revised

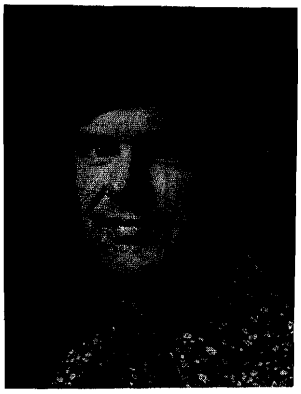
Pre-Algebra with Pizzazz!

Practice in Skills and Concepts

Wright Group
McGraw-Hill

Steve Marcy, Ph.D.
Janis Marcy, M.A.

The authors . . .



Janis Marcy and Steve Marcy

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The authors wish to thank Mr. Bob Fine and especially all of our former students in Azusa, Inglewood, Los Angeles, and Santa Monica, California.

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A MESSAGE FROM THE AUTHORS

Pre-Algebra With Pizzazz! is a series of enrichment books designed to provide practice with skills and concepts taught in pre-algebra classes.

The authors believe that mastery of math skills and concepts requires good teaching and also a great deal of practice. Our goal is to provide puzzle activities that make this practice more effective. We have tried to build into these activities certain characteristics that increase the effectiveness of practice:

1. **Motivating Goal for the Student.** Each puzzle has a goal that is motivating to students. Students work problems in order to discover the punch line of a joke or riddle, decode a humorous poem or one-liner, create an interesting picture, etc. Thus, the solution is a built-in reward to the student when he or she completes the puzzle. In addition, the variety and novelty of procedures for solving puzzles help capture and maintain student interest.
2. **Knowledge of Results.** Various devices are used in the puzzles to tell students whether or not their answers are correct. In most of the puzzles, feedback occurs immediately after the student works each exercise. For example, if a particular answer is not in the code or scrambled answer list, the student knows it is incorrect. The student can then try again or ask for help. Additional feedback occurs when the student achieves a puzzle solution that is appropriate. We have found that students greatly appreciate and benefit from this immediate knowledge of results.
3. **Focus on a Single, Clear Objective.** Though review puzzles are included which involve multiple objectives, most of the puzzles focus on single objectives. The skills and concepts required for each puzzle are limited so that students with different levels of ability, though possibly requiring differing amounts of preliminary instruction, can experience success. In some puzzles, the exercises are sequenced so that students can discover a pattern, generalization, or method for solving a different type of exercise. Our goal is for all students to feel successful when doing mathematics.

In addition to these efforts to make the puzzles highly effective, we have tried to make Pre-Algebra With Pizzazz! easy to use. Two lists of objectives—a summary list and a complete list—and the specific puzzles that provide practice for each objective are given on pages v–xix. The major objectives of most pre-algebra textbooks are included within this series. We have tried to arrange the puzzles on a given topic so that each puzzle builds on skills and concepts previously covered. Nearly all Pre-Algebra With Pizzazz! puzzles require only one page. Finally, because the puzzles are self-correcting, they help eliminate the task of correcting assignments.

We hope you enjoy using Pre-Algebra With Pizzazz! as much as we enjoyed writing it.

Steve and Janis Marcy

Suggestions for Using Pre-Algebra With Pizzazz!

Pre-Algebra With Pizzazz! puzzles can serve a variety of purposes. They are suitable for classwork or homework practice following introduction of a new skill or concept. They are ideal for an individualized program, as students can work independently on puzzles selected to meet their specific needs. Finally, the'puzzles can be a valuable addition to a math lab.

1. **Reproduction.** Pre-Algebra With Pizzazz! pages may be removed from the binder and used as blackline masters. The pages are especially accessible and easy to use.
2. **Directions.** Directions for each puzzle are simple and concise. Most students will have no difficulty getting started on most of the puzzles, though you may occasionally want to work through the first problem with your students, showing where the answers are to go, etc. An overhead transparency of a puzzle may facilitate discussion, especially for puzzles that include geometric figures. Students sometimes get excited and call out the solution, when they solve a puzzle, so you may want to caution your class about this before they begin working.
3. **Objectives.** Two lists of objectives—a summary list and a complete list (expressed in terms of learner behaviors)—and the specific puzzles that provide practice for each objective are given on pages v–xix. These objectives may be helpful in planning or in writing test items.
4. **Showing Work.** Though some exercises can be done mentally, many require paper-and-pencil (or calculator) computations. If you require the use of paper and pencil, you may wish to have students hand in their scratch paper for each puzzle with the work for each problem identified. If students use calculators, you may want them to hand in a record of computations performed. Requiring students to show their work can help in diagnosing individual strengths and weaknesses.

Other Books by Steve and Janis Marcy published by Creative Publications:

Middle School Math With Pizzazz! Book A	Operations with whole numbers, basic facts, place value, and numeration
Middle School Math With Pizzazz! Book B	Decimals, operations, applications, and problem-solving strategies
Middle School Math With Pizzazz! Book C	Fraction concepts and operations, number theory, and relating fractions and decimals
Middle School Math With Pizzazz! Book D	Measurement, geometry, area, perimeter, angles, square roots, and right triangles
Middle School Math With Pizzazz! Book E	Percent, probability, ratio and proportion, statistics, integers, and equations
Algebra With Pizzazz!	Practice activities for first-year algebra students

PART AA
SUMMARY TABLE OF OBJECTIVES

PART AA
COMPLETE TABLE OF OBJECTIVES

The student will be able to:

PART BB
SUMMARY TABLE OF OBJECTIVES

PART BB
COMPLETE TABLE OF OBJECTIVES

The student will be able to:

PART CC
SUMMARY TABLE OF OBJECTIVES

PART CC
COMPLETE TABLE OF OBJECTIVES

The student will be able to:

PART DD
SUMMARY TABLE OF OBJECTIVES

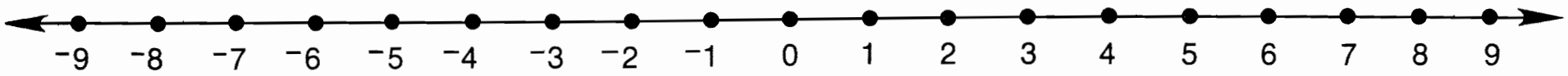
PART DD
COMPLETE TABLE OF OBJECTIVES

The student will be able to:

a·fine·line

DIRECTIONS:

Below you see pairs of letters and numbers. Write each letter above the number line at the point that corresponds to its number. A special message will appear!



E	2	O	4	S	0	R	$-2\frac{1}{2}$
I	$-5\frac{1}{2}$	A	-7	T	$4\frac{1}{2}$	H	$6\frac{1}{2}$
O	$-1\frac{1}{2}$	W	$-\frac{1}{2}$	N	-5	M	-6
S	$8\frac{1}{2}$	T	8	A	$\frac{1}{2}$	A	$-3\frac{1}{2}$
R	-2	G	$-4\frac{1}{2}$	O	7	H	$2\frac{1}{2}$
S	6	R	$1\frac{1}{2}$	L	-8	F	$-8\frac{1}{2}$

What did CINDERELLA say to the photographer?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:
Each number in the boxes below stands for a point on the number line.
Find the correct point for any of these numbers. Then write the corresponding letter at that point above the number.

KEEP WORKING AND SEE WHAT DEVELOPS!

0	$-\frac{7}{8}$	-0.75	$-1\frac{2}{3}$	$-1\frac{5}{8}$	$1\frac{2}{3}$	$1\frac{3}{8}$	2.33	-0.33	$-2\frac{7}{8}$	$2\frac{1}{8}$	1	$-2\frac{1}{3}$	-2.5	0.5

$-\frac{1}{4}$	$-\frac{1}{2}$	-1.25	2.75	1.5	$-2\frac{3}{4}$	$1\frac{1}{4}$	$-1\frac{1}{2}$	

- FIND THE MESSAGE -

TO FIND THE HIDDEN MESSAGE, FOLLOW THESE DIRECTIONS:

Each row going across has 7 rectangles. Only 3 of them contain a number that meets the requirement for that row. Circle these 3 numbers in each row.

Over each number you have circled, notice the small number and letter. The small number tells you where to put the letter in the row of boxes at the bottom of the page. You will spell out a five-word message.

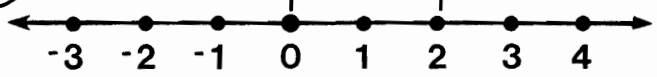
	12-R	21-A	16-A	19-P	20-E	5-I	11-F
GREATER THAN 4	-5	-1	5	-8	$\frac{7}{2}$	$\frac{9}{2}$	8
	21-D	15-E	19-I	4-O	6-M	12-E	2-V
LESS THAN -2	-3	0	-7	$4\frac{2}{3}$	-1	$\frac{-5}{2}$	$\frac{1}{4}$
	13-G	2-E	11-U	15-S	14-I	9-N	20-N
GREATER THAN $-\frac{1}{2}$	-4	0	$-1\frac{3}{4}$	$\frac{-1}{4}$	-1	$\frac{-5}{4}$	5
	7-R	16-O	13-E	4-L	9-O	3-D	18-P
LESS THAN $5\frac{1}{2}$	8	$5\frac{1}{2}$	$\frac{10}{2}$	$\frac{-10}{2}$	$\frac{-1}{3}$	10	$\frac{13}{2}$
	10-L	7-G	18-A	17-F	14-I	3-T	6-N
GREATER THAN $-7\frac{1}{3}$	-9	-7	$\frac{-16}{2}$	-10	$\frac{-1}{3}$	-12	0
	3-L	5-O	8-E	17-S	18-R	1-F	10-F
LESS THAN -1	$\frac{-3}{2}$	0	$\frac{-1}{2}$	-1	-5	8	$-2\frac{2}{3}$
	17-B	8-C	1-S	21-C	8-R	17-G	1-M
GREATER THAN 0	$\frac{-1}{4}$	15	$\frac{7}{8}$	0	-11	$3\frac{1}{3}$	-1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

WHAT DID THE SNOWPLOW SAY ABOUT THE BLIZZARD?

Each arrow below represents a number. Find the number in the boxes at the bottom of the page and write the corresponding letter above it. When you finish, you will know the plane truth!

O



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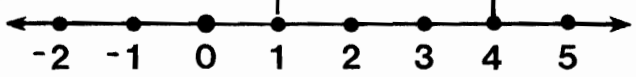

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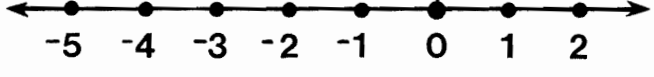

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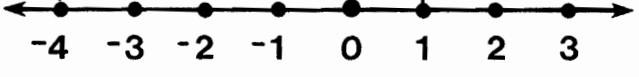

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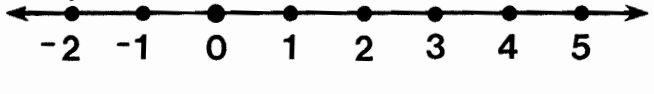

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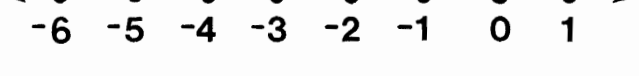

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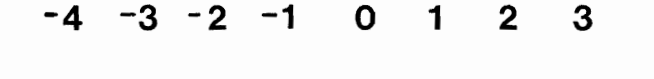

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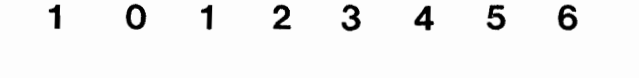

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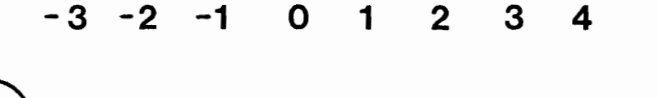

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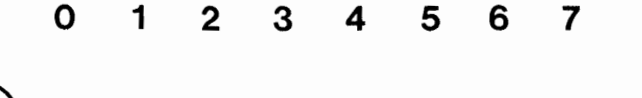

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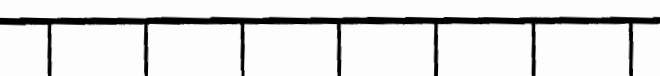


S

−6	6	7	−2	−5	2	5	−7	−3	3	4	−4	−1	1

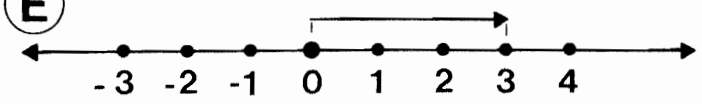
When does a BARBERSHOP QUARTET have 16 legs?

TO ANSWER THIS QUESTION:

1. Identify the number represented by each arrow in the 8 exercises on the left.
2. Determine the number that goes in each lettered box in the table on the right.

After doing each exercise, find your answer at the bottom of the page and write the corresponding letter above it.

E



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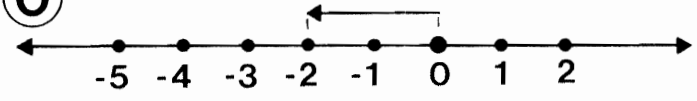

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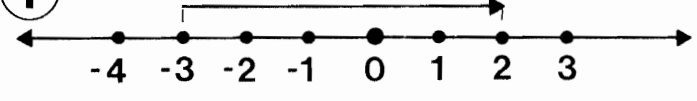

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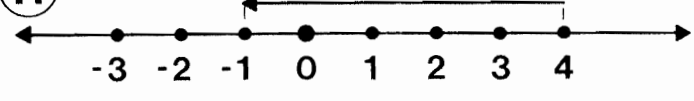

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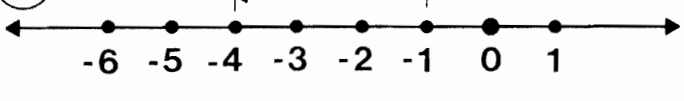

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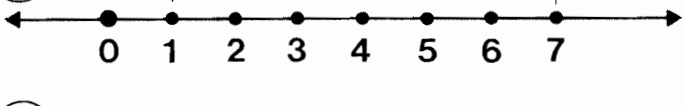

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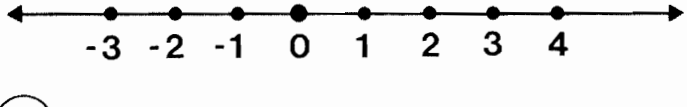

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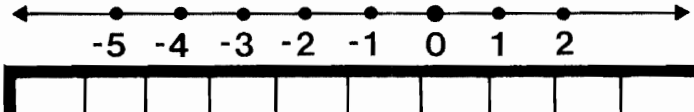


ARROW STARTING POINT COORDINATE	DIRECTION AND LENGTH OF ARROW	ARROW ENDPOINT COORDINATE
1	POSITIVE, 6	E
-3	POSITIVE, 2	A
4	NEGATIVE, 10	N
-2	NEGATIVE, 7	H
$1\frac{1}{2}$	NEGATIVE, $\frac{1}{2}$	S
-5	POSITIVE, $8\frac{1}{2}$	E
-3	NEGATIVE, $1\frac{1}{4}$	R
$6\frac{1}{2}$	POSITIVE, $2\frac{1}{2}$	N
$-12\frac{1}{4}$	POSITIVE, $5\frac{1}{4}$	S
1	NEGATIVE, $6\frac{1}{2}$	W
$-1\frac{1}{2}$	POSITIVE, $9\frac{1}{2}$	P
6	NEGATIVE, $\frac{1}{2}$	N
0	NEGATIVE, $6\frac{3}{5}$	T

$-5\frac{1}{2}$	-9	6	9	-4	-6	3	8	7	$-4\frac{1}{4}$	-7	-3	4	5	1	-1	$-6\frac{3}{5}$	$3\frac{1}{2}$	$5\frac{1}{2}$	-2	-5

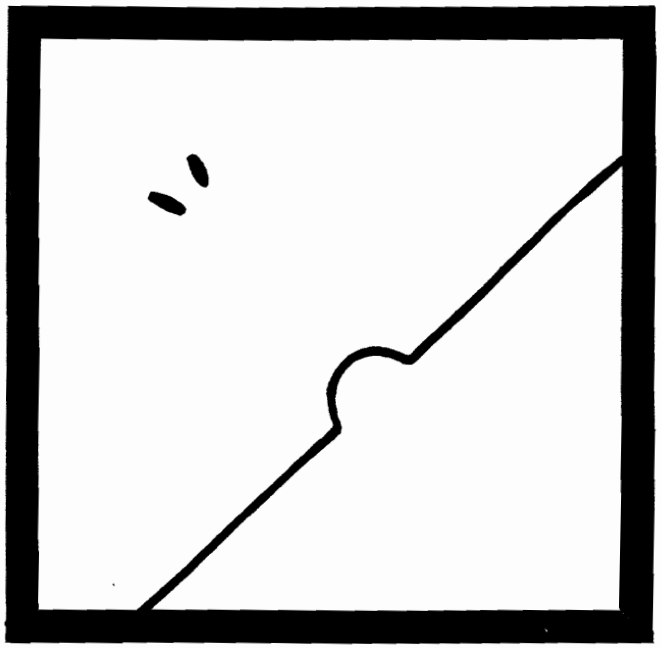
What is the Title of This Picture?

CODED TITLE:

−101 −89 −72 −179 −56 −6 −35 −89 −72 −75 −89 154 −6 −952 −109

−323 −109 −6 −800 −142 −259 −800 −6 −226 −952 −85 −75 −6 −72

−101 −89 −72 −35 −800 −226 −96 −226 −952 −35 823 −89 −900



TO DECODE THE TITLE OF THIS PICTURE:

Do any exercise below and find your answer in the coded title. Each time the answer appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE TITLE.

(H) $-45 + -30 =$

(D) $-19 + -66 =$

(C) $-9 + -87 =$

(G) $-75 + -34 =$

(L) $-90 + -52 =$

(T) $-28 + -7 =$

(W) $56 + 98 =$

(F) $-241 + -18 =$

(E) $-76 + -150 =$

(A) $-4 + -319 =$

(U) $-28 + -28 =$

(B) $-899 + -1 =$

(N) $-243 + -709 =$

(J) $624 + 199 =$

(R) $-500 + -300 =$

(I) $-2 + -2 + -2 =$

(S) $-6 + -25 + -41 =$

(Q) $-68 + -99 + -12 =$

(O) $-31 + -50 + -8 =$

(M) $-85 + -6 + -10 =$

DECODE DESIGN

DIRECTIONS:

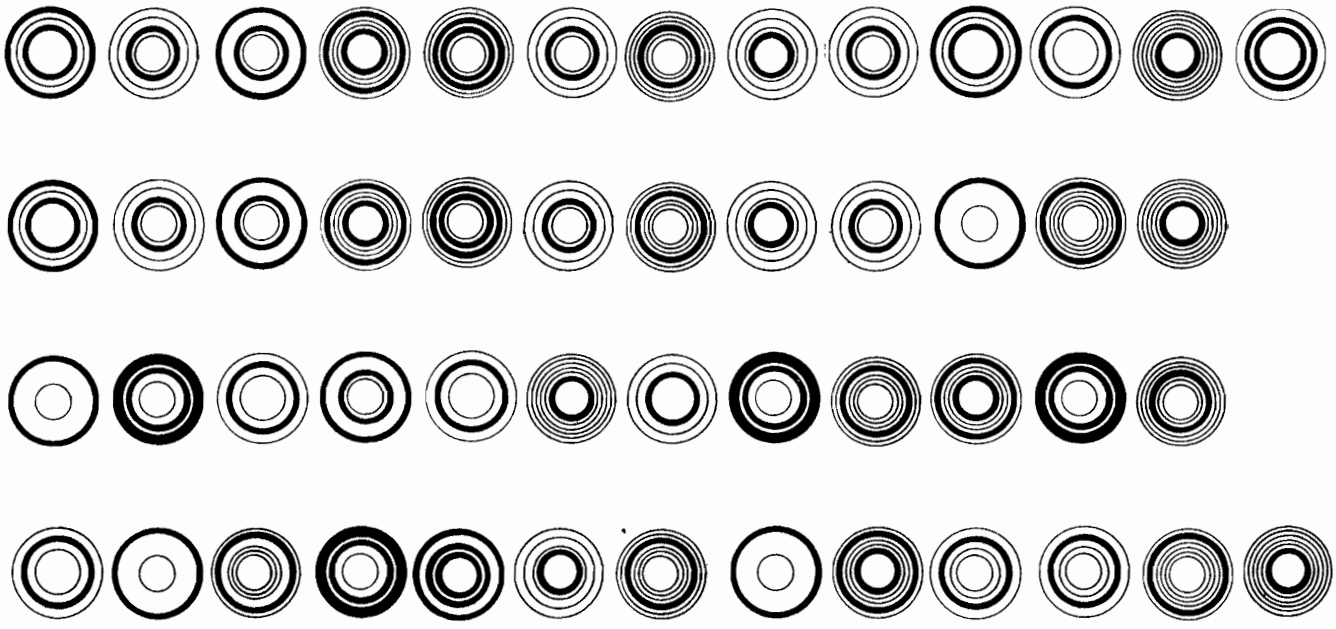
Each arrow diagram on page 2 represents a number sentence. Find the number sentence for any of these diagrams in the answer columns below. Notice the CIRCLE DESIGN next to the answer.

Find the CIRCLE DESIGN of your answer in the code at the bottom of the page. Each time it appears, write the letter of the arrow diagram above it.

KEEP WORKING AND YOU WILL DECODE A "SONG FOR SAIL!"

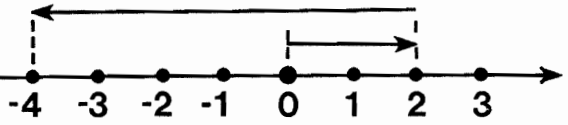
$6 + {}^{-}7 = {}^{-}1$	${}^{-}20 + 5 = {}^{-}15$	${}^{-}10 + 20 = 10$
${}^{-}40 + 40 = 0$	${}^{-}3 + 5 = 2$	$60 + {}^{-}40 = 20$
$10 + {}^{-}4 = 6$	${}^{-}6 + 8 = 2$	$3 + {}^{-}3 = 0$
${}^{-}25 + 25 = 0$	${}^{-}30 + 50 = 20$	$10 + {}^{-}25 = {}^{-}15$
$2 + {}^{-}6 = {}^{-}4$	${}^{-}5 + 7 = 2$	$5 + {}^{-}1 = 4$
${}^{-}4 + 2 = {}^{-}2$	$8 + {}^{-}12 = {}^{-}4$	${}^{-}6 + 4 = {}^{-}2$

TITLE: A SONG FOR SAIL



PAGE 2

H



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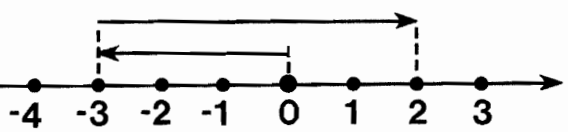
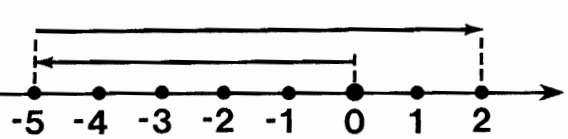
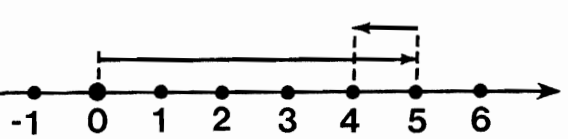


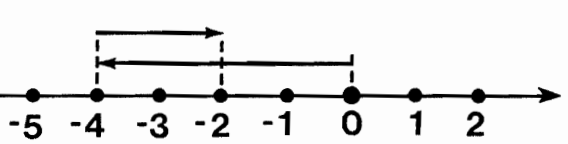
D



E



B



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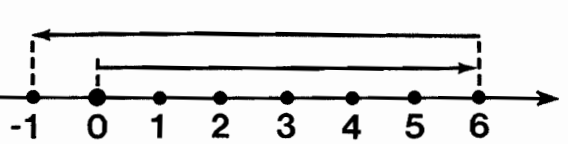

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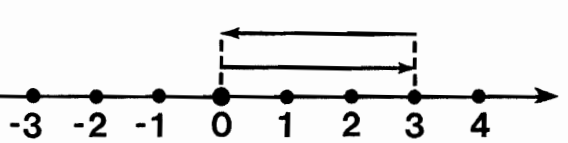

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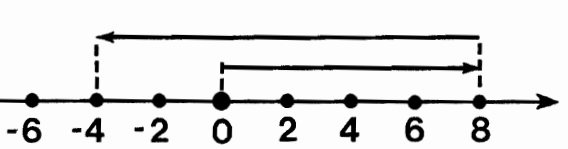
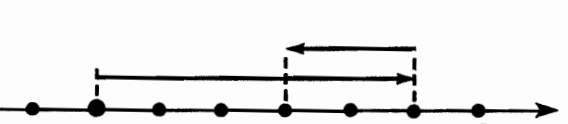
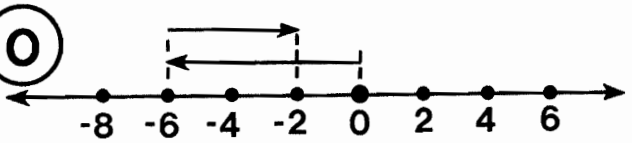


T



O



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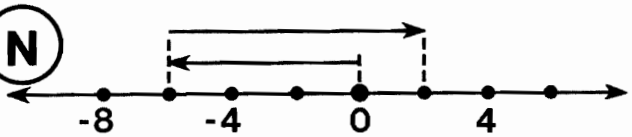
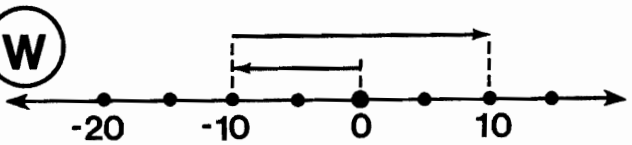
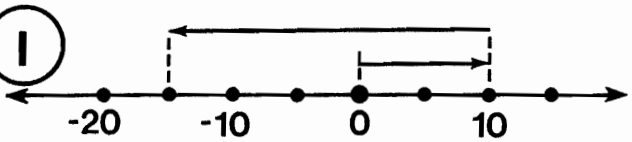


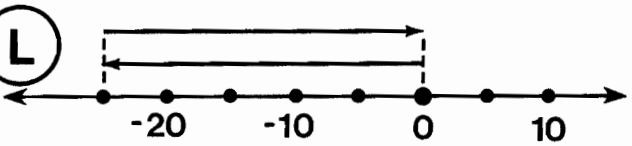
W



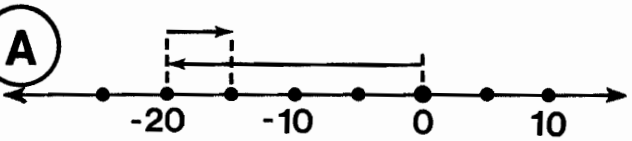
I



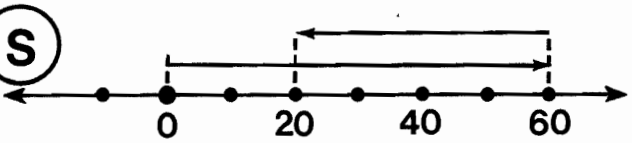
L



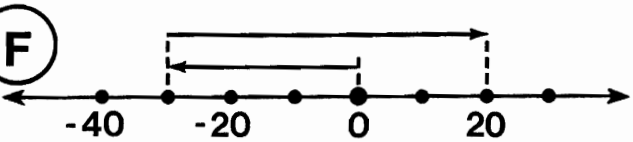
A



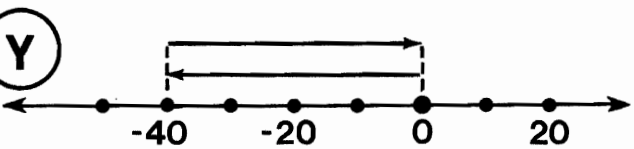
S



F



Y



+ SUM UP +

Do any exercise below and find your answer in the code key. Notice the letter above it. Print this letter in the box at the bottom of the page that contains the number of the exercise. Keep working and you will create a special message.

CODE KEY

W	G	H	D	L	S	A	E	O	Y	I	U	T	C	M	R	P	N	F
-18	-15	-13	-10	-8	-7	-6	-4	-3	-1	0	2	3	4	5	7	8	14	17

(1) $-8 + 2 =$
(2) $6 + 8 =$
(3) $5 + -9 =$
(4) $-9 + 1 =$
(5) $-3 + -1 =$
(6) $-1 + 5 =$
(7) $-3 + 6 =$
(8) $9 + -2 =$
(9) $-3 + 3 =$
(10) $-5 + 9 =$
(11) $-7 + -3 =$
(12) $8 + -8 =$
(13) $-1 + -6 =$
(14) $-20 + 7 =$
(15) $-9 + -9 =$
(16) $-7 + 1 =$
(17) $2 + -9 =$
(18) $-9 + -4 =$
(19) $-7 + 3 =$
(20) $3 + 4 =$
(21) $-7 + -8 =$
(22) $4 + -8 =$
(23) $-6 + 9 =$
(24) $-10 + 3 =$
(25) $6 + -7 =$
(26) $-9 + 6 =$
(27) $-3 + 5 =$
(28) $2 + -5 =$
(29) $-7 + 9 =$
(30) $8 + -5 =$
(31) $-1 + -2 =$
(32) $8 + 9 =$
(33) $-8 + 1 =$
(34) $3 + -6 =$
(35) $-2 + 7 =$
(36) $-5 + 1 =$
(37) $-1 + 4 =$
(38) $4 + -7 =$
(39) $-4 + 6 =$
(40) $-9 + -6 =$
(41) $7 + -20 =$
(42) $-15 + 8 =$
(43) $7 + -3 =$
(44) $-1 + 8 =$
(45) $3 + -9 =$
(46) $-1 + 9 =$
(47) $8 + -12 =$
(48) $-3 + -4 =$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

HOW'S BUSINESS?

SOLDIER: "Mine is _____."

30 37 $^{-}2$ 8 $^{-}37$ $^{-}22$ $^{-}87$ 59 8 $^{-}78$ $^{-}87$ $^{-}47$ $^{-}2$

BOXER: "Mine is _____."

$^{-}78$ 26 0 37 8 8 0 $^{-}22$ 49 $^{-}93$ 2 0 $^{-}83$ 59

STEAK SAUCE MAKER: "Mine is _____."

$^{-}19$ 0 2 $^{-}2$ 59 $^{-}257$ $^{-}22$ $^{-}2$ $^{-}186$ 59 $^{-}78$ 2

MATH TEACHER: "Mine is _____."

$^{-}846$ 161 $^{-}78$ $^{-}2$ $^{-}2$ $^{-}186$

EACH PERSON ABOVE IS ANSWERING THE QUESTION, "HOW'S BUSINESS?" TO DECODE THEIR ANSWERS:

Do any exercise below and find your answer in the code above. Each time the answer appears in the code, write the letter of that exercise above it. Keep working until you have decoded all four responses.

(I) $10 + {}^{-}32 =$

(B) $^{-}15 + 41 =$

(V) $^{-}39 + {}^{-}44 =$

(E) $^{-}27 + 86 =$

(M) $61 + {}^{-}12 =$

(K) $^{-}75 + 28 =$

(A) $^{-}37 + {}^{-}41 =$

(D) $^{-}165 + {}^{-}92 =$

(W) $54 + {}^{-}73 =$

(J) $83 + {}^{-}53 =$

(U) $^{-}48 + 85 =$

(F) $^{-}85 + 48 =$

(P) $^{-}16 + {}^{-}77 =$

(L) $63 + 98 =$

(T) $^{-}105 + 113 =$

(O) $^{-}50 + 50 =$

(Y) $737 + {}^{-}923 =$

(N) $^{-}285 + 198 =$

(C) $^{-}457 + {}^{-}389 =$

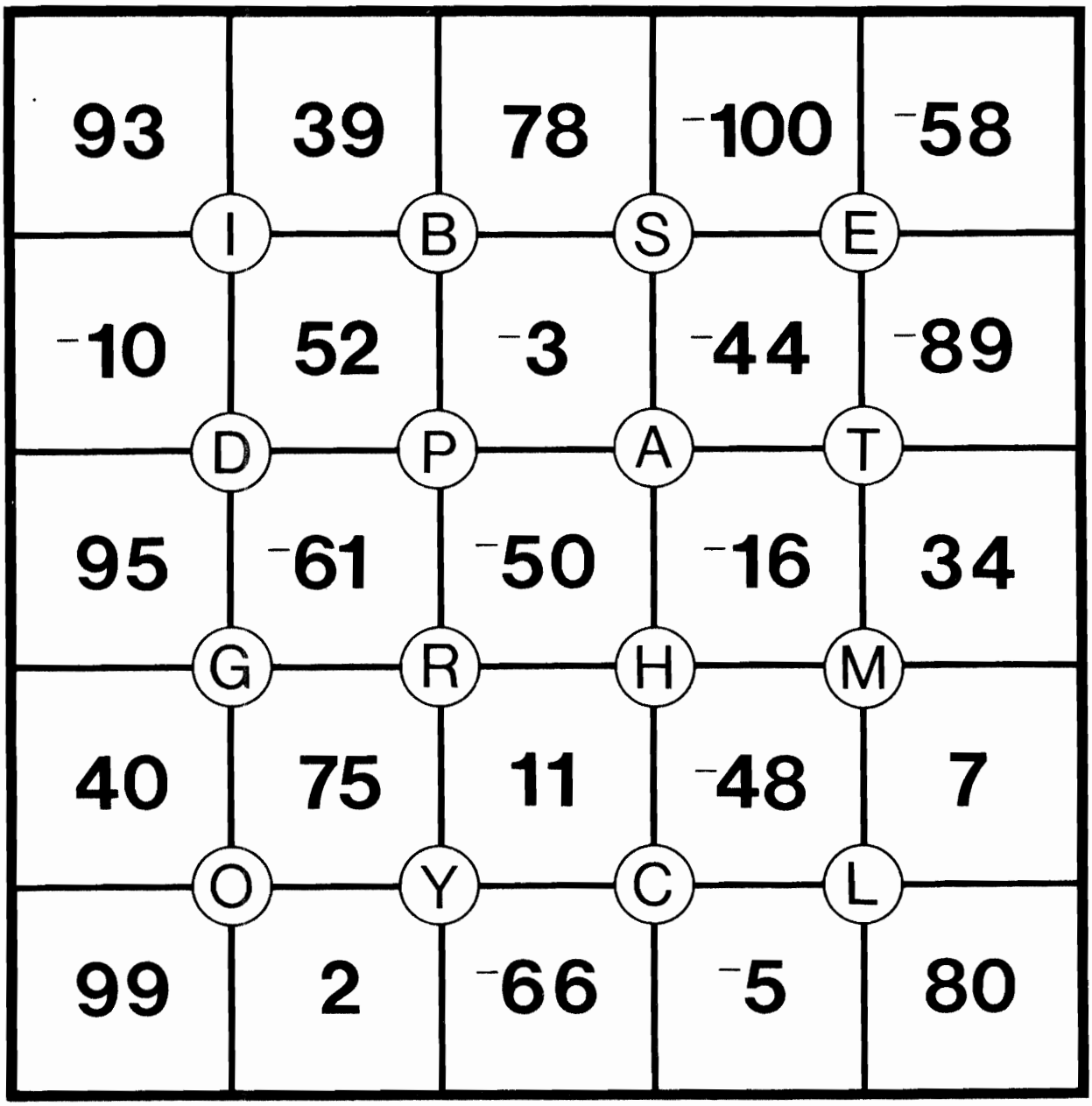
(R) $95 + {}^{-}93 =$

(S) $^{-}95 + 93 =$

Why did the BICYCLE go to a PSYCHIATRIST ?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:

Add the four numbers touching any letter below and write the sum next to the appropriate letter. Then find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the corresponding letter above it. Keep working and you will decode the answer to the question.



CODED
ANSWER: 174 −115 −103 −113 76 −108 22 −108 34 −291

34 216 149 174 −108 −113 34 −62 −25 216 166 34 −291 −23 −69

What should you do when you can't sleep?

Do any exercise below and find your answer in the corresponding answer column. The letter of the exercise goes in the box that contains the number of the answer. Keep working and you will discover the answer to the title question.

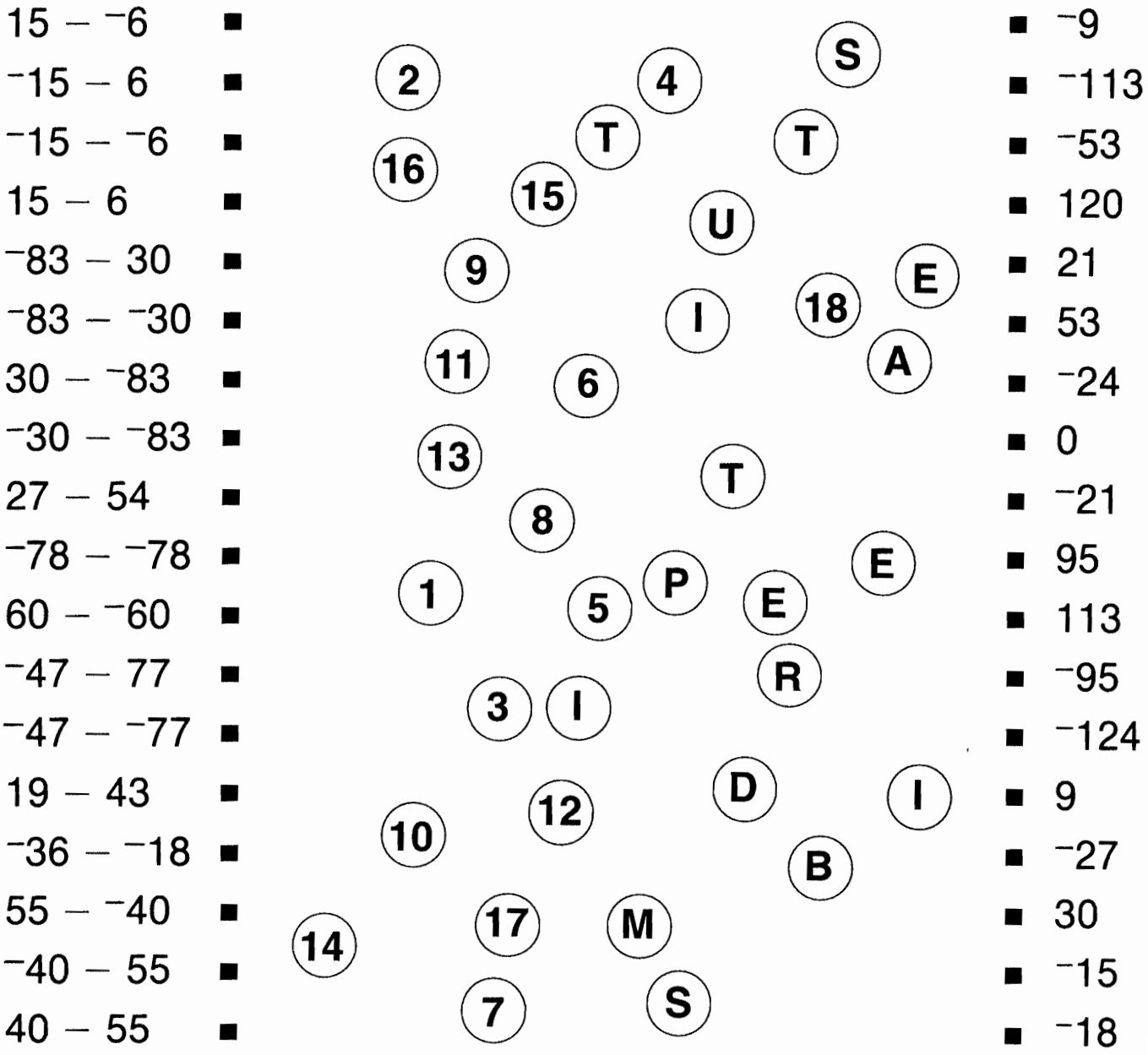
T	$3 - 7 =$	41	-10	E	$-5 - -15 =$	10	17	E	$-3 - -1 =$	38	18
R	$-2 - 5 =$	9	8	R	$8 - -9 =$	24	8	C	$-7 - 8 =$	25	-10
E	$7 - -1 =$	13	-4	D	$3 - 13 =$	12	2	S	$2 - -5 =$	26	-2
U	$9 - 3 =$	29	5	O	$-2 - -4 =$	4	10	M	$13 - 4 =$	42	0
O	$-5 - -10 =$	23	-6	Y	$-6 - 6 =$	17	-8	O	$-2 - -20 =$	33	-15
F	$1 - 11 =$	37	-7	E	$15 - 7 =$	27	-10	F	$-9 - -9 =$	1	9
H	$-8 - -2 =$	32	6	D	$-9 - -1 =$	30	-12	B	$6 - 16 =$	8	7
C	$4 - -4 =$	15	-7	O	$5 - 5 =$	35	-1	O	$-7 - 4 =$	3	14
O	$-3 - -7 =$	11	9	E	$-4 - 10 =$	20	0	E	$4 - 7 =$	16	-3
A	$-1 - 12 =$	2	4	T	$-9 - -5 =$	7	4	L	$-4 - -7 =$	36	-14
E	$2 - 9 =$	34	-13	N	$6 - 7 =$	28	17	P	$7 - -4 =$	6	3
F	$17 - 4 =$	31	-9	S	$15 - -2$	14	-17	G	$-7 - -7 =$	40	-11
O	$-11 - -2 =$	5	8	O	$-8 - -12 =$	22	-4	V	$7 - -7 =$	18	0
T	$6 - -3 =$	21	13	H	$-11 - 6 =$	19	-14	D	$-7 - 7 =$	39	11

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	

What Did the Mama Cow Say to the Baby Cow?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:

Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

What is the DIFFERENCE between UNLAWFUL and ILLEGAL ?

THE ANSWER TO THIS QUESTION IS WRITTEN IN CODE AT THE BOTTOM OF THE PAGE.
TO DECODE:

Do any exercise below and find your answer in the code. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will discover the answer to the title question.

(N) $77 - {}^{-}145 =$

(T) ${}^{-}203 - {}^{-}85 =$

(E) ${}^{-}472 - 351 =$

(C) $86 - 527 =$

(A) ${}^{-}140 - {}^{-}891 =$

(W) $66 - {}^{-}377 =$

(F) $736 - 439 =$

(D) ${}^{-}442 - 397 =$

(G) ${}^{-}608 - {}^{-}519 =$

(R) $394 - 805 =$

(H) $500 - {}^{-}300 =$

(K) ${}^{-}79 - 788 =$

(U) ${}^{-}413 - {}^{-}48 =$

(L) $747 - {}^{-}9 =$

(I) ${}^{-}137 - {}^{-}540 =$

(B) $803 - 900 =$

(S) $700 - 77 =$

−365	222	756	751	443	297	−365	756	403	623	751	−89	751	403	222	623	−118
−118	800	−823	756	751	443	751	222	−839	403	756	756	−823	−89	751	756	
403	623	751	623	403	−441	−867	−97	403	−411	−839						

What Should You Do If You Are Surrounded By 20 Lions, 15 Tigers And 10 Leopards?

Do any exercise below and find your answer in one of the boxes at the bottom of the page. Write the letter of the exercise in this box. (To make it easier to find your answer, the answers are arranged in order from smallest to largest.) Keep working and you will discover the answer to the title question.

Y $-6 + 2 =$	T $-4 + -25 =$	F $60 - -15 =$	J $-32 + -32 =$
O $3 - -7 =$	P $37 - 12 =$	J $10 + 6 =$	M $-1 - -20 =$
D $9 + -4 =$	O $17 - 18 =$	D $-5 - -20 =$	W $5 + -25 =$
E $-7 + -2 =$	S $10 + -2 =$	H $4 - 14 =$	N $16 + -12 =$
U $-3 - -20 =$	E $-11 - -4 =$	T $12 + -6 =$	R $-48 + 43 =$
O $-16 + 18 =$	U $-30 - 20 =$	S $-30 - 13 =$	M $2 - 10 =$
T $1 - 12 =$	O $-1 - -8 =$	I $-8 + -9 =$	T $-6 + 15 =$
A $4 + -22 =$	T $-17 + 2 =$	O $-18 - -5 =$	R $-69 - -69 =$
F $-4 - 10 =$	N $22 + -9 =$	P $14 + -3 =$	G $50 + -53 =$
O $31 - -6 =$	R $-20 - -8 =$	F $15 - -45 =$	
A $-3 + 15 =$	U $-32 + 35 =$	R $-7 + 1 =$	

-64	-50	-43	-29	-20	-18	-17	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-1
0	2	3	4	5	6	7	8	9	10	11	12	13	15	16	17	19	25	37	60	75

DAFFYNITION DECODER

TWIN: _____

-980 -7 5181 476 -7 534 19 542 73 -115 476 -382

CARROT JUICE: _____

-254 476 19 542 534 -129 -7 -980 -607

MALE SURFER: _____

60 476 -7 -129 633 542 19 -444 -129 476 19 -589

TO DECODE THESE THREE DAFFYNITIONS, FOLLOW THESE DIRECTIONS:

Work any problem below and find your answer in the code. Each time the answer appears in the code, write the letter of that problem above it.

KEEP WORKING AND YOU WILL DECODE DEFINE PRINT.

(L) $-78 + -37 =$

(C) $-562 - 45 =$

(E) $-81 - -623 =$

(V) $762 + -129 =$

(Y) $17 - 399 =$

(D) $-808 + 219 =$

(T) $445 - -89 =$

(B) $356 + -800 =$

(I) $-490 + -490 =$

(H) $671 - 925 =$

(M) Temperature in Tahiti: 27°C.
Temperature in Siberia: -33°C.
What is the difference in these temperatures?
_____°C

(P) Horatio Hornswoggle was born: 57 B.C.
Horatio Hornswoggle died: 16 A.D.
How old was Horatio when he died?
_____ years

(O) Bank account balance: $357.
Check written for: $486.
What was the new balance? $_____

(F) Altitude of mountain climber: 4572 meters.
Altitude of submarine commander: -609 meters.
What is the difference in these altitudes?
_____ meters

(A) The Roman Republic was established: 509 B.C.
The Roman Empire fell 985 years later.
In what year did the Empire fall?
_____ A.D.

(R) Altitude of scuba diver: -12 meters.
Altitude of shark: -31 meters.
What is the difference in these altitudes?
_____ meters

(N) Temperature at 8:00 A.M.: -15°C.
Temperature rose 8°C during the next hour. What was the temperature at 9:00 A.M.? _____°C

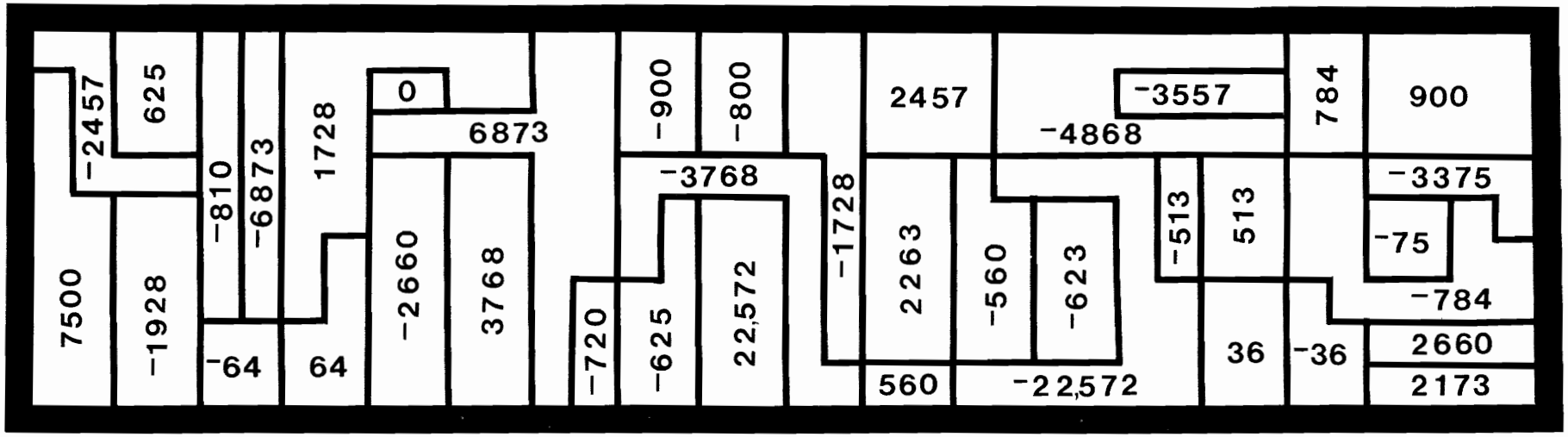
FIND A MATCH

DIRECTIONS:

Each of the two blocks below is divided into 12 boxes containing exercises. Find two exercises, one in the top block and one in the bottom block, that have the same answer. Each time you find two exercises with the same answer, transfer the word from the top box to the corresponding bottom box. Keep working and you will spell out a message.

$^{-}8 + 4 - {}^{-}9 =$ TRYING	$10 - 14 + {}^{-}8 =$ SOME	$^{-}5 - {}^{-}7 + {}^{-}5 =$ IN
$^{-}8 + {}^{-}1 + {}^{-}20 + {}^{-}3 =$ ARE	$2 - 17 + 21 - {}^{-}1 =$ TO	$^{-}4 - {}^{-}4 + 8 - 8 =$ A
$^{-}1 + {}^{-}1 - {}^{-}1 + 1 - {}^{-}1 =$ DOUGH	$^{-}70 + 90 + {}^{-}50 =$ MAKE	$^{-}7 - {}^{-}7 + 7 - {}^{-}7 =$ BAKERS
$9 + {}^{-}16 - {}^{-}8 + 11 =$ FORTUNE	$17 - {}^{-}2 + {}^{-}20 - 6 =$ PRETZEL	$^{-}25 + {}^{-}75 - {}^{-}50 =$ CROOKED
$^{-}30 + 15 - {}^{-}9 - 6 =$	$5 - {}^{-}4 + 9 - 25 =$	$^{-}29 + 39 + {}^{-}7 - {}^{-}11 =$
$40 - 80 - {}^{-}15 + {}^{-}7 =$	$6 - {}^{-}2 - 19 + 16 =$	$^{-}14 + 44 + {}^{-}23 =$
$24 + {}^{-}48 + {}^{-}12 + 6 =$	$48 + {}^{-}16 + {}^{-}16 + {}^{-}16 =$	$32 - 35 - {}^{-}5 + 10 =$
$^{-}3 - {}^{-}13 - 10 - 3 =$	$^{-}30 + 40 - 50 + {}^{-}10 =$	$15 + {}^{-}6 - 13 + 5 =$

What did the purple shovel say to the pink hoe ?



DIRECTIONS: The answer to the title question is hidden in the rectangle. To find it, do the exercises below and find your answers in the rectangle. Shade in each area containing a correct answer.

MULTIPLY

1. $(6)(-6) =$
2. $(-8)(8) =$
3. $(57)(-9) =$
4. $(-20)(45) =$
5. $(38)(-70) =$
6. $(-35)(16) =$
7. $(87)(-79) =$
8. $(53)(41) =$
9. $(25)(-25) =$
10. $(9)(-9)(10) =$
11. $(-15)(15)(15) =$
12. $(13)(27)(-7) =$
13. $(-24)(36)(2) =$
14. $(50)(3)(50) =$
15. $(98)(8)(-1) =$
16. $(-471)(8) =$
17. $(-57)(396) =$
18. $(439)(-876)(0) =$

FAMOUS FARMING EXPRESSION

The multiplication table below contains 42 mistakes. Shade in each box that contains a mistake. Please use pencil so you can erase if necessary.

YOU WILL END UP WITH A FAMOUS FARMING EXPRESSION!

X	2	−4	−9	6	3	8	−1	4	−8	−2	−6	7	−5	9	−7
−3	6	−12	−27	−18	9	−24	−3	12	−24	6	−18	−21	−15	27	−21
9	−18	−36	−81	54	−27	72	9	36	−72	−18	54	63	45	81	63
−6	12	−24	54	−36	18	−48	−6	24	48	12	−36	−42	−30	−54	−42
5	−10	−20	−45	30	−15	40	5	20	−40	−10	30	35	25	45	35
−7	14	−28	−63	−42	21	−56	−7	28	−56	14	−42	−49	−35	63	−49

HIDDEN MESSAGE

FIRST, do each exercise and find your answer in the rectangle below. The correct answers run across from left to right.
SECOND, shade in the boxes containing each correct answer. When you finish, there will be 27 boxes not shaded in.

STARTING ON THE TOP LINE AND WORKING FROM LEFT TO RIGHT, PRINT THE 27 LETTERS THAT REMAIN INTO THE BOXES AT THE BOTTOM OF THE PAGE. A HIDDEN MESSAGE WILL APPEAR!

1 $(-48)(-17) =$

2 $(39)(-68) =$

3 $(-8)(4)(-7) =$

4 $(-6)(1589) =$

5 $(-15)(-25)(-35) =$

6 $(-100)(9)(53) =$

7 $(-3)(8)(-9)(-7) =$

8 $(-94)(-1)(78)(20) =$

9 $(-8)(-8)(-8)(-8) =$

10 $(-498)(10)(20)(30) =$

11 $(-3)(-3)(-3)(-3)(-3) =$

J	U	M	A	O	M	I	S	P	T	H	O	G	G	A	M	E	A	E	R	O	B	A	S	D
−1	8	1	6	4	−2	9	8	8	0	0	0	3	9	−1	5	1	2	−1	7	2	2	4	0	7
O	B	E	Y	L	I	A	T	T	E	N	T	I	O	N	R	O	L	E	I	N	G	O	O	N
−9	3	6	−2	6	5	2	4	−1	0	−1	3	1	2	5	−8	−2	4	3	4	4	0	9	6	7
T	H	A	T	O	T	E	L	O	P	H	Q	U	B	O	N	G	R	E	A	T	A	S	U	N
−3	2	−9	5	3	4	9	4	−3	1	4	6	6	4	0	5	−6	0	−4	7	7	0	0	4	3

LOVE STORY

YOU PROBABLY HEARD ABOUT THE GUY WHO MET A GIRL WHILE DRIVING HIS STEAM ROLLER AND GOT A CRUSH ON HER. HERE IS ANOTHER TOUCHING, TENDER, ROMANTIC LOVE STORY. TO DECODE IT:

Do any exercise below and find your answer in the coded LOVE STORY at the bottom of the page. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will decode the LOVE STORY. You'll love it!

O	$(^{-}5)(24) =$	**H**	$(14)(^{-}14) =$	**L**	$(^{-}70)(^{-}20) =$
N	$^{-}13 + 28 =$	**C**	$10 + ^{-}200 =$	**M**	$^{-}145 - ^{-}75 =$
W	$^{-}34 + ^{-}3 =$	**Y**	$^{-}17 - ^{-}67 =$	**U**	$^{-}275 + ^{-}350 =$
G	$(^{-}10)(^{-}13) =$	**A**	$(^{-}16)(^{-}400) =$	**T**	$(30)(^{-}30) =$
D	$18 - ^{-}12 =$	**E**	$87 - ^{-}23 =$	**F**	$^{-}99 - 65 =$
R	$^{-}7 - 99 =$	**I**	$^{-}69 + 37 =$	**S**	$600 + ^{-}475 =$

LOVE STORY TITLE: A PRESSING ENGAGEMENT

$^{-}196$ 110 $^{-}37$ 6400 125 6400 $^{-}900$ 6400 $^{-}32$ 1400 $^{-}120$ $^{-}106$ $^{-}37$ $^{-}196$ $^{-}120$

125 110 6400 $^{-}70$ 110 30 15 $^{-}32$ $^{-}190$ 110 6400 15 30 125 $^{-}625$ $^{-}32$ $^{-}900$ 110 30 $^{-}70$ 110

$^{-}164$ $^{-}32$ 15 110 125 $^{-}120$ $^{-}70$ 6400 $^{-}106$ $^{-}106$ $^{-}32$ 6400 130 110 $^{-}37$ 6400 125

$^{-}120$ 15 1400 50 $^{-}164$ $^{-}32$ $^{-}900$ $^{-}900$ $^{-}32$ 15 130.

What did ZORNA say about marrying a shorter man?

Do any exercise below and find your answer in one of the boxes at the bottom of the page. Write the letter of the exercise in that box. The answers are arranged in order from smallest to largest. Keep working and you will discover the answer to the title question.

(E) $\frac{36}{-2} =$

(O) $\frac{-50}{-2} =$

(A) $\frac{100}{-4} =$

(D) $\frac{-670}{-10} =$

(E) $\frac{9100}{-100} =$

(S) $\frac{-45}{3} =$

(A) $\frac{600}{4} =$

A $-12 \div 4 =$
E $60 \div 15 =$
T $45 \div -9 =$
A $-48 \div -4 =$
R $-49 \div -7 =$
A $-3 \div -3 =$
E $-60 \div 5 =$
O $-200 \div 4 =$
A $-90 \div 9 =$
H $0 \div -7 =$
D $77 \div -7 =$
E $-215 \div 1 =$
T $96 \div 12 =$
E $-75 \div -5 =$
O $56 \div -8 =$

(V) $\frac{39}{3} =$

(O) $\frac{-54}{-6} =$

(L) $\frac{311}{1} =$

(N) $\frac{38}{-19} =$

(V) $\frac{-63}{3} =$

(T) $\frac{300}{-2} =$

(H) $\frac{1000}{100} =$

A $750 \div 10 =$
E $-42 \div -7 =$
R $-150 \div 2 =$
E $-100 \div -2 =$
T $67 \div -1 =$
N $-80 \div -40 =$
H $150 \div -5 =$
R $-30 \div 5 =$
T $1700 \div -10 =$
V $100 \div 20 =$
T $13 \div -13 =$
V $120 \div 4 =$
M $-100 \div 25 =$
V $-42 \div 3 =$
L $80 \div 5 =$

(B) $\frac{3110}{-10} =$

(N) $\frac{900}{300} =$

(S) $\frac{81}{-9} =$

(L) $\frac{-430}{-2} =$

(H) $\frac{-48}{6} =$

(L) $\frac{-48}{3} =$

(T) $\frac{-91}{-1} =$

−311	−215	−170	−150	−91	−75	−67	−50	−30	−25	−21	−18	−16	−15	−14	−12	−11	−10	−9	−8	−7	−6	−5
−4	−3	−2	−1	0	1	2	3	4	5	6	7	8	9	10	12	13	15	16	25	30	50	67	75	91	150	215	311

Did you hear about...

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O ?

DIRECTIONS: Divide to simplify any expression below and find your answer in one of the answer columns. Notice the word next to the answer. Write this word in the box that has the same letter as the exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT A MIST-AKE.

Ⓐ $\frac{-783}{-27}$

Ⓑ $\frac{-848}{53}$

Ⓒ $\frac{1755}{-39}$

Ⓓ $\frac{-9271}{73}$

Ⓔ $\frac{9292}{46}$

Ⓕ $\frac{-8551}{-17}$

Ⓖ $\frac{6942}{-89}$

Ⓗ $\frac{-6390}{-10}$

Ⓘ $\frac{-20{,}544}{64}$

Ⓙ $\frac{60{,}872}{-8}$

Ⓚ $\frac{40{,}112}{-92}$

Ⓛ $\frac{-4572}{-381}$

Ⓜ $\frac{-600{,}000}{100}$

Ⓝ $\frac{0}{-439}$

Ⓞ $\frac{-62{,}916}{84}$

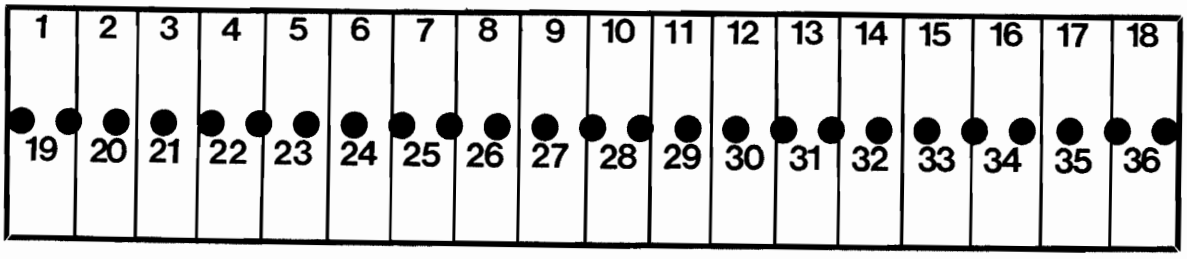
−436 — IN	−79 — HUG
29 — THE	−324 — WIFE
−46 — MONSTER	503 — TO
−124 — THAT	12 — THE
−7609 — FRIEND	−127 — WHO
−16 — UNHAPPY	637 — A
639 — HIS	202 — TRIED
505 — AT	−435 — BUT
−749 — MIST	−6000 — FOG
−7607 — BUT	−321 — GIRL
−78 — KISS	−743 — LOST
0 — AND	−45 — GUY
27 — A	203 — HELPED

Why did the ant run across the cracker box?

Do any exercise below and find your answer in the corresponding answer column. The letter of the exercise goes in the box that contains the number of the answer. Keep working and you will discover the answer to the title question.

T $-15 + 7 =$	(23) 7	T $(-15 \div 3) + 14 =$	(2) -1
A $8 - -21 =$	(32) -27	E $(-10 + -5)(-2) =$	(4) 3
D $(3)(-9) =$	(28) 50	H $(-3 - 4) \div 7 =$	(10) -55
H $-24 \div 4 =$	(13) -8	D $(-9 \cdot 6) + -4 =$	(7) 30
E $-9 + -13 =$	(25) -6	O $(-30 - -22) \cdot 6 =$	(12) -58
O $(-2)(-25) =$	(36) -5	A $(20 \div 4) \cdot -11 =$	(34) 100
L $-50 - 30 =$	(5) 29	E $(28 - -10) - 7 =$	(30) 9
G $-56 \div -8 =$	(8) -80	I $(-13 + -12)(-4) =$	(31) 31
E $32 + -37 =$	(3) -22	L $(4 \cdot -6) \div -8 =$	(21) -48

I $-5 \cdot 20 =$	(9) 12	E $(-6 + 17) - 20 =$	(18) 14
T $30 \div -2 =$	(11) -100	A $(-64 \div 2) \div -2 =$	(20) 2
A $-9 - -19 =$	(22) 77	B $(-5 - -6) \cdot -87 =$	(16) -9
N $-7 \cdot -11 =$	(26) -14	T $(-40 + -50) \div 9 =$	(35) -12
O $-7 + -11 =$	(24) -15	R $(-13 \cdot -2) + -12 =$	(6) -87
S $-60 \div -5 =$	(1) -24	N $(42 \div -7) - 6 =$	(27) 75
T $12 - 36 =$	(33) -26	D $(-5 - -30)(3) =$	(15) 72
E $-17 - -3 =$	(14) -18	L $(-12 + -18) \div -15 =$	(29) -10
L $\frac{260}{-10} =$	(17) 10	T $(-8 \cdot -8) - -8 =$	(19) 16



What did the BOY VOLCANO say to the GIRL VOLCANO?

TO DISCOVER THE ROMANTIC WORDS OF THE BOY VOLCANO:

Do any exercise below and find your answer at the bottom of the page. Shade in the letter above each correct answer.

WHEN YOU FINISH, THE BOY VOLCANO'S WORDS WILL REMAIN!

1. $^{-}178 + {}^{-}345 =$
2. $^{-}403 - {}^{-}177 =$
3. $(^{-}397)(8) =$
4. $\frac{^{-}2632}{^{-}7} =$
5. $690 + {}^{-}255 =$
6. $800 - {}^{-}499 =$
7. $(^{-}56)(^{-}90) =$
8. $\frac{^{-}7080}{10} =$
9. $^{-}83 + 24 + {}^{-}19 =$
10. $^{-}2094 - 67 =$
11. $(^{-}12)(^{-}12)(^{-}12) =$
12. $\frac{4956}{^{-}84} =$
13. $^{-}15 + 19 + {}^{-}26 + 11 =$
14. $^{-}232 - {}^{-}508 =$
15. $(^{-}5)(6)(^{-}7)(8) =$
16. $\frac{0}{^{-}600} =$
17. $76 + {}^{-}90 - {}^{-}48 =$
18. $(\frac{^{-}3768}{^{-}6})(^{-}3) =$

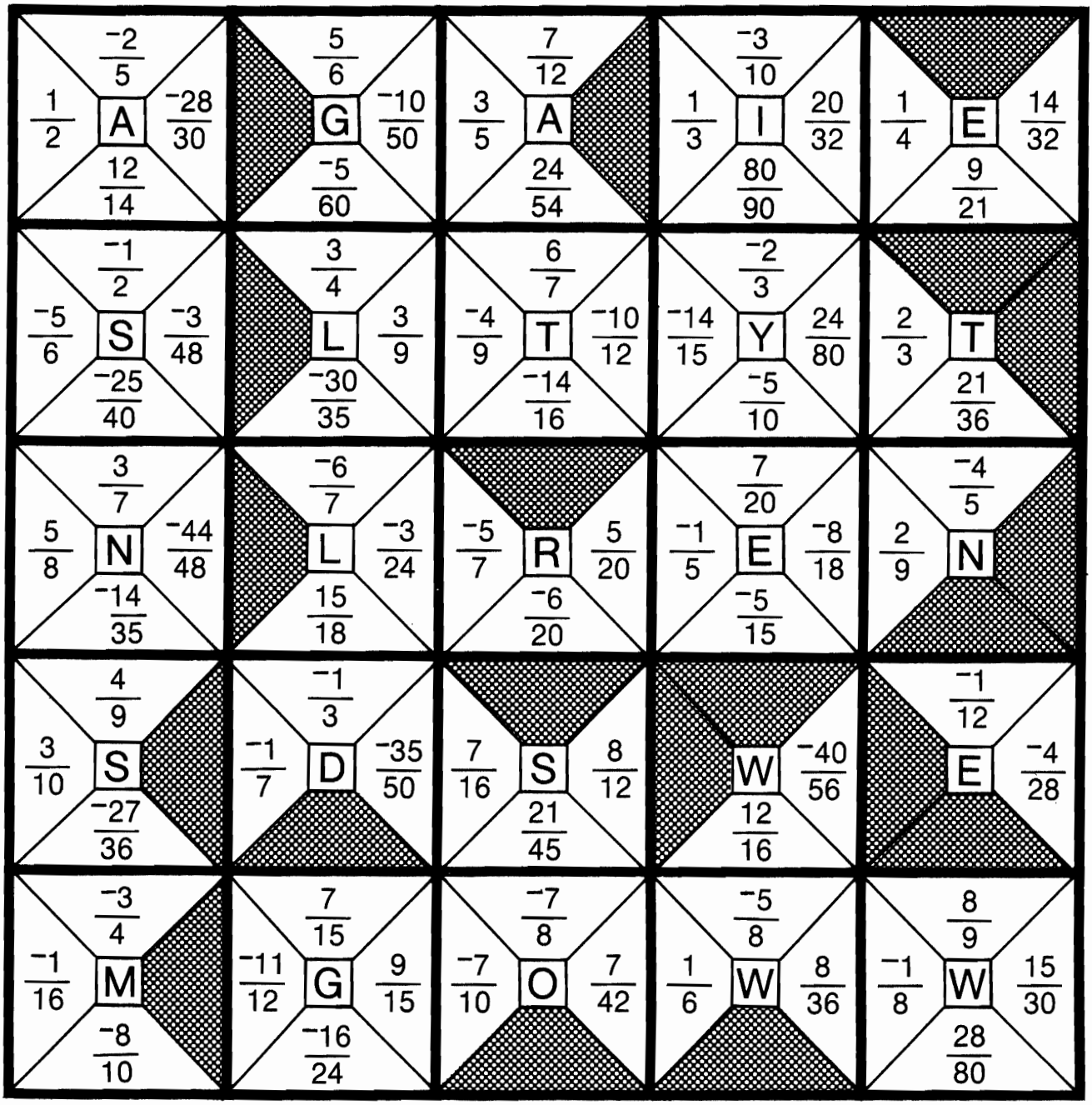
E	V	E	R	Y	S	M	I	L	E	A	D	D	S	F	A	C	E	V	A	L	U	E	!
1299	276	-523	-1884	-3176	1680	5040	45	-613	-2161	-11	-226	435	0	-59	2480	376	-78	285	-1974	-708	-2976	34	-1728

JUMBLED JIGSAW

DIRECTIONS:

This puzzle provides practice in reducing fractions. First cut out the 25 square puzzle pieces below. Then arrange the pieces so that each fraction that can be reduced is next to its equivalent fraction in lowest terms.

When the pieces are properly arranged, the letters inside the pieces will form a special message!



ON THE BUTTON

HERE IS A BUTTON YOU CAN CUT OUT AND WEAR. TO DECODE THE BUTTON:
Solve any equation below and find your answer around the rim of the button.
Each time the answer appears on the button, write the letter in that equation above it.

KEEP SOLVING EQUATIONS AND YOU WILL DECODE THE BUTTON.

$\frac{-1}{2} = \frac{G}{8}$ G =	$\frac{2}{3} = \frac{10}{E}$ E =	$\frac{-4}{5} = \frac{D}{20}$ D =
$\frac{-8}{9} = \frac{-16}{C}$ C =	$\frac{-5}{6} = \frac{V}{18}$ V =	$\frac{-3}{4} = \frac{-18}{S}$ S =
$\frac{7}{12} = \frac{I}{24}$ I =	$\frac{3}{N} = \frac{1}{16}$ N =	$\frac{W}{24} = \frac{-3}{8}$ W =
$\frac{-7}{10} = \frac{-35}{A}$ A =	$\frac{T}{28} = \frac{4}{7}$ T =	$\frac{2}{15} = \frac{4}{L}$ L =
$\frac{-7}{25} = \frac{R}{100}$ R =	$\frac{-70}{O} = \frac{-7}{8}$ O =	$\frac{5}{12} = \frac{F}{60}$ F =

XX DOUBLE CROSS XX

1. What do you get when you cross A HUNTING DOG WITH A TELEPHONE?

_____

$\frac{-7}{18}$ $-1\frac{1}{3}$ $-1\frac{5}{24}$ $\frac{67}{100}$ $\frac{5}{12}$ $\frac{-17}{30}$ $-1\frac{13}{24}$ $\frac{1}{12}$ $\frac{-17}{30}$ $\frac{1}{18}$ $\frac{-17}{30}$ $\frac{-3}{10}$ $\frac{1}{3}$ $\frac{-17}{30}$ $\frac{1}{12}$

2. What do you get when you cross A MOTORCYCLE WITH A JOKE BOOK?

_____

$\frac{-7}{18}$ $\frac{29}{48}$ $\frac{-7}{18}$ $\frac{-1}{20}$ $\frac{-7}{18}$ $\frac{17}{24}$ $\frac{-7}{18}$ $\frac{17}{24}$ $\frac{-7}{18}$ $\frac{17}{24}$ $\frac{-7}{18}$ $\frac{17}{24}$ $\frac{-7}{18}$

3. What do you get when you cross FIVE PIGS AND FIVE DEER?

_____

$\frac{1}{4}$ $\frac{-17}{30}$ $-1\frac{13}{24}$ $\frac{9}{20}$ $-1\frac{5}{24}$ $-1\frac{1}{15}$ $\frac{9}{20}$ $\frac{-7}{18}$ $-1\frac{13}{24}$ $\frac{5}{12}$ $\frac{-39}{40}$ $\frac{-13}{15}$ $\frac{1}{18}$ $\frac{19}{36}$ $\frac{9}{20}$

TO DECODE THE ANSWERS TO THESE THREE QUESTIONS:

Do any exercise below and find your answer in the code. Each time the answer appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DISCOVER WHAT YOU GET FROM EACH DOUBLE CROSS!

(D) $\frac{2}{3}+\frac{-1}{4}=$

(I) $\frac{-4}{5}+\frac{1}{2}=$

(O) $\frac{-1}{3}+\frac{-7}{8}=$

(M) $\frac{-4}{5}+\frac{3}{4}=$

(U) $\frac{-1}{5}+\frac{-2}{3}=$

(T) $\frac{5}{6}+\frac{-7}{12}=$

(R) $\frac{-3}{4}+\frac{5}{6}=$

(W) $\frac{-9}{10}+\frac{-1}{6}=$

(K) $\frac{-1}{4}+\frac{7}{9}=$

(V) $\frac{11}{15}+\frac{-2}{5}=$

(N) $\frac{-11}{12}+\frac{-5}{8}=$

(Y) $\frac{2}{3}+\frac{-1}{16}=$

(C) $\frac{-4}{9}+\frac{1}{2}=$

(G) $\frac{-3}{4}+\frac{-7}{12}=$

(B) $\frac{-3}{5}+\frac{-3}{8}=$

(L) $\frac{3}{10}+\frac{37}{100}=$

(E) $\frac{3}{10}+\frac{-13}{15}=$

(H) $\frac{-1}{8}+\frac{5}{6}=$

(A) $\frac{-1}{6}+\frac{-2}{9}=$

(S) $\frac{-1}{4}+\frac{7}{10}=$

SUM CODE

Do any exercise below and find your answer in the answer columns. Notice the number in front of the answer. Each time this number appears in the code, write the letter of the exercise above it. Keep working and you will decode the message.

(S) $-1\frac{1}{4}+-2\frac{1}{2}=$

(O) $-3\frac{2}{3}+-1\frac{2}{5}=$

(A) $4\frac{1}{2}+-2\frac{1}{3}=$

(F) $3\frac{1}{6}+-5\frac{3}{5}=$

(U) $-8\frac{3}{4}+1\frac{3}{10}=$

(T) $-7\frac{1}{3}+7\frac{3}{4}=$

(M) $-2\frac{1}{16}+-2\frac{1}{3}=$

(L) $6\frac{3}{7}+-4\frac{1}{4}=$

(D) $-1\frac{1}{6}+5\frac{7}{10}=$

(N) $4\frac{2}{9}+-9\frac{1}{2}=$

(W) $-8\frac{3}{4}+1\frac{2}{5}=$

(C) $-3\frac{1}{4}+-5\frac{7}{9}=$

(G) $6\frac{8}{11}+2\frac{2}{3}=$

(I) $5\frac{5}{6}+-5\frac{8}{9}=$

(H) $-3\frac{4}{5}+2\frac{3}{10}=$

(R) $8\frac{3}{8}+-9\frac{2}{3}=$

(E) $-4\frac{1}{5}+-1\frac{7}{8}=$

(B) $-7\frac{3}{8}+7\frac{3}{8}=$

ANSWERS

[1] $-1\frac{7}{24}$ [10] $\frac{-1}{18}$

[2] $-5\frac{1}{15}$ [11] $\frac{5}{12}$

[3] $-7\frac{9}{20}$ [12] $4\frac{8}{15}$

[4] $-6\frac{3}{40}$ [13] $-1\frac{1}{2}$

[5] $-5\frac{5}{18}$ [14] $-3\frac{3}{4}$

[6] $9\frac{13}{33}$ [15] $-4\frac{19}{48}$

[7] 0 [16] $-7\frac{7}{20}$

[8] $-2\frac{13}{30}$ [17] $2\frac{1}{6}$

[9] $2\frac{5}{28}$ [18] $-9\frac{1}{36}$

17·7·4·17·1·15·3·14·11·7·4·16·17·1·4·16·13·4·5·9·2·14·10·5·6

13·10·14·13·17·10·1·7·4·18·17·3·14·4·17·8·11·4·1 · 17·9·9· 13·2·16

15·3·18·13·18·2·9·12·17·10·1·18·17·5·17·7·17·1·4·7·4·17·1·7·4·17·1?

What do Hairdressers do?

Do the exercises below. Circle the answers and their letters. Then rearrange the circled letters in each grid to make a word. Write the words in order in the boxes at the bottom of the page.

WHEN YOU FINISH YOU WILL KNOW WHAT HAIRDRESSERS DO!

① $-2\frac{1}{4} - 4\frac{1}{3} =$

② $6\frac{3}{4} - -2\frac{4}{5} =$

③ $-5\frac{1}{2} - -1\frac{1}{6} =$

④ $4\frac{1}{8} - 1\frac{3}{4} =$

E $-4\frac{1}{3}$	R $-6\frac{1}{3}$	Y $2\frac{3}{8}$
A $1\frac{1}{12}$	P $-4\frac{1}{2}$	T $9\frac{11}{20}$
S $-5\frac{2}{3}$	H $-6\frac{7}{12}$	I $8\frac{1}{10}$

⑤ $-6\frac{2}{3} - -8\frac{1}{5} =$

⑥ $3\frac{2}{5} - -5\frac{5}{6} =$

⑦ $-7\frac{1}{4} - 1\frac{7}{9} =$

⑧ $-4\frac{1}{2} - -2\frac{3}{5} =$

L $9\frac{7}{30}$	T $-1\frac{1}{2}$	U $1\frac{8}{15}$
R $-9\frac{1}{36}$	E $\frac{-7}{10}$	D $-8\frac{1}{9}$
A $9\frac{13}{30}$	L $2\frac{1}{15}$	C $-1\frac{9}{10}$

⑨ $\frac{1}{6} - 6\frac{7}{8} =$

⑩ $-5\frac{1}{6} - \frac{-2}{3} =$

T $-4\frac{5}{6}$	S $-6\frac{19}{24}$	P $-6\frac{17}{24}$
O $-4\frac{1}{3}$	A $-6\frac{1}{8}$	U $-4\frac{1}{2}$

⑪ $-3\frac{1}{7} - 1\frac{2}{5} =$

⑫ $-2\frac{3}{4} - \frac{9}{10} =$

⑬ $4\frac{2}{3} - \frac{-5}{8} =$

F $-3\frac{11}{20}$	T $-3\frac{3}{10}$	B $-4\frac{6}{35}$
R $-4\frac{11}{24}$	O $5\frac{7}{8}$	D $5\frac{7}{24}$
A $-4\frac{19}{35}$	U $5\frac{1}{2}$	N $-3\frac{13}{20}$

⑭ $-6\frac{1}{2} - -6\frac{7}{9} =$

⑮ $3\frac{2}{5} - -4\frac{3}{8} =$

⑯ $8\frac{1}{6} - 7\frac{3}{4} =$

S $7\frac{27}{40}$	R $\frac{7}{12}$	A $\frac{7}{18}$
I $-1\frac{1}{20}$	E $\frac{5}{18}$	D $7\frac{31}{40}$
Y $\frac{5}{12}$	T $\frac{5}{6}$	B $7\frac{1}{2}$

FRACTION ATTRACTION

Do the exercises below. Find your answers in the rectangle at the bottom of the page. Cross out each box containing a correct answer. When you finish, there will be 9 boxes not crossed out. Print the letters in these boxes in the bottom row of boxes.

A HIDDEN MESSAGE WILL APPEAR!

1 $2\frac{2}{3} + {}^{-}1\frac{1}{2} =$

2 ${}^{-}5\frac{5}{6} - {}^{-}2\frac{3}{5} =$

3 ${}^{-}2\frac{1}{3} + {}^{-}2\frac{3}{10} =$

4 $9\frac{1}{9} - \frac{5}{6} =$

5 $5\frac{3}{4} + 1\frac{11}{15} =$

6 $\frac{{}^{-}7}{8} - 4\frac{4}{5} =$

7 $4\frac{1}{4} - {}^{-}2\frac{2}{5} =$

8 ${}^{-}7\frac{1}{8} + 4\frac{3}{4} =$

9 $1\frac{5}{6} - {}^{-}3\frac{7}{8} =$

10 $7\frac{5}{12} + {}^{-}7\frac{7}{8} =$

11 $4\frac{5}{8} + \frac{2}{3} =$

12 ${}^{-}3\frac{1}{3} + {}^{-}3\frac{5}{16} =$

13 $1\frac{1}{2} - 6\frac{7}{9} =$

14 ${}^{-}2\frac{3}{4} - 6\frac{5}{9} =$

15 ${}^{-}1\frac{3}{4} + 5\frac{1}{6} =$

16 ${}^{-}4\frac{1}{2} - {}^{-}6\frac{2}{5} =$

17 $\frac{11}{15} + {}^{-}5\frac{1}{2} =$

18 ${}^{-}6 + 6\frac{1}{8} =$

CAR $-9\frac{11}{36}$	PET $6\frac{13}{20}$	RAC $\frac{1}{8}$	KET $-4\frac{19}{30}$	ERS $-4\frac{23}{30}$	KID $3\frac{11}{12}$	OGS $5\frac{7}{24}$	TOP $7\frac{29}{60}$	SWI $-9\frac{17}{36}$
THM $-5\frac{21}{40}$	NGT $8\frac{5}{18}$	ALL $-6\frac{31}{48}$	UMP $-6\frac{37}{48}$	IRE $-5\frac{27}{40}$	STA $1\frac{1}{6}$	SHA $7\frac{37}{60}$	LLO $5\frac{17}{24}$	VEA $6\frac{9}{20}$
CUT $\frac{-11}{24}$	SWE $8\frac{1}{18}$	ETI $-5\frac{5}{18}$	SFA $-3\frac{7}{30}$	LLT $-4\frac{11}{30}$	OST $3\frac{5}{12}$	ALL $-2\frac{3}{8}$	IME $2\frac{3}{10}$	ING $1\frac{9}{10}$

MAZE PHRASE page 1

Do the problems below and on page 2. Find your answers in the maze on page 2. SHADE IN each room containing a correct answer.

Then find a path to the Treasure that goes only through rooms you have NOT shaded in. The words in those rooms will form an a-mazing message!

1 The temperature at 6:00 P.M. in Frostfrozen, Antarctica was $^-37$ °C. If the temperature dropped $8\frac{1}{2}$ °C during the next hour, what was the temperature at 7:00 P.M.?

2 Cash Orcheck had a balance of $867 in his checking account on January 1. During January, Cash wrote checks for the following amounts: $98, $456, $29, and $381. What was his balance at the end of January?

3 Joe Terrific gained 986 yards during football season. Ziggy Fumble lost 118 yards during the season. What was the difference in their yardage gains?

4 The net profit for 4 months of Calculess Company is shown in the table. What was the net profit for the 4 month period?

Month	Net Profit
Jan.	$34,500
Feb.	15,600
Mar.	$^-5,800$
Apr.	$^-20,000$

5 A submarine was cruising at $^-132$ meters. It then climbed to $^-64\frac{1}{2}$ meters. What was the difference between its original altitude and its later altitude?

6 An elevator traveled in this way: up 18 floors, down 6 floors, down 14 floors, up 19 floors, down 25 floors. What was the net change in position of the elevator?

7 Astronauts Milky and Way boarded their spacecraft $4\frac{1}{2}$ hours before launch. They ate lunch $2\frac{1}{3}$ hours after launch. How many hours passed between boarding time and lunch time?

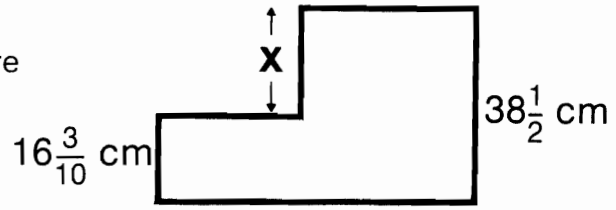
8 The Buzzards football team made the following gains on four plays: 9 yards, $^-11$ yards, $^-2\frac{2}{3}$ yards, $6\frac{1}{3}$ yards. What was the net change in position of the Buzzards as a result of the four plays ?

9 On Monday, the temperature in Iceberg, North Pole was $^-19$ °C. On Tuesday, it rose $26\frac{1}{2}$ °C. On Wednesday, it dropped $33\frac{1}{2}$ °C. What was the temperature on Wednesday?

10 During a week, the stock of M.A.T.H. Corporation had the following daily changes in price: Monday, up 4 points; Tuesday, down 6 points; Wednesday, up $3\frac{1}{2}$ points; Thursday, up $1\frac{1}{4}$ points; Friday, down $\frac{5}{8}$ of a point. What was the net change in price of the stock for the week?

page 2

11 What is the distance **x** in the figure at the right?



12 A cross-country skier started skiing at the 2000 meter level of a mountain. His altitude changed during the next four hours as follows: 1st hour, up 47 meters; 2nd hour, down 269 meters; 3rd hour, down 109 meters; 4th hour, up 54 meters. What was his altitude after the 4th hour?

13 One of two brothers was scuba diving at $-9\frac{1}{2}$ meters. The other brother was flying in a helicopter at 298 meters. What was the difference in the two brothers' altitudes?

$24,300 ENOUGH	☆ TREASURE ☆			$-45\frac{1}{2}$ °C OFTEN
-8 KNOW	$-\$86$ IT	$22\frac{1}{5}$ cm IS	$1\frac{2}{3}$ yd ABOUT	$+2\frac{7}{8}$ pt PIE
1206 yd NEVER	$-1\frac{1}{3}$ yd SAW	$-\$97$ THAT	$304\frac{1}{2}$ m THINK	$67\frac{1}{2}$ m EAT
-4 THEY	$+2\frac{1}{8}$ pt CAN	$-47\frac{1}{2}$ °C BELIEVE	1634 m NOT	$23,600 DO
-22°C BECAUSE	$69\frac{1}{2}$ m STONE	$2\frac{1}{3}$ yd IN	1723 m STATUES	$7\frac{1}{3}$ hr TEACHERS
1104 yd FIGHT	$307\frac{1}{2}$ m MONSTERS	-26 °C WORKING	$309\frac{1}{2}$ m MANY	$2\frac{2}{3}$ hr SHOP
$21\frac{7}{10}$ cm FIREMEN		↖ ↑ ↗ ENTER		$6\frac{5}{6}$ hr A

WRITE THE MESSAGE HERE:

What Happened to the Guy Who Wanted to be a Human Cannonball at the Circus?

Do each exercise mentally. Write the letter of the exercise in the box containing the number of the correct choice.

(N) $\frac{1}{5}+\frac{2}{5}$ 4 $\frac{-1}{5}$ 12 $\frac{3}{5}$	(I) $1-\frac{1}{10}$ 13 $1\frac{1}{10}$ 7 $\frac{9}{10}$	(E) $1-\frac{1}{100}$ 17 $\frac{99}{100}$ 16 $\frac{1}{100}$	(D) $2-\frac{1}{3}$ 23 $1\frac{1}{3}$ 10 $1\frac{2}{3}$	(A) $8-\frac{1}{8}$ 19 $7\frac{3}{4}$ 25 $7\frac{7}{8}$
(E) $\frac{1}{5}-\frac{2}{5}$ 2 $\frac{-1}{5}$ 20 $\frac{3}{5}$	(H) $-1+\frac{-1}{10}$ 15 $\frac{-9}{10}$ 22 $-1\frac{1}{10}$	(A) $2\frac{1}{2}-1\frac{1}{4}$ 29 $1\frac{1}{2}$ 4 $1\frac{1}{4}$	(O) $\frac{-1}{7}-\frac{-15}{7}$ 19 2 9 -2	(E) $-2\frac{1}{2}-5\frac{1}{2}$ 27 -8 15 $-7\frac{1}{2}$
(D) $1\frac{1}{2}+\frac{1}{4}$ 13 $1\frac{3}{4}$ 30 $1\frac{1}{4}$	(A) $\frac{3}{4}+\frac{1}{2}$ 8 $\frac{2}{3}$ 29 $1\frac{1}{4}$	(T) $-1+\frac{1}{4}$ 21 $\frac{-3}{4}$ 3 $\frac{-1}{4}$	(S) $1\frac{1}{2}+\frac{3}{4}$ 5 $2\frac{1}{4}$ 8 $1\frac{3}{4}$	(D) $\frac{1}{2}-\frac{1}{3}$ 14 $\frac{1}{5}$ 18 $\frac{1}{6}$
(E) $-1+\frac{1}{2}$ 6 $-1\frac{1}{2}$ 23 $\frac{-1}{2}$	(I) $2-\frac{1}{4}$ 9 $1\frac{1}{2}$ 15 $1\frac{3}{4}$	(H) $-4+-1\frac{3}{5}$ 24 $-2\frac{3}{5}$ 1 $-5\frac{3}{5}$	(A) $1-\frac{11}{10}$ 11 $\frac{-1}{10}$ 16 $\frac{1}{10}$	(N) $\frac{-13}{9}+\frac{-5}{9}$ 30 -1 20 -2
(Y) $2\frac{1}{2}+2\frac{1}{2}$ 30 5 24 $4\frac{1}{2}$	(E) $1-\frac{9}{10}$ 9 $\frac{1}{10}$ 8 $\frac{-1}{10}$	(S) $6-\frac{-1}{2}$ 24 $6\frac{1}{2}$ 6 $5\frac{1}{2}$	(W) $1-\frac{99}{100}$ 14 $\frac{-1}{100}$ 3 $\frac{1}{100}$	(R) $\frac{1}{2}+\frac{1}{10}$ 16 $\frac{3}{5}$ 6 $\frac{1}{6}$
(D) $3+\frac{1}{8}$ 28 $3\frac{1}{8}$ 14 $2\frac{7}{8}$	(H) $\frac{1}{10}-1$ 26 $\frac{-1}{10}$ 6 $\frac{-9}{10}$	(M) $\frac{7}{25}+\frac{18}{25}$ 14 $\frac{1}{2}$ 26 1	(R) $\frac{99}{100}-1$ 8 $\frac{-1}{100}$ 23 $\frac{-99}{100}$	(F) $1-1\frac{1}{2}$ 20 $\frac{1}{2}$ 14 $\frac{-1}{2}$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

What did the DENTIST say to the GOLFER?

SOME OF THE EXERCISES ON THIS PAGE HAVE THE SAME ANSWER. IN FACT, THERE ARE ONLY 6 DIFFERENT ANSWERS FOR ALL 17 EXERCISES. THESE 6 ANSWERS ARE PRINTED AT THE BOTTOM OF THE PAGE.

TO ANSWER THE TITLE QUESTION:

Do any exercise and find the answer at the bottom of the page. Write the letter of that exercise in ANY ONE of the boxes directly under its answer.

When you finish all the exercises, rearrange the letters in each group to make a word. Write the words in the BOTTOM row of boxes.

(N) $\frac{-4}{15} \cdot 9 =$

(O) $\frac{5}{9} \cdot -6 =$

(E) $\frac{7}{6} \cdot \frac{9}{14} =$

(O) $-3 \cdot \frac{2}{9} =$

(E) $\frac{10}{7} \cdot \frac{-7}{3} =$

(A) $\frac{8}{21} \cdot \frac{7}{20} =$

(E) $\frac{-7}{12} \cdot -10 =$

(N) $\frac{-25}{9} \cdot \frac{-21}{10} =$

(A) $-5 \cdot \frac{-3}{20} =$

(I) $-6 \cdot \frac{2}{5} =$

(V) $\frac{11}{2} \cdot \frac{3}{22} =$

(U) $\frac{-8}{9} \cdot \frac{3}{4} =$

(H) $\frac{-15}{14} \cdot \frac{-7}{10} =$

(Y) $\frac{5}{12} \cdot \frac{-8}{5} =$

(L) $\frac{11}{6} \cdot \frac{-20}{11} =$

(O) $\frac{7}{2} \cdot \frac{5}{3} =$

(H) $\frac{-18}{5} \cdot \frac{25}{27} =$

$-\frac{2}{3}$	$\frac{3}{4}$	$\frac{2}{15}$	$-3\frac{1}{3}$	$-2\frac{2}{5}$	$5\frac{5}{6}$

REARRANGE EACH GROUP OF LETTERS TO MAKE A WORD

BOOKS NEVER WRITTEN

Insect Pests by _____

87 78 92 92 62 76 76 64 13 69

Air Express by _____

93 44 35 94 22 54 78 84 76 90 90 78 15 77 64

Run for Your Lives by _____

90 88 49 88 92 93 44 84 78 35 15

ABOVE ARE THE TITLES OF THREE "BOOKS NEVER WRITTEN." TO DECODE THE NAMES OF THEIR AUTHORS, FOLLOW THESE DIRECTIONS:

Use the DISTRIBUTIVE PROPERTY to do any exercise below. Find each circled answer in the code. Each time the answer appears, write the letter of that exercise above it. Keep working and you will decode the names of all three authors. Write on!

(G) $2\frac{1}{2} \cdot 6 = \underline{12} + \underline{3} =$ ( )

(A) $8 \cdot 5\frac{1}{2} = \underline{40} + \_ =$ ( )

(F) $3\frac{1}{2} \cdot 14 = \_\_ + \_ =$ ( )

(O) $3 \cdot 4\frac{1}{3} = \_\_ + \_ =$ ( )

(E) $6\frac{1}{3} \cdot 12 = \_\_ + \_ =$ ( )

(Y) $10 \cdot 2\frac{1}{5} = \_\_ + \_ =$ ( )

(I) $3\frac{1}{4} \cdot 24 = \_\_ + \_ =$ ( )

(W) $9 \cdot 7\frac{2}{3} = \_\_ + \_ =$ ( )

(N) $1\frac{3}{4} \cdot 20 = \_\_ + \_\_ =$ ( )

(H) $8 \cdot 9\frac{5}{8} = \_\_ + \_ =$ ( )

(M) $4\frac{5}{6} \cdot 18 = \_\_ + \_\_ =$ ( )

(L) $15 \cdot 3\frac{3}{5} = \_\_ + \_ =$ ( )

(T) $1\frac{7}{9} \cdot 36 = \_\_ + \_\_ =$ ( )

(D) $16 \cdot 5\frac{7}{8} = \_\_ + \_\_ =$ ( )

(K) $2\frac{7}{12} \cdot 24 = \_\_ + \_\_ =$ ( )

(S) $40 \cdot 2\frac{3}{10} = \_\_ + \_\_ =$ ( )

(V) There are 10 millimeters in 1 centimeter. How many millimeters are there in $8\frac{2}{5}$ centimeters? ( )

(U) How many hours are there in $3\frac{2}{3}$ days? ( )

(C) Zorna baked $7\frac{3}{4}$ dozen cookies. How many cookies did she bake? ( )

(R) How many seconds are there in $1\frac{1}{2}$ minutes? ( )

FAMOUS QUOTATIONS

1. WHAT DID GEORGE WASHINGTON SAY TO HIS MEN JUST BEFORE THEY GOT IN THE BOAT?

Answer: “ _____ .”

$8\frac{2}{5}$ $2\frac{4}{7}$ $-1\frac{1}{16}$ -8 $2\frac{4}{7}$ $9\frac{4}{5}$ $8\frac{1}{8}$ $-1\frac{1}{16}$ $9\frac{4}{5}$ $-3\frac{1}{4}$ $2\frac{4}{7}$ $-1\frac{2}{3}$ -25 $18\frac{1}{5}$ $9\frac{4}{5}$

2. WHAT DID LEWIS AND CLARK SAY BEFORE THEY REACHED THE SEA?

Answer: “ _____ .”

-24 -25 $-1\frac{1}{16}$ -8 $9\frac{4}{5}$ $8\frac{1}{8}$ $8\frac{2}{5}$ $2\frac{4}{7}$ $-1\frac{1}{16}$ -25 $-7\frac{1}{3}$ $2\frac{4}{7}$ $18\frac{1}{5}$

3. WHAT DID BENJAMIN FRANKLIN SAY ABOUT DOING MATH?

Answer: “ _____ .”

$8\frac{1}{8}$ $7\frac{1}{3}$ $-2\frac{1}{10}$ $18\frac{1}{5}$ $9\frac{4}{5}$ $-3\frac{1}{4}$ $2\frac{4}{7}$ $-2\frac{1}{10}$ -20 -24 $2\frac{1}{4}$ $18\frac{1}{5}$ $15\frac{3}{4}$ $8\frac{1}{8}$ $9\frac{4}{5}$ $2\frac{4}{7}$

★★★★★★★★★★★★★★★★★★★★★★☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Do any exercise below and find your answer in the code. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will discover the three historical (hysterical) answers.

H $\left(1\frac{1}{4}\right)\left(-2\frac{3}{5}\right) =$

G $\left(-1\frac{5}{7}\right)\left(4\frac{2}{3}\right) =$

D $\left(-6\right)\left(-1\frac{2}{9}\right) =$

Y $\left(1\frac{4}{11}\right)\left(1\frac{13}{20}\right) =$

I $\left(-6\frac{1}{2}\right)\left(-1\frac{1}{4}\right) =$

F $\left(-2\frac{1}{2}\right)\left(8\right) =$

B $\left(3\frac{4}{7}\right)\left(\frac{-7}{15}\right) =$

R $\left(\frac{7}{11}\right)\left(-3\frac{3}{10}\right) =$

K $\left(-2\frac{1}{4}\right)\left(-7\right) =$

S $\left(-2\frac{1}{2}\right)\left(2\frac{2}{3}\right)\left(1\frac{1}{10}\right) =$

M $\left(4\right)\left(-1\frac{4}{5}\right)\left(-1\frac{1}{6}\right) =$

A $\left(-3\frac{1}{4}\right)\left(-2\frac{2}{5}\right)\left(2\frac{1}{3}\right) =$

L $\left(-1\frac{5}{9}\right)\left(-3\right)\left(-5\frac{1}{7}\right) =$

T $\left(4\frac{1}{2}\right)\left(5\frac{3}{5}\right)\left(\frac{7}{18}\right) =$

N $\left(4\frac{1}{8}\right)\left(\frac{1}{6}\right)\left(-1\frac{6}{11}\right) =$

O $\left(-1\frac{2}{3}\right)\left(-3\frac{3}{4}\right)\left(-4\right) =$

E $\left(\frac{-2}{13}\right)\left(3\frac{5}{7}\right)\left(-4\frac{1}{2}\right) =$

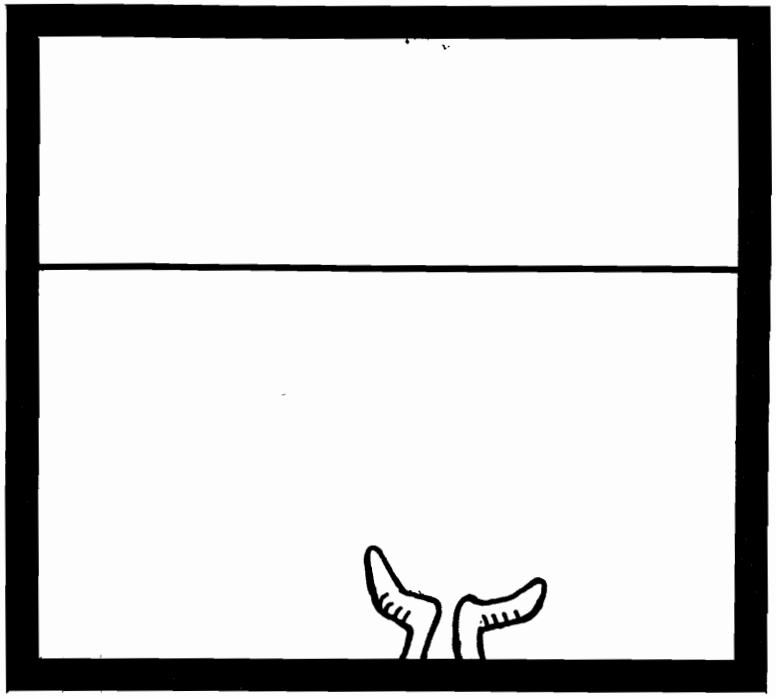
What is the Title of This Picture? ↘

TO DECODE THE TITLE OF THIS PICTURE:

Find the reciprocals of the given numbers in the first 12 exercises on the left.

Then do the remaining 6 exercises by solving each equation for n.

After doing each exercise, find your answer in the code. Each time the answer appears, write the letter of that exercise above it. Keep working and you will discover the answer to the title question.



FIND THE RECIPROCAL

- **L** $\frac{4}{5}$
- **P** $33\frac{1}{3}$
- **H** $\frac{-1}{2}$
- **G** $\frac{-1}{9}$
- **Y** $\frac{-3}{11}$
- **K** $-3\frac{7}{12}$
- **M** $12\frac{1}{2}$
- **S** $2\frac{3}{10}$
- **O** $-1\frac{7}{8}$
- **C** -1
- **E** 10
- **I** $-17\frac{3}{4}$

SOLVE FOR n

- **V** $\frac{9}{10} \cdot n = 1$
- **U** $4\frac{5}{8} \cdot n = 1$
- **A** $-6\frac{5}{7} \cdot n = 1$
- **R** $n \cdot 16\frac{2}{3} = 1$
- **W** $n \cdot -9\frac{2}{5} = 1$
- **T** $\frac{3}{7} \cdot n = 1$

CODED TITLE:

$\frac{10}{9}$	$\frac{1}{10}$	$\frac{3}{50}$	$\frac{-11}{3}$	-1	$\frac{5}{4}$	$\frac{8}{37}$	$\frac{2}{25}$	$\frac{10}{23}$	$\frac{-11}{3}$
$\frac{7}{3}$	$\frac{-4}{71}$	-9	-2	$\frac{7}{3}$	$\frac{3}{50}$	$\frac{-8}{15}$	$\frac{3}{100}$	$\frac{1}{10}$	
$\frac{-5}{47}$	$\frac{-7}{47}$	$\frac{5}{4}$	$\frac{-12}{43}$	$\frac{1}{10}$	$\frac{3}{50}$				

A BURNING QUESTION

Why did Ray Friar need to get an approval from Councilman Hugh before he could open a flower shop?

TO FIND THE ANSWER:

Do any exercise below and find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will discover the moral of the story.

(S) $\frac{-3}{7} \div \frac{1}{2} =$

(T) $\frac{25}{3} \div \frac{15}{6} =$

(N) $\frac{-7}{10} \div 7 =$

(C) $\frac{-4}{5} \div \frac{-4}{3} =$

(G) $\frac{-7}{9} \div \frac{-21}{6} =$

(L) $\frac{11}{12} \div \frac{-33}{8} =$

(Y) $\frac{5}{8} \div \frac{-7}{12} =$

(I) $\frac{-11}{4} \div \frac{2}{3} =$

(P) $\frac{-45}{4} \div \frac{-15}{16} =$

(A) $\frac{-15}{13} \div \frac{-10}{11} =$

(V) $\frac{-9}{10} \div \frac{-12}{5} =$

(H) $\frac{6}{20} \div \frac{7}{10} =$

(E) $\frac{5}{6} \div \frac{-7}{8} =$

(O) $3 \div \frac{-2}{3} =$

(R) $-10 \div \frac{-4}{7} =$

(D) $\frac{-8}{9} \div 2 =$

(U) $\frac{4}{15} \div \frac{-14}{5} =$

(F) $\frac{-48}{9} \div \frac{16}{21} =$

$\frac{3}{7}$ $\frac{-2}{21}$ $\frac{2}{9}$ $\frac{3}{7}$ $\frac{33}{26}$ $\frac{-1}{10}$ $\frac{-4}{9}$ $\frac{-9}{2}$ $\frac{-1}{10}$ $\frac{-2}{9}$ $\frac{-15}{14}$

$\frac{3}{7}$ $\frac{-2}{21}$ $\frac{2}{9}$ $\frac{3}{7}$ $\frac{3}{5}$ $\frac{33}{26}$ $\frac{-1}{10}$ 12 $\frac{35}{2}$ $\frac{-20}{21}$ $\frac{3}{8}$ $\frac{-20}{21}$ $\frac{-1}{10}$ $\frac{10}{3}$

-7 $\frac{-2}{9}$ $\frac{-9}{2}$ $\frac{35}{2}$ $\frac{-33}{8}$ $\frac{-6}{7}$ $\frac{10}{3}$ -7 $\frac{35}{2}$ $\frac{-33}{8}$ $\frac{33}{26}$ $\frac{35}{2}$ $\frac{-6}{7}$

Why did they build a GYM on WALL STREET ?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:

Do any exercise below and find your answer in the boxes at the bottom of the page. Write the letter of the exercise in the box above its correct answer. Keep working until you discover the answer to the title question.

$-3\frac{1}{2} \div 2\frac{1}{3} =$ **Y**	$-8 \div 1\frac{5}{7} =$ **O**	$-6\frac{1}{8} \div \frac{7}{9} =$ **C**	$4\frac{5}{7} \div -1\frac{4}{7} =$ **K**
$-5\frac{1}{4} \div -4\frac{3}{8} =$ **O**	$3 \div 3\frac{4}{5} =$ **O**	$\frac{3}{5} \div -1\frac{5}{7} =$ **F**	$-22\frac{1}{2} \div -15 =$ **T**
$6\frac{2}{3} \div -10 =$ **S**	$-1\frac{7}{9} \div -4\frac{4}{11} =$ **R**	$-10 \div -3\frac{1}{3} =$ **K**	$-1\frac{3}{4} \div 12\frac{1}{4} =$ **S**
$1\frac{5}{6} \div -3\frac{3}{10} =$ **E**	$3\frac{1}{6} \div \frac{-1}{3} =$ **R**	$\frac{-7}{8} \div 2\frac{7}{12} =$ **R**	$20 \div \frac{1}{2} =$ **B**

$\frac{-7}{20}$	$1\frac{1}{5}$	$-9\frac{1}{2}$	$\frac{-1}{7}$	$1\frac{1}{2}$	$-4\frac{2}{3}$	$-7\frac{7}{8}$	3	$-1\frac{1}{2}$	40	$\frac{-21}{62}$	$\frac{15}{19}$	-3	$\frac{-5}{9}$	$\frac{11}{27}$	$\frac{-2}{3}$

What did the 800 lb MONSTER say to the 400 lb MONSTER ??

TO DISCOVER THE WORDS OF THE 800 POUND MONSTER:

Do each exercise and find the answer at the bottom of the page. Shade in the letter above each correct answer. When you finish, the monster's words will remain!

1. $\frac{-2}{3} + \frac{-4}{5} =$

2. $\frac{1}{2} - \frac{7}{10} =$

3. $\left(\frac{-6}{7}\right)\left(\frac{3}{8}\right) =$

4. $\frac{-9}{10} \div \frac{-6}{15} =$

5. $1\frac{1}{4} + -3\frac{5}{6} =$

6. $-7\frac{3}{10} - -4\frac{4}{5} =$

7. $\left(-1\frac{5}{9}\right)\left(-2\frac{1}{7}\right) =$

8. $5\frac{2}{3} \div -1\frac{2}{15} =$

9. $\frac{-2}{3} + 6\frac{1}{8} =$

10. $-3\frac{2}{5} - \frac{5}{6} =$

11. $(6)\left(1\frac{3}{10}\right) =$

12. $-12 \div \frac{1}{3} =$

13. $2\frac{3}{4} + 2\frac{5}{9} =$

14. $\frac{5}{8} - 5 =$

15. $\left(3\frac{5}{9}\right)\left(\frac{-9}{32}\right) =$

16. $-3\frac{4}{7} \div \frac{-5}{8} =$

17. $8\frac{7}{10} + -4\frac{1}{4} =$

18. $\left(\frac{-2}{3}\right)\left(1\frac{2}{5}\right)\left(-1\frac{5}{7}\right) =$

19. $4\frac{3}{11} \div \frac{47}{11} =$

G	O	O	D	M	U	S	I	C	I	S	N	O	T	E	W	O	R	T	H	Y
-5	$-4\frac{7}{30}$	$-1\frac{7}{15}$	$5\frac{5}{7}$	$7\frac{4}{5}$	1	$4\frac{9}{20}$	$\frac{-9}{28}$	$5\frac{11}{36}$	$4\frac{11}{20}$	$-2\frac{1}{2}$	$5\frac{11}{24}$	-1	$2\frac{1}{4}$	$1\frac{3}{5}$	$3\frac{1}{11}$	$-1\frac{1}{5}$	-36	$-4\frac{3}{8}$	$3\frac{1}{3}$	$-2\frac{7}{12}$

Why did the TERMITE like expensive hotels ?

Do each exercise below and find the answer in the rectangle at the bottom of the page. Cross out each box containing a correct answer. When you finish, there will be 8 boxes not crossed out. Print the letters in these boxes in the bottom row of boxes.

THE ANSWER TO THE TITLE QUESTION WILL APPEAR!

1 A recipe calls for $3\frac{3}{4}$ cups of flour. How much flour is needed to make $\frac{1}{2}$ the recipe? _____ cups

2 A team member played $5\frac{3}{4}$ minutes during the first period, $2\frac{2}{3}$ minutes during the second period, and $10\frac{1}{6}$ minutes during the third period. How many minutes did he or she play in all? _____ minutes

3 A $3\frac{1}{2}$ gallon gas can contains $\frac{9}{10}$ gallon. How much more gas can be poured in? $2\frac{3}{5}$ gallons

4 A kilometer is about $\frac{5}{8}$ mile. How many kilometers are in $2\frac{3}{4}$ miles? $4\frac{2}{5}$ km

5 A rectangular plot of land is $1\frac{1}{2}$ miles wide by $2\frac{4}{5}$ miles long. What is its area? _____ sq. mi.

6 Stock sold at $23\frac{7}{8}$ at the start of trading. It was up $3\frac{1}{2}$ points at the end of trading. What was the price at the end of trading? $ _____

7 Cut $2\frac{2}{3}$ yards of material from a piece $5\frac{1}{2}$ yards long. How much material is left? _____ yards

8 A bottle of TNT Tonic contains $10\frac{1}{2}$ ounces and sells for 98¢. What is the cost per ounce? _____ ¢

9 A team played 42 games and won $\frac{5}{14}$ of them. How many games were lost? _____

10 UFO Industries makes $\frac{1}{3}$ of the world's widgets. IOU Corporation makes $\frac{2}{5}$ of the world's widgets. DDT Enterprises makes $\frac{1}{6}$. What fraction is made by other companies? _____

11 A math textbook is $1\frac{3}{8}$ inches thick. How many of these books will fit on a 33-inch shelf? _____

12 A rocket's speed is $2\frac{1}{3}$ miles per second. How fast is this in miles per hour? _____ m.p.h.

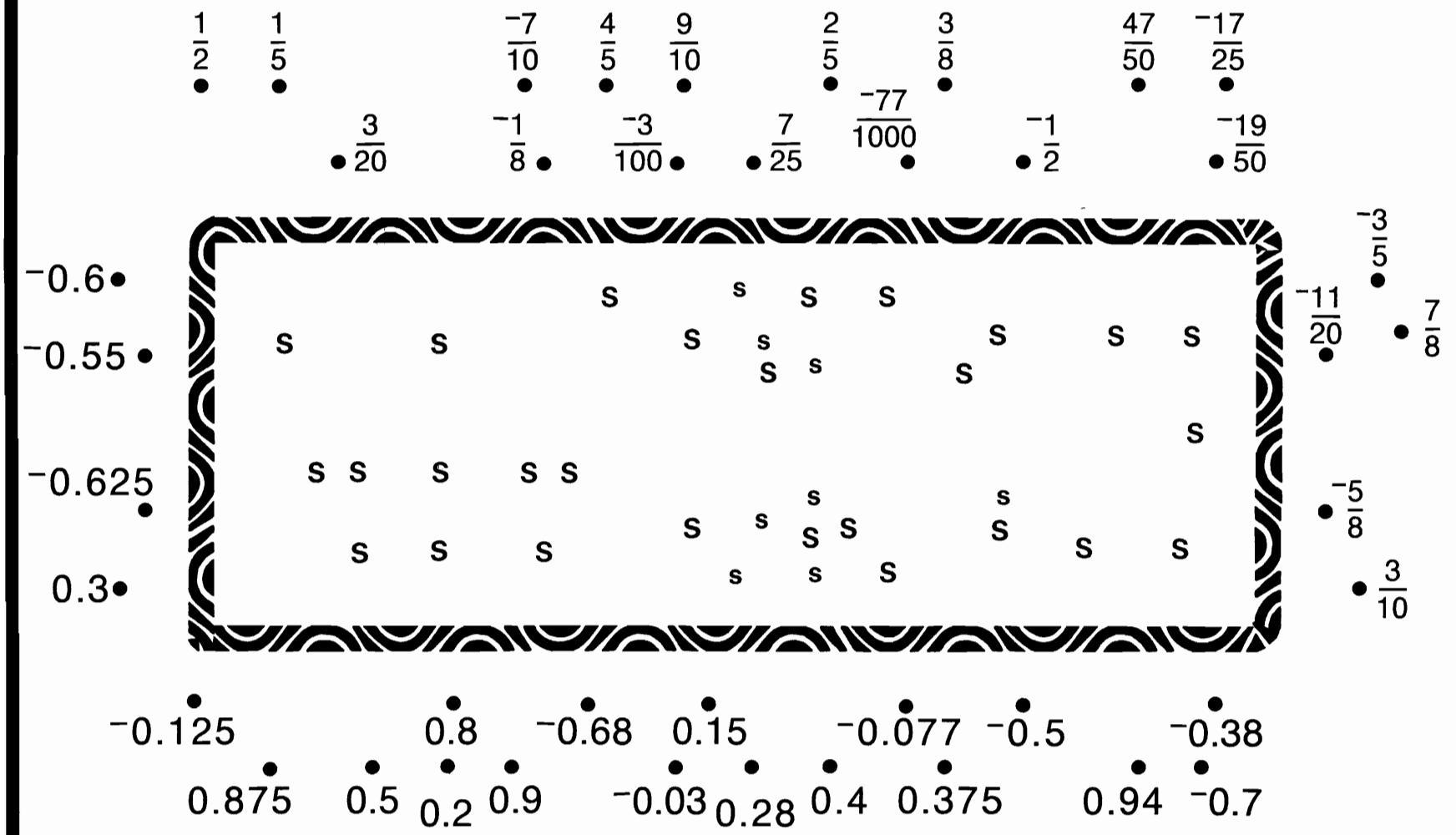
ME	AT	HE	RE	AS	HA	VE	DA	TE	SU
$4\frac{2}{5}$	$4\frac{1}{5}$	8700	24	$27\frac{3}{8}$	$27\frac{1}{4}$	8400	$2\frac{1}{8}$	27	26
NB	IT	ET	HE	YW	OO	DE	AT	TH	EM
$1\frac{7}{8}$	$3\frac{4}{5}$	$18\frac{5}{6}$	$9\frac{1}{3}$	$18\frac{7}{12}$	$8\frac{1}{2}$	$2\frac{3}{5}$	$2\frac{5}{6}$	$\frac{1}{5}$	$\frac{1}{10}$

WHAT IS A FALSEHOOD?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:

Fractions appear on two sides of the rectangle below, and their decimal equivalents appear on the other two sides. Draw a STRAIGHT LINE connecting each fraction to its decimal equivalent.

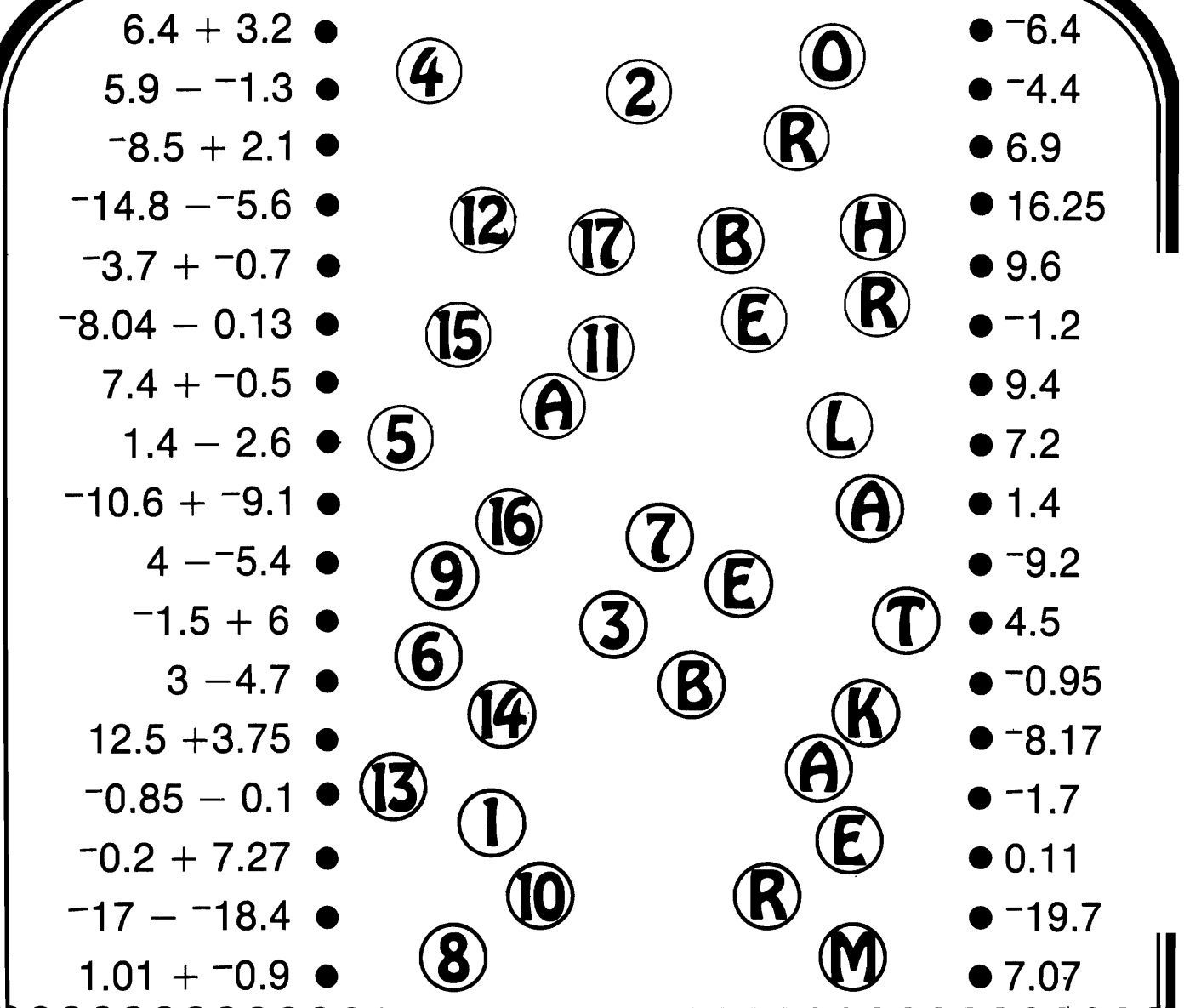
When you finish, you will notice that some areas in the rectangle contain an "S," which stands for "shade." Shade in all of these areas. The answer to the title question will appear!



Why is SPACE TRAVEL like a CHALKBOARD ?

TO ANSWER THIS QUESTION, FOLLOW THESE DIRECTIONS:

Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



HIDDEN MESSAGE

FIRST, do each exercise and find the answer in the rectangle below.
The correct answers run across from left to right.
SECOND, shade in the boxes containing each correct answer. When you finish, there will be 27 boxes not shaded in.

STARTING ON THE TOP LINE AND WORKING FROM LEFT TO RIGHT, PRINT THE 27 REMAINING LETTERS IN THE BOXES AT THE BOTTOM OF THE PAGE. A HIDDEN MESSAGE WILL APPEAR!

1. $^{-}6.98 + 0.475 =$
2. $7.2 - 9.03 =$
3. $^{-}6 + ^{-}2.17 =$
4. $^{-}0.01 - ^{-}1.1 =$
5. $4 + ^{-}0.008 =$
6. $^{-}1.808 - 180.8 =$
7. $^{-}0.003 + ^{-}7 =$
8. $5.001 - 0.999 =$
9. $^{-}0.6 + ^{-}6 + ^{-}0.06 =$
10. $12 - 0.076 + ^{-}8.8 =$
11. $^{-}0.7 + 0.02 - 3 =$
12. $^{-}0.05 - ^{-}5 - 0.005 =$

A −7.	L 0	L 0	O 3	V 4	O −1	T 3.	E 1	L 2	E 4	L −5.	U 6	P −6.	H 5	O 0	T 5	N 0	T 7
E −4.	E 3	L −1.	E 8	P 3	R 7	O −6.	M 6	I 6	S −1.	A 9	L 4.	L 9	B 4	A 5	R −3.	E 0	G 7
O 2	U 3.	L 9	A 9	B 2	O 4.	D 6	F 7	Y −1	E 8	S 2.	T 6	E 0	R 8	O 5	B −3.	O 6	T 8
R −1	T 4.	L 0	E 0	T 2	N −3.	O 7	T 7	H −8.	E 1	S 7	H 4	I −1	M 1.	S 0	I 9	N 7	G 1

CHAIN CODE

THESE ARE CALLED CHAIN PROBLEMS. DO THE STEPS IN ORDER FROM LEFT TO RIGHT FOR EACH PROBLEM.

Do any exercise below and find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter from the end of that exercise above the answer. Keep working and you will decode the message.

TAKE 24.8	ADD $^-$8.7	SUBTRACT 13	= = W
TAKE $^-$5.08	SUBTRACT $^-$0.068	ADD 16.3	= = H
TAKE 15	ADD $^-$2.7	ADD 0.04	ADD $^-$12.3 = = N
TAKE $^-$8.9	SUBTRACT $^-$0.75	SUBTRACT 18	= = S
TAKE $^-$17.1	ADD $^-$0.007	SUBTRACT 4.9	= = V
TAKE 0.47	SUBTRACT 0.008	ADD $^-$9	= = O
TAKE 68.707	ADD $^-$99.999	ADD 32.592	= = A
TAKE $^-$.04	SUBTRACT $^-$3	SUBTRACT 25.003	= = M
TAKE 7	SUBTRACT 14.1	ADD 23.471	= = K
TAKE $^-$431.9	ADD $^-$43.19	SUBTRACT 4.319	= = R
TAKE $^-$0.01	ADD 0.1	ADD $^-$1	ADD 10 = = T
TAKE 17.8	SUBTRACT $^-$4.006	SUBTRACT 22	= = L
TAKE $^-$37	ADD 46.98	SUBTRACT $^-$0.02	= = E

$^-$479.409	10	1.3	$^-$0.194	10	$^-$26.15	9.09	1.3	9.09	10
$^-$22.043	10	0.04	11.288	1.3	$^-$22.007	10	9.09	$^-$8.538	
16.371	0.04	$^-$8.538	3.1	1.3	$^-$0.194	$^-$8.538	9.09		

What has 12 HUMPS and lives at the NORTH POLE ?

****** TO ANSWER THIS QUESTION: ******

Some of these exercises have a number and some have a letter. Find two exercises, one with a number and one with a letter, that have the SAME ANSWER. The number tells you where to put the letter in the row of boxes at the bottom of the page.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.

(1)	$(0.3)(^{-}0.4) =$	(I)	$(^{-}0.04)(^{-}0.3) =$
(2)	$(^{-}6)(^{-}0.002) =$	(S)	$(^{-}0.1)(^{-}2) =$
(3)	$(0.01)(120) =$	(E)	$(0.05)(0.004) =$
(4)	$(^{-}0.04)(0.03) =$	(O)	$(^{-}0.8)(0.3) =$
(5)	$(^{-}0.04)(6) =$	(S)	$(^{-}0.6)(0.2) =$
(6)	$(^{-}24)(^{-}0.01) =$	(A)	$(240)(^{-}0.1) =$
(7)	$(8)(^{-}0.003) =$	(X)	$(^{-}60)(^{-}0.02) =$
(8)	$(0.002)(12) =$	(L)	$(0.4)(^{-}0.5) =$
(9)	$(^{-}0.06)(400) =$	(M)	$(20)(^{-}0.1) =$
(10)	$(0.4)(^{-}5) =$	(T)	$(0.1)(^{-}0.24) =$
(11)	$(0.005)(0.04) =$	(C)	$(^{-}0.6)(^{-}0.04) =$
(12)	$(^{-}200)(0.001) =$	(S)	$(0.2)(1.2) =$
(13)	$(^{-}10)(^{-}0.02) =$	(L)	$(0.1)(^{-}0.012) =$

1	2	3	4	5	6	7	8	9	10	11	12	13

FIND A MATCH

DIRECTIONS:
Each of the two blocks below is divided into 20 boxes. Boxes in the top block contain exercises and boxes in the bottom block contain their answers. Do the exercises and find your answers in the bottom block. Then write the word from the top box in the corresponding bottom box. Keep working and you will spell out a message.

① (2.4)(−0.39) IS	② (−0.87)(−15) THE	③ (−7.02)(5.5) BECAUSE	④ (−24.8)(−0.03) A
⑤ (78)(−7.8) BEST	⑥ (−0.019)(9.4) ONLY	⑦ (−8.025)(−100) TO	⑧ (8.025)(1000) THE
⑨ (63.92)(−0.08) ON	⑩ (−0.39)(−27.6) OF	⑪ (−93)(0.555) POPULAR	⑫ (0.4)(0.4)(−0.4) THERE'S
⑬ (−1.5)(−15)(−0.15) THE	⑭ (−0.05)(0.8)(−3) PLACE	⑮ (3.4)(−9)(0.01) ONE	⑯ (7)(−0.593)(−0.1) VISIT
⑰ (−538.9)(−10) WEIGHT	⑱ (0.029)(−42) MOON	⑲ (−0.8)(45.46) RESTAURANT	⑳ (−0.01)(−0.1)(−1) SIXTH

8025	−608.4	0.12	802.5	0.4151
0.744	−51.615	−36.368	−0.936	−5.1136
−3.375	−1.218	−38.61	−0.064	−0.1786
−0.306	−0.001	10.764	13.05	5389

How did the ANGEL lose his job?

Work any problem below and find your answer in the answer column. Notice the letter next to it. Print this letter in each box at the bottom of the page that contains the number of the exercise.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.

(1) $^{-}13.5 + {}^{-}2.75$

(2) $^{-}4.8 - {}^{-}7.5$

(3) $(0.7)\,(^{-}28.1)$

(4) $(^{-}65)\,(^{-}0.005)$

(5) Absolute zero, the coldest possible temperature, is $^{-}273.2°C$. Dry ice becomes a gas at $^{-}78.5°C$. How many degrees above absolute zero is this?

(6) The U.S. Navy submarine Trieste II reached a record altitude of $^{-}10.9$ kilometers on January 23, 1960. A Russian MIG-25 jet reached a record altitude of 36.3 kilometers on July 25, 1973. What is the difference in these two altitudes?

(7) The highest priced diamond ever sold at auction weighed 69.42 carats and sold for $1,050,000. A carat is equal to 0.2 grams. What was the weight of this diamond in grams?

(8) In the 3 days after Jimmy Carter was elected President of the United States, the Dow Jones stock average had the following daily changes: Wednesday, $^{-}9.56$ points; Thursday, $^{+}3.91$ points; Friday, $^{-}17.37$ points. What was the net change for the three days?

(9) The 1937 Detroit football team holds the National Football League record for fewest penalties in a season. They received 19 penalties and gained an average $^{-}7.3$ yards per penalty. How many yards did they gain in all as a result of the penalties?

(10) The highest recorded temperature in the world was at Azizia, Libya, on September 13, 1922. The temperature was 58.0°C. The lowest temperature, $^{-}88.3°C$, was recorded at the Soviet Antarctic station Vostok on August 24, 1960. What is the difference in these two temperatures?

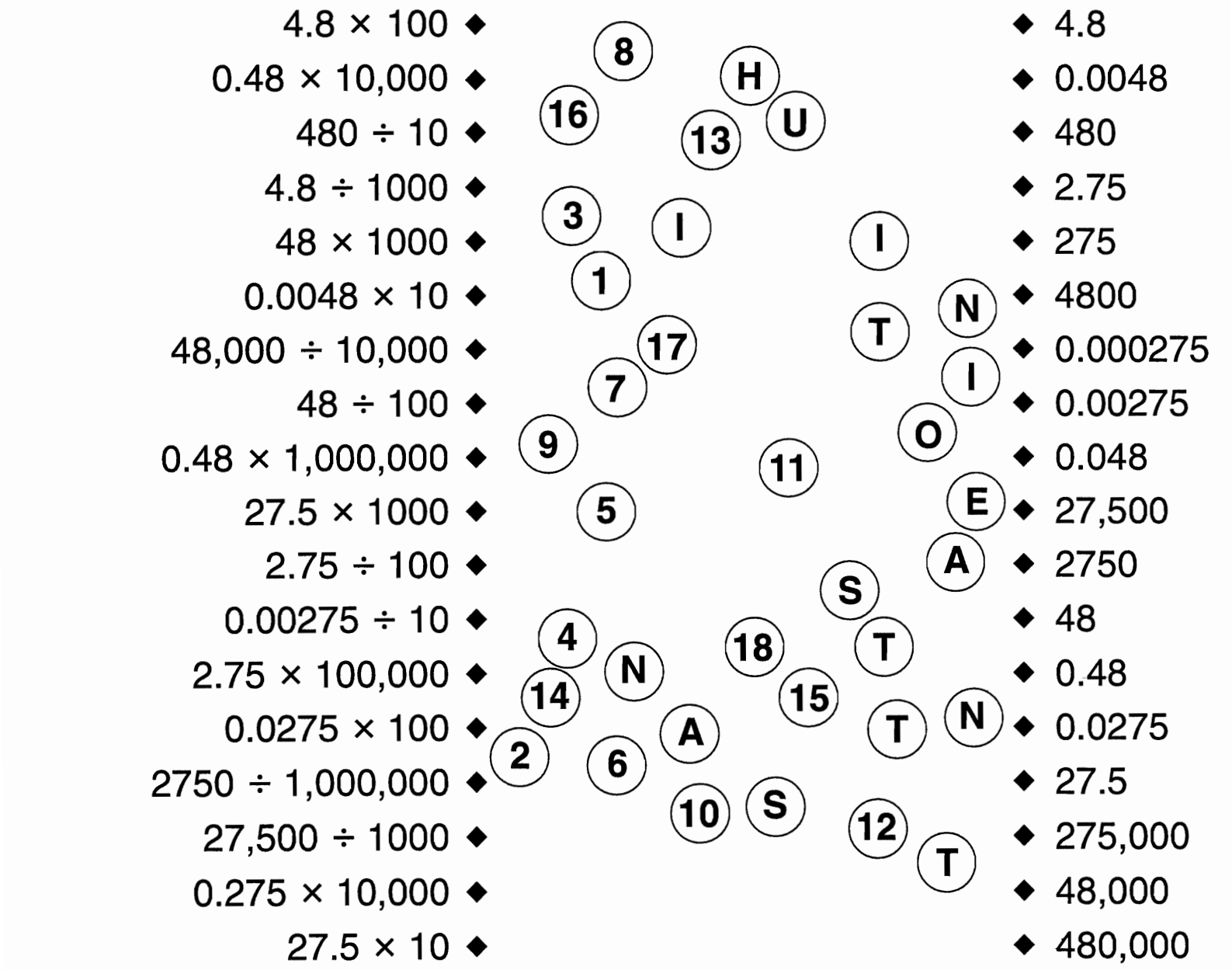
T	$^{-}147.7$ yds
L	13.884 g
D	$^{-}19.67$
M	$^{-}18.77$
P	$^{-}138.7$ yds
E	$^{-}16.25$
M	$^{-}21.12$ pts
I	194.7°C
S	154.3°C
H	146.3°C
V	48.8 km
U	2.7
R	47.2 km
O	0.725
F	$^{-}23.02$ pts
B	15.984 g
A	0.325

10	1	10	4	3	10	4	6	9	8	4	5	7	2	6	1

When Do Super Heroes Use Decimals?

TO ANSWER THIS QUESTION:

Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

sign up

1. SIGN IN ANTIQUE STORE:

$^{-}4390$	800	$^{-}0.0079$	$^{-}379$	$^{-}0.2$	0.04	$^{-}70.9$	$^{-}3.7$	68.037	$^{-}275$	800	$^{-}70.9$	800	800	0.04

2. SIGN ON WATERBED:

$^{-}70.9$	800	$^{-}379$	$^{-}0.879$	68.037	$^{-}4390$	$^{-}5.008$	68.037	4.39	$^{-}4390$	$^{-}70.9$	800	7.09	$^{-}0.879$

3. SIGN ON LAUNDRY TRUCK:

0.083	800	7.09	$^{-}0.2$	6.556	800	68	7.09	68.037	$^{-}3.7$	2789.06	800	$^{-}70.9$	68	$^{-}379$	7.09	7.09	$^{-}70.9$

TO DECODE THESE THREE SIGNS: Do any exercise below and find your answer in the code. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will decode all three signs. Enjoy the signery!

(I) $^{-}0.6 \div 3 =$	(A) $^{-}2.274 \div 0.006 =$	(O) $^{-}34.0185 \div {}^{-}0.5 =$
(N) $^{-}0.24 \div {}^{-}6 =$	(W) $^{-}0.00332 \div {}^{-}0.04 =$	(H) $5.57812 \div 0.002 =$
(F) $4.395 \div {}^{-}5 =$	(C) $^{-}61.2 \div {}^{-}0.9 =$	(E) $^{-}3.2 \div {}^{-}0.004 =$
(K) $^{-}59.004 \div {}^{-}9 =$	(Y) $0.35056 \div {}^{-}0.07 =$	(M) $^{-}0.0237 \div 3 =$
(T) $2.96 \div {}^{-}0.8 =$	(R) $^{-}439 \div 0.1 =$	(L) $^{-}6.381 \div {}^{-}0.9 =$
(U) $0.3073 \div 0.07 =$	(B) $2.2 \div {}^{-}0.008 =$	(S) $7090 \div {}^{-}100 =$

When Did Porky Pig Lose His Pilot's License?

TO ANSWER THIS QUESTION:

Work all the problems below. Then arrange your answers from smallest (most negative) to largest (most positive) and write the letters of the problems in the boxes at the bottom of the page.

(G) $\frac{-358.4}{64} =$

(D) $\frac{-25.65}{-95} =$

(G) $\frac{-33.44}{-1.9} =$

(N) $\frac{0.03652}{-0.44} =$

(O) $\frac{-37.62}{0.076} =$

(O) $\frac{420.16}{52} =$

(R) $\frac{0.4806}{-0.089} =$

(E) $\frac{-0.9816}{-24} =$

(U) $\frac{13.158}{-7.31} =$

(O) $\frac{0.3978}{-0.195} =$

(N) $\frac{-0.27}{0.0036} =$

(D) $\frac{0.5672}{-70.9} =$

(Y) One sheet of paper is 0.0075 cm thick. How many sheets are there in a stack 2.7 cm high?

ANSWER: _____ sheets

(D) One dose of medicine is 1.25 milliliters. How many doses are in a bottle containing 40 milliliters?

ANSWER: ____ doses

(H) The ai or three-toed sloth travels at a speed of about 0.16 kilometer per hour. How long does it take to travel one kilometer at this speed?

ANSWER: _____ hours

(A) A math book is 2.5 cm thick. How many of these books can be stored on a shelf that is one meter long?

ANSWER: ____ books

SMALLEST (MOST NEGATIVE) →

← LARGEST (MOST POSITIVE)

Why is an ELEPHANT big, gray, and wrinkled?

TO ANSWER THIS QUESTION:

Do the exercises below. Find your answers in the answer column. Notice the number in front of the answer. Each time this number appears in the code, write the letter of the exercise above it. Keep working and you will decode the answer to the question.

D	$^{-}43.7 + 9.06 =$
S	$^{-}2.005 - 19.19 =$
U	$(^{-}8.6)(^{-}0.07) =$
E	$^{-}36.75 \div 5 =$
H	$^{-}0.937 + ^{-}16.5 =$
B	$4 - 20.95 =$
F	$(98)(^{-}0.44) =$
O	$^{-}53.36 \div ^{-}0.8 =$
N	$75 + ^{-}9.606 =$
W	$^{-}14.88 - ^{-}20.88 =$
L	$(^{-}4308.1)(0.01) =$
R	$0.24054 \div 0.006 =$
T	$^{-}0.49 + 49 - 4.9 =$
A	$15.1 - ^{-}9.133 + ^{-}60 =$
I	$(^{-}0.8)(17)(^{-}0.02) =$
P	$203.75 \div ^{-}0.1 =$

ANSWERS

1	40.09
2	$^{-}43.12$
3	6
4	0.602
5	66.7
6	0.272
7	43.61
8	$^{-}7.35$
9	$^{-}35.767$
10	$^{-}34.64$
11	$^{-}17.437$
12	65.394
13	$^{-}2037.5$
14	$^{-}21.195$
15	$^{-}43.081$
16	$^{-}16.95$

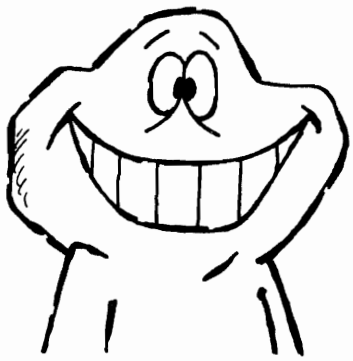
CODED ANSWER **6 2 6 7 3 8 1 8 15 6 7 7 15 8 3 11 6 7 8 9 12 10**

1 5 4 12 10 6 7 3 5 4 15 10 16 8 9 12 9 14 13 6 1 6 12

MYSTERY QUESTION:

How can you be sure to wake up every morning with a smile?

THE ANSWER TO THIS QUESTION IS WRITTEN IN CODE AT THE BOTTOM OF THE PAGE. USE THE CLUES GIVEN BELOW TO CRACK THE CODE AND FIND THE ANSWER.



$R = 69.7 + {}^{-}41.75$

$P = ({}^{-}8.5)({}^{-}0.04)$

$L = R \times N$

$E = W - O$

$U = P \times I$

$I = {}^{-}0.5648 \div 0.008$

$A = R + O + G$

$N = {}^{-}19 + 19.1$

$S = T \times W \times Y$

$T = R \div W$

$O = -17.9 - 0.104$

$M = G \div N$

$W = (0.005)({}^{-}86)$

$G = O \div Y$

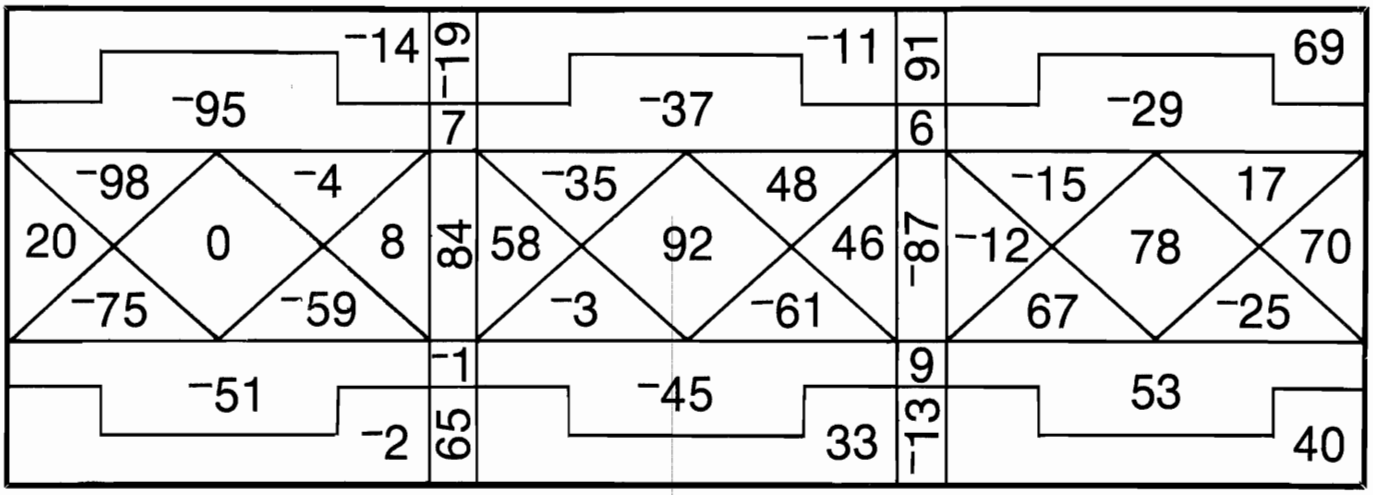
$H = E - G$

$Y = {}^{-}0.028 \div 0.7$

CODED ANSWER

$^{-}1.118$	2.795	17.574	17.574	0.34	$^{-}0.43$	$^{-}70.6$	$^{-}65$	$^{-}432.526$
460.046	$^{-}432.526$	460.046	0.1	450.1	17.574	27.95	$^{-}70.6$	0.1
$^{-}0.04$	$^{-}18.004$	$^{-}24.004$	27.95	4501	$^{-}18.004$	$^{-}24.004$	$^{-}65$	$^{-}432.526$

ZERO*



DIRECTIONS: Solve each equation below and find the answer in the rectangle above. Shade in each area containing a correct answer.

WHEN YOU FINISH, YOU WILL HAVE A PICTURE TITLED "ZERO." CAN YOU FIGURE OUT WHY???

$67 + 0 = A$ $A =$	$^{-}15\,(H - \frac{0}{2}) = 60$ $H =$	$P - (^{-}37 \cdot 0) = ^{-}51$ $P =$
$^{-}11 - 0 = B$ $B =$	$I - ^{-}45 = 0$ $I =$	$92 - Q = 0$ $Q =$
$^{-}8\,(0 - 5) = C$ $C =$	$^{-}78 + J = 0$ $J =$	$17 - R - 17 = ^{-}17$ $R =$
$^{-}6\,(7 + D) = ^{-}42$ $D =$	$^{-}33 + K + 7 = 7$ $K =$	$\left(\frac{0}{^{-}8 \cdot 5}\right) + S = ^{-}75$ $S =$
$\left(\frac{0}{9}\right) - 2 = E$ $E =$	$L + \left(\frac{0}{^{-}5}\right) = ^{-}14$ $L =$	$^{-}9 + T - \left(\frac{0}{8}\right) = 44$ $T =$
$(^{-}4 \cdot 8 \cdot 0) + F = ^{-}29$ $F =$	$M + ^{-}6 + \left(\frac{0}{^{-}1}\right) = ^{-}9$ $M =$	$^{-}37 - U = 0$ $U =$
$3\,(0 - ^{-}16) = G$ $G =$	$\left(\frac{0 \cdot 5}{^{-}7}\right) - ^{-}69 = N$ $N =$	$^{-}95 - V - ^{-}6 = 6$ $V =$

*MUCH ADO ABOUT NOTHING

ALL FOR ONE

1. WHAT DO YOU CALL A STOLEN SAUSAGE?

   ANSWER: _____

   45 1 $^{-}61$ 0 $^{-}9$ 84 84 $^{-}9$ $^{-}8$ $^{-}73$ 9 $^{-}9$ $^{-}8$ $^{-}45$

2. WHAT HAPPENED TO THE HORSE WHO ATE ELECTRIC CABLES?

   ANSWER. _____

   1 $^{-}61$ $^{-}6$ $^{-}61$ $^{-}8$ 45 1 $^{-}28$ 14 $^{-}6$ $^{-}9$ 2 $^{-}61$

3. WHAT WAS THE TOW TRUCK DOING AT THE CAR RACE?

   ANSWER: _____

   $^{-}98$ $^{-}46$ 9 9 $^{-}9$ $^{-}8$ $^{-}73$ $^{-}28$ 5 $^{-}28$ 84 45 7 $^{-}8$ $^{-}61$

TO DECODE THE ANSWERS TO THESE THREE IMPORTANT QUESTIONS:
Solve the equations below. Find the solutions in the code. Each time the solution appears, write the letter in that equation above it. Keep working and you will decode all three answers.

$^{-}28 \div 1 = A$ $A =$	$^{-}1 \times Y = {}^{-}14$ $Y =$	$\frac{^{-}9}{5} \times \frac{F}{9} = {}^{-}1$ $F =$
$K \div 1 = {}^{-}45$ $K =$	$G \times {}^{-}1 = 73$ $G =$	$\frac{^{-}5}{6} \times \frac{W}{5} = 1$ $W =$
$T \div {}^{-}1 = {}^{-}45$ $T =$	$\frac{7}{7} + \frac{4}{4} = R$ $R =$	$^{-}98\left(\frac{8}{N}\right) = 98$ $N =$
$\frac{^{-}20}{^{-}1} + \frac{13}{^{-}1} = O$ $O =$	$\frac{^{-}13}{13} + \frac{43}{43} = M$ $M =$	$\left(\frac{^{-}4}{1}\right)\left(\frac{84}{S}\right) = {}^{-}4$ $S =$
$\frac{29}{^{-}1} + \frac{^{-}17}{1} = U$ $U =$	$\frac{P}{98} + \frac{^{-}17}{17} = {}^{-}2$ $P =$	$\left(\frac{I}{^{-}9}\right)\left(\frac{^{-}52}{52}\right) = {}^{-}1$ $I =$
$E \times 1 = {}^{-}61$ $E =$	$\frac{3}{8} \times \frac{8}{3} = H$ $H =$	$\left(\frac{19}{^{-}19}\right)\left(\frac{L}{^{-}1}\right) = 9$ $L =$

GET THE MESSAGE

DIRECTIONS:

Next to these equations are two columns of letters, one marked *TRUE* and the other marked *FALSE.* Circle the appropriate letter next to each equation.

When you finish, print the letters you circled in the row of boxes at the bottom of the page. FIRST print those from the *TRUE* column, THEN print those from the *FALSE* column.

A MESSAGE WILL APPEAR!

	TRUE	FALSE
$48 + 96 = 96 + 48$	M	S
$48 - 96 = 96 - 48$	A	E
$48 \times 96 = 96 \times 48$	O	L
$48 \div 96 = 96 \div 48$	N	E
$57 \times (19 \times 30) = 57 \times (30 \times 19)$	V	C
$(41 + 85) + 72 = (85 + 41) + 72$	I	N
$93 + (40 - 7) = 93 + (7 - 40)$	N	L
$(15 + 97) + 64 = 15 + (97 + 64)$	E	I
$25 \times (59 \times 36) = (25 \times 59) \times 36$	S	E
$100 \div (50 \div 25) = (100 \div 50) \div 25$	P	T
$(47 - 24) - 11 = 47 - (24 - 11)$	L	R
$(80 \cdot 4) \cdot 69 = 80 \cdot (4 \cdot 69)$	A	I
$45 + (78 + 8) = 45 + (8 + 78)$	R	A
$27 + (29 + 94) = (27 + 29) + 94$	E	P
$33 \times (64 + 20) = (33 \times 64) + 20$	F	E
$(64 - 48) \div 16 = 64 - (48 \div 16)$	F	A
$(48 \div 24) \times 12 = 48 \times (24 \div 12)$	U	T
$(48 \cdot 24) \cdot 12 = 48 \cdot (12 \cdot 24)$	A	E
$48 + (24 + 12) = 12 + (48 + 24)$	R	P

FIRST PRINT THE LETTERS FROM THE "TRUE" COLUMN, THEN THOSE FROM THE "FALSE" COLUMN:

CODE LINE

DIRECTIONS:

Figure out what number must replace any letter in these equations so that each equation illustrates the DISTRIBUTIVE PROPERTY. Write your answer in the box at the end of each row.

Then, find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter in that equation above it.

KEEP WORKING AND YOU WILL DECODE THE LINE.

$^{-}4\ (2 + 8) = (^{-}4 \times 2) + (^{-}4 \times N)$	N =
$15\ (^{-}7 + 5) = (15 \times Y) + (15 \times 5)$	Y =
$^{-}34\ (10 + ^{-}3) = (^{-}34 \times 10) + (^{-}34 \times A)$	A =
$7\ (^{-}6 + ^{-}5) = (7 \times G) + (7 \times ^{-}5)$	G =
$59\ (12 + 9) = (59 \times 12) + (L \times 9)$	L =
$20\ (^{-}8 + 1) = (C \times ^{-}8) + (20 \times 1)$	C =
$^{-}17\ (^{-}4 + ^{-}5) = (^{-}17 \times ^{-}4) + (S \times ^{-}5)$	S =
$(6 \times 43) + (6 \times 19) = 6\ (43 + H)$	H =
$(^{-}7 \times 28) + (^{-}7 \times 75) = ^{-}7\ (28 + R)$	R =
$(8 \times ^{-}4) + (8 \times 18) = 8\ (I + 18)$	I =
$(^{-}6 \times 13) + (^{-}6 \times 30) = ^{-}6\ (W + 30)$	W =
$(^{-}19 \times ^{-}8) + (^{-}19 \times 52) = P\ (^{-}8 + 52)$	P =
$(98 \times ^{-}2) + (98 \times ^{-}11) = E\ (^{-}2 + ^{-}11)$	E =
$(50 \times 6) + (^{-}31 \times 50) = T\ (6 + ^{-}31)$	T =

TITLE: CURRENT EVENT

98	59	98	20	50	75	−4	20	−4	50	−7	−4	−17
13	−3	50	50	−17	19	−3	−19	−19	98	8	−4	8	−6

What is the Title of This Picture?

CODED TITLE:

$^{-}77$ 0 $^{-}2412$ $^{-}2412$ 8330 $^{-}8000$ 8330 $^{-}77$ $^{-}8000$ 2500 1425 $^{-}680$ 9577

2500 $^{-}2208$ $^{-}2208$ $^{-}680$ $^{-}680$ $^{-}4740$ 4050 9577 8330 $^{-}190$

0 $^{-}4740$ $^{-}2208$ 0 $^{-}660$ $^{-}680$ $^{-}77$ 0 $^{-}2412$ $^{-}2412$ 8330 $^{-}8000$ 8330

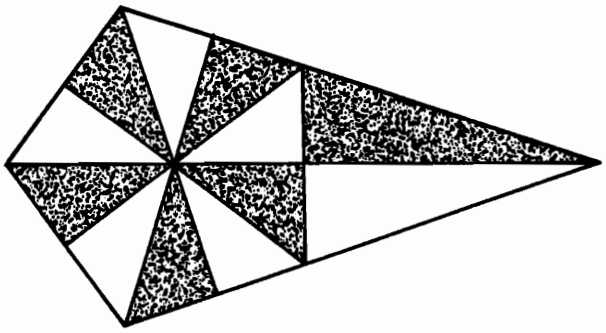
TO DECODE THE TITLE OF THIS PICTURE:

Use the DISTRIBUTIVE PROPERTY to do any exercise below. Then find your answer in the coded title. Each time the answer appears in the code, write the letter of that exercise above it. Keep working and you will decode the title.

A $(25 \times 43) + (25 \times 57) =$	**Y** $(75 \times 8) + (75 \times {}^{-}3) + (75 \times 14) =$
E $({}^{-}17 \times 64) + ({}^{-}17 \times {}^{-}24) =$	**D** $(49 \times {}^{-}66) + ({}^{-}72 \times {}^{-}66) + (33 \times {}^{-}66) =$
F $({}^{-}90 \times {}^{-}37) + ({}^{-}90 \times {}^{-}8) =$	**O** $({}^{-}98 \times {}^{-}15) + ({}^{-}98 \times {}^{-}55) + ({}^{-}98 \times {}^{-}15) =$
R $(58 \times 61) + (99 \times 61) =$	**L** $({}^{-}80 \times 19) + (43 \times {}^{-}80) + ({}^{-}80 \times 38) =$
M $({}^{-}43 \times 19) + (33 \times 19) =$	**S** $({}^{-}65 \times 24) + (13 \times 24) + ({}^{-}40 \times 24) =$
C $({}^{-}67 \times 86) + ({}^{-}50 \times {}^{-}67) =$	**I** $({}^{-}52 \times 84) + ({}^{-}52 \times {}^{-}39) + ({}^{-}45 \times {}^{-}52) =$
N $({}^{-}18 \times 79) + (79 \times {}^{-}42) =$	**P** $(77 \times {}^{-}29) + (77 \times 77) + ({}^{-}49 \times 77) =$

TEST of GENIUS

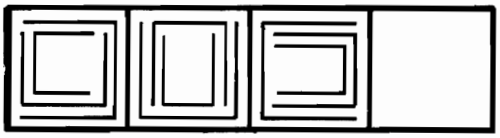
1. How many triangles can you count in this picture?



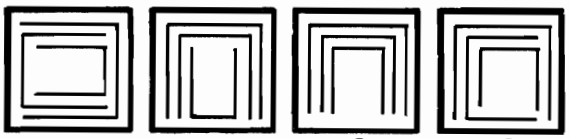
2. Herman Horsetrader bought a horse for $600 and then sold it for $700. The next day he bought it back for $800 and then sold it for $900. How much money did Herman make altogether?

3. How many brothers and sisters are there in a family in which each boy has as many sisters as brothers but each girl has twice as many brothers as sisters?

4.



Which of the four figures below should go in the empty box above?



1 2 3 4

5. Suppose a man offered to work for 30 days at the following salary: 1 cent for the first day, 2 cents for the second day, 4 cents for the third day, and so on, doubling each day. Would this salary be too much or too little for 30 days of work?

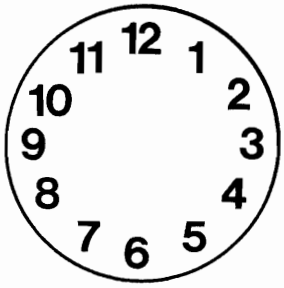
6. How many different 4-letter license plates can be made using only the letters M, A, T, and H? All four letters must be used on each plate.

7. It has been established that 1 of 4 men committed a crime. Following are the statements made by each suspect:

Harry: Barry did it.
Barry: Jerry did it.
Larry: I didn't do it.
Jerry: Barry lied when he said I did it.

If ONLY ONE STATEMENT IS TRUE, who is the criminal?

8. Draw 2 straight lines across this clock face to divide it into 3 parts so that the numbers in each part add to 26.



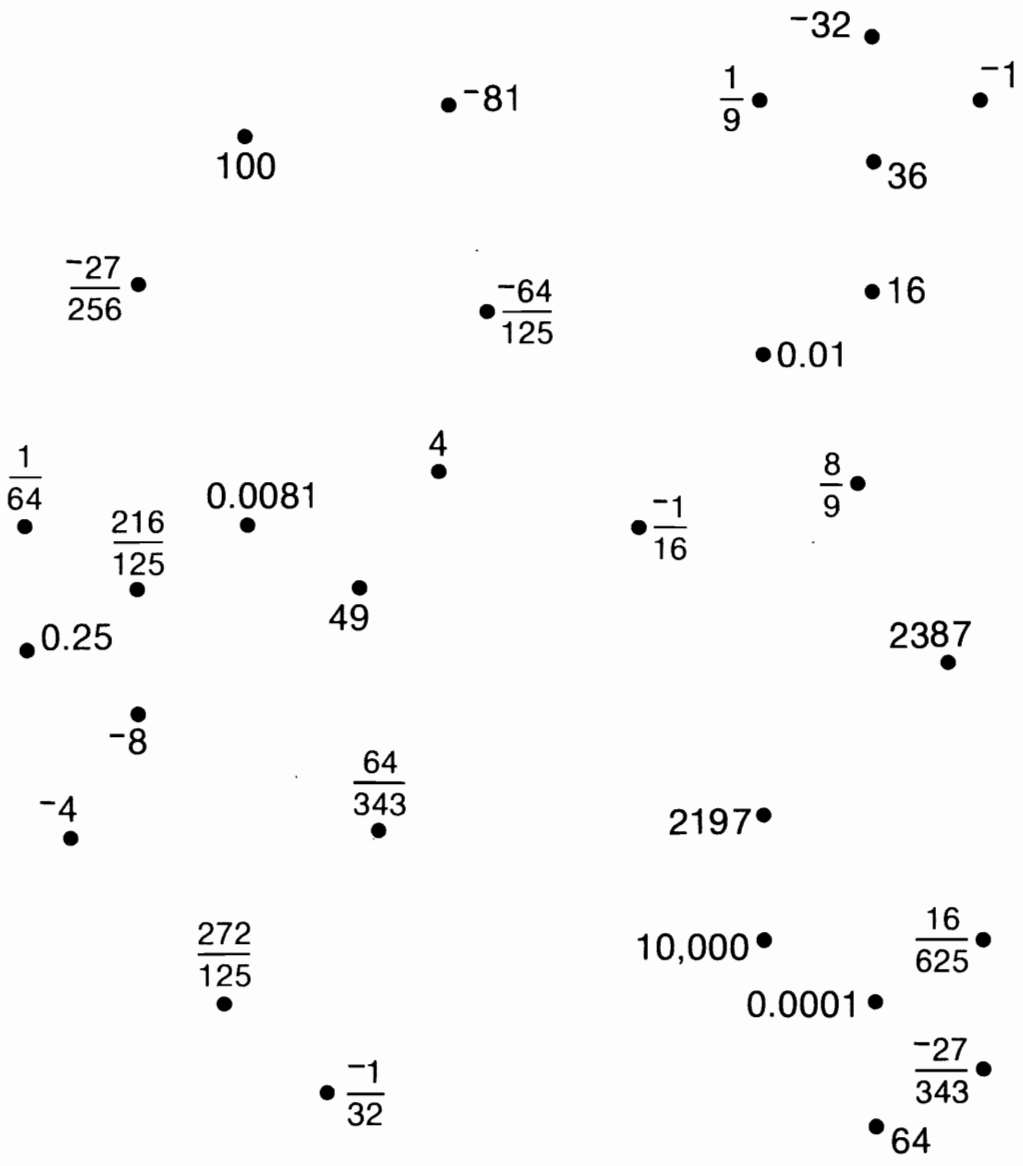
9. The pattern below includes every letter of the alphabet except Z. Would Z go on the top or bottom row? Why?

A EF HI KLMN T VWXY
BCD G J OPQRS U

SCORING KEY

8 or 9 -- *Superstar Genius*
6 or 7 -- *Star Genius*
4 or 5 -- *Genius*
3 or less -- *Genius of the Future*

Can You Build This?



DIRECTIONS:
Figure out the value of each expression below and find it next to a dot. Connect the dots in the same order as the exercises are numbered. Be careful to lift your pencil and begin again each time you see the instruction "LIFT PENCIL."

YOU WILL CREATE AN INTERESTING STRUCTURE. CAN YOU BUILD IT?

① 7^2
② 2^4
③ $(-6)^2$
④ $\left(\frac{1}{3}\right)^2$

Lift Pencil

① $(-2)^3$
② $(0.5)^2$
③ $\left(\frac{1}{4}\right)^3$
④ $(-10)^4$
⑤ $(0.1)^2$

Lift Pencil

① $(-2)^6$
② $(-8)^1$
③ $\left(\frac{6}{5}\right)^3$
④ $(0.3)^4$

Lift Pencil

① $\left(\frac{-4}{25}\right)^2$
② $\left(\frac{-3}{7}\right)^3$
③ 4^3
④ $(0.01)^2$
⑤ $(-100)^2$

Lift Pencil

① $(-1)^7$
② $\left(\frac{2}{5}\right)^4$
③ $(-0.1)^4$
④ 16^1

Lift Pencil

① 13^3
② $(-0.09)^2$
③ $(-1)^{19}$
④ $(-2)^5$
⑤ $\left(\frac{1}{8}\right)^2$

Stop

How Did the Light Dress Up for the Costume Party?

Write a fraction (or 1) for each power. For each set of exercises, there is one extra answer. Write the letter of this answer in the corresponding box at the right.

8	3	5	10	4	1	7	9	6	2

1	7^{-2}		**Answers**	**6**	10^{-1}		**Answers**
	2^{-3}	(B) $\frac{1}{9}$	(V) $\frac{1}{49}$		20^{-2}	(U) $\frac{1}{400}$	(A) $\frac{1}{10}$
	3^{-2}	(L) $\frac{1}{8}$	(A) $\frac{1}{12}$		100^{-3}	(E) $\frac{1}{2000}$	(O) $\frac{1}{1{,}000{,}000}$
2	10^{-4}			**7**	2^{-7}		
	4^{-3}	(G) $\frac{1}{64}$	(D) $\frac{1}{81}$		5^{-4}	(T) $\frac{1}{500}$	(L) 1
	9^{-2}	(R) $\frac{1}{27}$	(N) $\frac{1}{10{,}000}$		15^{0}	(M) $\frac{1}{625}$	(V) $\frac{1}{128}$
3	15^{-1}			**8**	8^{-2}		
	8^{-3}	(S) $\frac{1}{40}$	(J) $\frac{1}{32}$		10^{-5}	(I) $\frac{1}{256}$	(O) $\frac{1}{64}$
	2^{-5}	(P) $\frac{1}{15}$	(C) $\frac{1}{512}$		4^{-4}	(Y) $\frac{1}{100{,}000}$	(A) $\frac{1}{196}$
4	5^{-3}			**9**	7^{-3}		
	3^{-4}	(H) $\frac{1}{125}$	(P) $\frac{1}{144}$		15^{-2}	(E) $\frac{1}{343}$	(H) $\frac{1}{300}$
	12^{-2}	(E) $\frac{1}{96}$	(F) $\frac{1}{81}$		11^{0}	(L) 1	(T) $\frac{1}{225}$
5	6^{0}			**10**	13^{-2}		
	1000^{-1}	(T) $\frac{1}{1000}$	(A) $\frac{1}{693}$		2^{-6}	(B) $\frac{1}{64}$	(M) $\frac{1}{169}$
	9^{-3}	(L) 1	(I) $\frac{1}{729}$		16^{-1}	(F) $\frac{1}{72}$	(S) $\frac{1}{16}$

Find the Message

Each row across has 5 rectangles. Only 3 of them contain TRUE equations. Circle these 3 equations in each row.

Notice the number and letter above each equation you have circled. The number tells you where to put the letter in the boxes at the bottom of the page. You will spell out a six-word message.

7–A	17–R	10–A	9–O	2–O
$10^{-3} = \frac{1}{1000}$	$10^{-3} = 0.001$	$10^{2} = \frac{1}{100}$	$10^{-3} = 0.01$	$10^{-2} = \frac{1}{10^2}$

10–U	16–A	19–I	21–D	13–S
$10^{-2} = 0.01$	$10^{-2} = \frac{1}{10}$	$10^{0} = 1$	$10^{-4} = \frac{1}{10^4}$	$10^{-3} = 1000$

4–R	9–O	5–I	16–E	14–M
$10^{0} = 10$	$10^{4} = 10{,}000$	$10^{-1} = \frac{1}{10}$	$10^{-2} = \frac{1}{100}$	$10^{-1} = 1$

13–E	15–H	6–S	12–B	4–L
$10^{-1} = 0.1$	$10^{1} = \frac{1}{10}$	$10^{-4} = 0.0001$	$10^{-3} = 0.0001$	$10^{-5} = \frac{1}{10^5}$

14–T	11–R	8–P	15–T	20–E
$10^{2} = 100$	$10^{-3} = \frac{1}{10^3}$	$10^{-4} = \frac{1}{1000}$	$10^{-1} = \frac{1}{10^1}$	$10^{0} = 0$

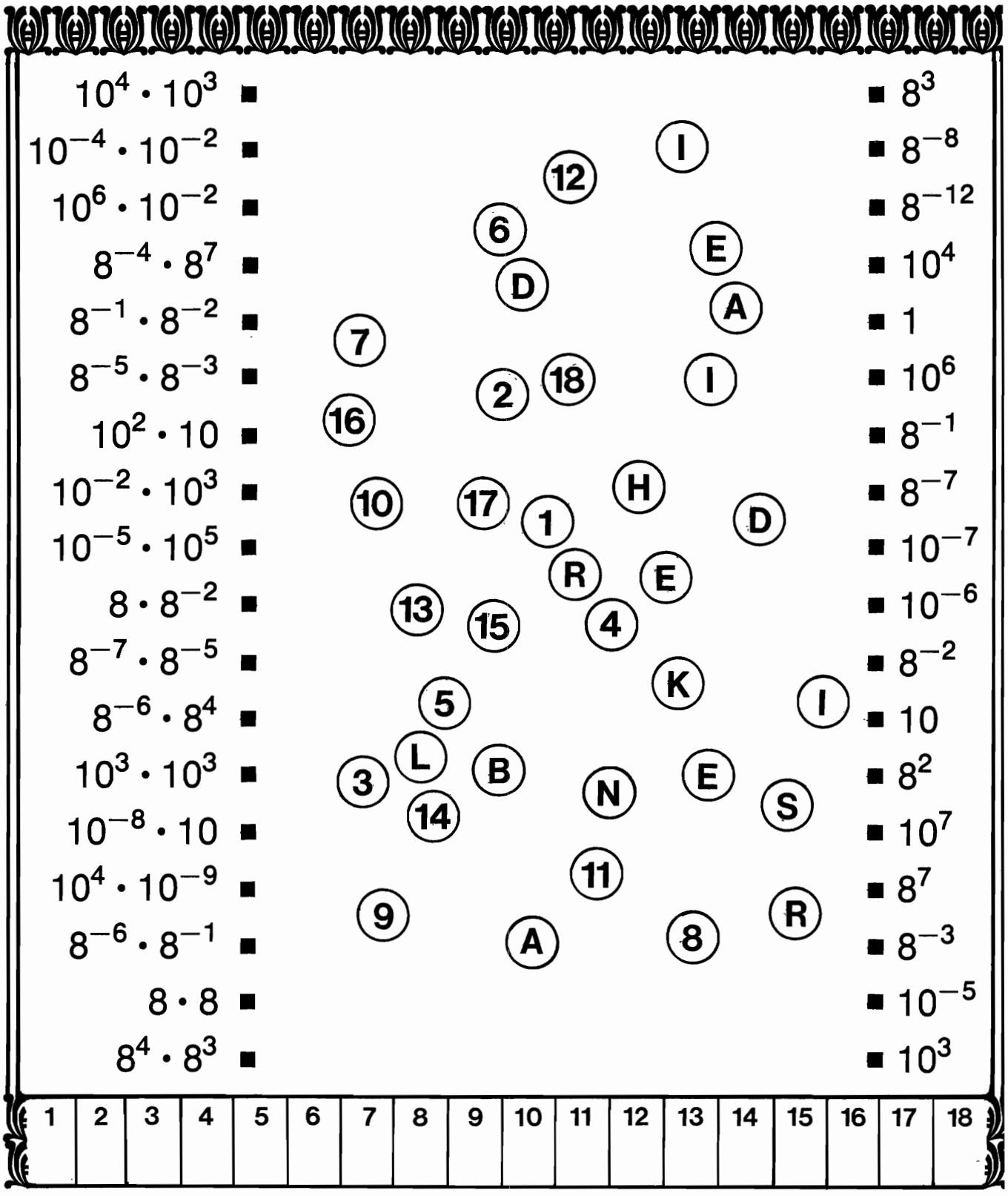
18–H	12–L	20–R	3–O	8–F
$10^{2} = \frac{1}{100}$	$10^{-5} = 0.00001$	$10^{-1} = 0.1$	$10^{-2} = \frac{1}{10}$	$10^{3} = 1000$

3–W	1–S	18–E	1–F	18–B
$10^{-4} = \frac{1}{10{,}000}$	$10^{3} = \frac{1}{1000}$	$10^{1} = 0.1$	$10^{-2} = 0.01$	$10^{1} = 10$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Why Did The Farmer Open A Bakery?

TO ANSWER THIS QUESTION: Express each product below as a single power of 10 or 8. Draw a straight line connecting each exercise with its answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



How Did Slugger McFist Get A BLACK EYE?

TO ANSWER THIS QUESTION: Express any quotient below as a decimal numeral and find this numeral in the code key. Notice the letter next to it. Print this letter in the box at the bottom of the page that contains the exercise number. Keep working and you will discover the answer to the title question.

① $10^5 \div 10^2 =$

② $10^2 \div 10^5 =$

③ $10^{-6} \div 10^2 =$

④ $10^{-1} \div 10^{-3} =$

⑤ $10^2 \div 10^{-7} =$

⑥ $10^6 \div 10 =$

⑦ $10^{-3} \div 10^{-3} =$

⑧ $\frac{10}{10^4} =$

⑨ $\frac{10^{-5}}{10^5} =$

⑩ $\frac{10^{10}}{10^{20}} =$

⑪ $\frac{10}{10^{-1}} =$

⑫ $\frac{10^{-2}}{10} =$

⑬ $\frac{10^{-8}}{10^{-9}} =$

⑭ $\frac{10^4}{10^{-3}} =$

⑮ $\frac{10^{-5}}{10^3} =$

⑯ $\frac{10^4}{10^6} =$

⑰ $\frac{10^{-2}}{10^{-1}} =$

⑱ $\frac{10}{10^{-2}} =$

⑲ $\frac{10^3}{10^3} =$

⑳ $10^{15} \div 10^{14} =$

㉑ $10^{-5} \div 10 =$

㉒ $10^{-7} \div 10^{-3} =$

㉓ $10 \div 10^6 =$

CODE KEY	
0.0000000001	U
0.00000001	I
0.000001	C
0.00001	M
0.0001	G
0.001	E
0.01	W
0.1	T
1	D
10	H
100	A
1000	S
100,000	L
10,000,000	B
1,000,000,000	Y

13	12	16	4	1	20	3	17	14	5	11	22	9	15	19	8	7	23	10	18	21	6	2

Daffynition Decoder

1. HAUNTED HOUSE:

10^{-11} 10^{-4} 10^{3} 10^{4} 10^{-2} 10^{-3} 10^{0} 10^{-6} 10^{-8} 10^{-11} 10^{-4} 10^{-3} 10^{4}

2. SUIT OF ARMOR:

10^{-7} 10^{-4} 10^{5} 10^{-13} 10^{-5} 10^{7} 10^{-13} 10^{-3} 10^{6} 10^{-4}

3. CENTIMETER:

10^{9} 10^{4} 10^{3} 10^{-11} 10^{7} 10^{-5} 10^{-11} 10^{-4} 10^{-11} 10^{2} 10^{12} 10^{-1} 10^{3} 10^{4}

TO DECODE THESE THREE DAFFYNITIONS:

Write any expression below as a single power of 10. Each time your answer appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THREE DE-FUN-ITIONS.

Ⓦ $10^{-2} \cdot 10^{8} =$

Ⓐ $10^{-4} \cdot 10^{-7} =$

Ⓘ $\frac{1}{1000} \cdot 10^{8} =$

Ⓩ $10 \cdot \frac{1}{100} =$

Ⓞ $\frac{1}{10} \cdot \frac{1}{100} =$

Ⓢ $\frac{1}{1{,}000{,}000} =$

Ⓛ $10^{9} \div 10^{7} =$

Ⓗ $10 \div 10^{6} =$

Ⓤ $\frac{10^{-2}}{10^{-2}} =$

Ⓚ $\frac{1}{10{,}000} \div 1000 =$

Ⓔ $\frac{1}{100} \div \frac{1}{100{,}000} =$

Ⓑ $1{,}000{,}000{,}000 =$

Ⓜ $\frac{1}{100{,}000} \cdot \frac{1}{1000} =$

Ⓨ $10^{8} \div \frac{1}{10{,}000} =$

Ⓥ $10^{6} \cdot 10^{-8} =$

Ⓣ $\frac{10^{3}}{10^{-4}} =$

Ⓖ $10^{-10} \cdot \frac{1}{1000} =$

Ⓡ $1000 \div \frac{1}{10} =$

Ⓝ $\frac{1}{10^{4}} =$

HIDDEN MESSAGE

Write each expanded form below as a decimal numeral and find these decimal numerals in the rectangle.
Look for the decimal numerals from left to right across the rectangle.
Shade in the boxes containing each answer. When you finish, there will be 31 boxes not shaded in.
STARTING ON THE TOP LINE AND WORKING FROM LEFT TO RIGHT, PRINT THE 31 REMAINING LETTERS IN THE BOXES AT THE BOTTOM OF THE PAGE. A HIDDEN MESSAGE WILL APPEAR!

① $(7 \times 10^4) + (6 \times 10^3) + (9 \times 10^0) =$

② $(5 \times 10^6) + (4 \times 10^2) + (8 \times 10) =$

③ $(4 \times 10) + (6 \times 10^0) + (3 \times 10^{-1}) =$

④ $(2 \times 10^3) + (5 \times 10) + (7 \times 10^{-2}) + (1 \times 10^{-3}) =$

⑤ $(4 \times 10^4) + (8 \times 10^{-1}) + (2 \times 10^{-3}) + (2 \times 10^{-4}) =$

⑥ $(5 \times 10^0) + (4 \times 10^{-4}) =$

⑦ $(7 \times 10^2) + (6 \times 10^{-2}) + (9 \times 10^{-5}) =$

⑧ $(2 \times 10) + (5 \times 10^{-1}) + (7 \times 10^{-3}) + (1 \times 10^{-4}) =$

⑨ $(4 \times 10^3) + (6 \times 10^0) + (3 \times 10^{-5}) + (6 \times 10^{-6}) =$

⑩ $(4 \times 10^0) + (8 \times 10^{-2}) + (2 \times 10^{-4}) =$

M	O	N	C	A	N	N	O	T	O	F	F	I	N	S	P	O	R	T	S	A	T	U	N
4	0	0	6.	0	0	0	0	3	6	5	4.	0	8	0	2	0	7	4	6.	3	0	3	6
E	T	R	A	B	S	P	E	L	L	I	N	O	V	G	E	T	I	M	E	R	S	H	A
2	5.	7	6	0	0	9	4.	0	0	4	0	0	0	0.	8	0	2	2	4.	0	6	0	3
V	E	A	L	W	A	Y	E	S	M	O	O	T	O	N	E	V	H	O	T	F	A	T	H
5.	0	4	0	2	0	5	0.	0	7	1	2.	5	7	1	5	0	0	0	4	8	0	0	2
E	B	E	A	L	R	L	O	N	B	R	E	A	F	U	A	O	T	G	N	H	I	L	L
2	0.	5.	0	0	0	4	7	0	0.	0	6	0	0	9	0	2	0.	5	0	7	1	7	1

Did You Hear About. . .

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R ?

DIRECTIONS: Write any fraction or mixed numeral below as a decimal numeral. Find this decimal in one of the answer columns and notice the word next to it. Write this word in the box that has the same letter as the exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT A REAL FRAME-UP!

- 1.000973—AND
- −0.087—CHAIR
- 61.8—PLUMBER
- 61.08—EYE
- 14.0605—GRINDING
- −0.00065—SIX
- 0.043201—OF
- −500.06—SO
- 0.9—THE
- −0.4954—HIS
- 0.43201—OUT
- −500.6—INTO
- 1.00973—FOR
- −0.775—DOCTOR
- 14.00605—CASE
- −0.000065—A

Ⓐ $\frac{9}{10} =$

Ⓑ $-3\frac{7}{10} =$

Ⓒ $\frac{-37}{100} =$

Ⓓ $61\frac{8}{100} =$

Ⓔ $\frac{-775}{1000} =$

Ⓕ $\frac{84}{1000} =$

Ⓖ $77\frac{5}{1000} =$

Ⓗ $-500\frac{6}{10} =$

Ⓘ $\frac{-4954}{10,000} =$

Ⓙ $\frac{-87}{10,000} =$

Ⓚ $14\frac{605}{10,000} =$

Ⓛ $\frac{-4}{100,000} =$

Ⓜ $1\frac{973}{1,000,000} =$

Ⓝ $18\frac{2001}{100,000} =$

Ⓞ $\frac{-65}{1,000,000} =$

Ⓟ $6\frac{5}{10,000} =$

Ⓠ $\frac{43,201}{1,000,000} =$

Ⓡ $-9\frac{7}{1000} =$

- −0.00004—MACHINE
- −0.04954—HOT
- 77.005—FELL
- −3.7—ABSENT
- 18.02001—MADE
- 18.2001—THAT
- 0.084—WHO
- 0.84—TO
- −9.007—HIMSELF
- −0.037—TEACHER
- −0.37—MINDED
- −0.0004—BIG
- −0.0087—LENS
- 6.005—VERY
- −9.0007—THEN
- 6.0005—SPECTACLE

Why Are Elephants Poor Dancers?

Round each number below as indicated. Circle the letter of each correct answer. Then rearrange the circled letters in each grid to make a word. Write the words in order in the boxes at the bottom of the page.

WHEN YOU FINISH, YOU WILL KNOW WHY ELEPHANTS ARE SUCH POOR DANCERS!

0.37 to the nearest tenth	L 0.3	M 76.08
$^{-}$2.474 to the nearest hundredth	O 5.9001	E 0.4
76.0835 to the nearest thousandth	H $^{-}$2.47	S $^{-}$2.48
5.90019 to the nearest ten thousandth	Y 5.9002	T 76.084
$^{-}$4.0822 to the nearest tenth	P 98.501	E $^{-}$4.1
98.500296 to the nearest thousandth	I 7.79	A 7.80
$^{-}$0.7608 to the nearest hundredth	D $^{-}$4.08	H 98.500
7.796 to the nearest hundredth	V $^{-}$0.76	L $^{-}$0.761
55.95 to the nearest tenth	N 0.7477	E $^{-}$0.049
$^{-}$0.0499 to the nearest thousandth	O 56.0	W 0.7476
0.747608 to the nearest ten thousandth	H 55.9	T $^{-}$0.050
8.999 to the nearest hundredth	L 1.00	F $^{-}$60.009
$^{-}$39.95 to the nearest tenth	T $^{-}$40.0	I 8.99
$^{-}$60.00905 to the nearest thousandth	E 9.00	M $^{-}$39.0
0.9971 to the nearest hundredth	B $^{-}$60.01	A 0.90
75.180763 to the nearest hundredth	F 10.0	T $^{-}$60.000
$^{-}$59.9999 to the nearest thousandth	L 75.19	Y 75.2
9.9955 to the nearest hundredth	G $^{-}$59.999	E 10.00
9.9955 to the nearest tenth	E 75.18	S 9.90

What Is The Difference Between A Buffalo And A Birthday Cake?

THE ANSWER TO THIS IMPORTANT QUESTION IS WRITTEN IN CODE AT THE BOTTOM OF THE PAGE. TO DECODE:

Find the decimal name for any fraction below. Round the decimal to the nearest THOUSANDTH (unless the decimal terminates at or before the thousandths place). Each time your answer appears in the code, write the letter of that exercise above it. Keep working and you will discover the answer to the title question.

Ⓥ $\frac{1}{3}$ =

Ⓓ $\frac{13}{15}$ =

Ⓘ $\frac{19}{32}$ =

Ⓚ $\frac{4}{7}$ =

Ⓕ $\frac{8}{9}$ =

Ⓑ $\frac{1}{20}$ =

Ⓞ $\frac{7}{12}$ =

Ⓢ $\frac{4}{11}$ =

Ⓡ $\frac{2}{3}$ =

Ⓣ $\frac{11}{16}$ =

Ⓐ $\frac{7}{100}$ =

Ⓔ $\frac{4}{5}$ =

Ⓦ $\frac{3}{8}$ =

Ⓨ $\frac{5}{6}$ =

Ⓜ $\frac{6795}{10{,}000}$ =

Ⓒ $\frac{1}{2}$ =

Ⓤ $\frac{59}{99}$ =

Ⓗ $\frac{3}{4}$ =

coded answer

0.75 0.07 0.333 0.8 0.833 0.583 0.596

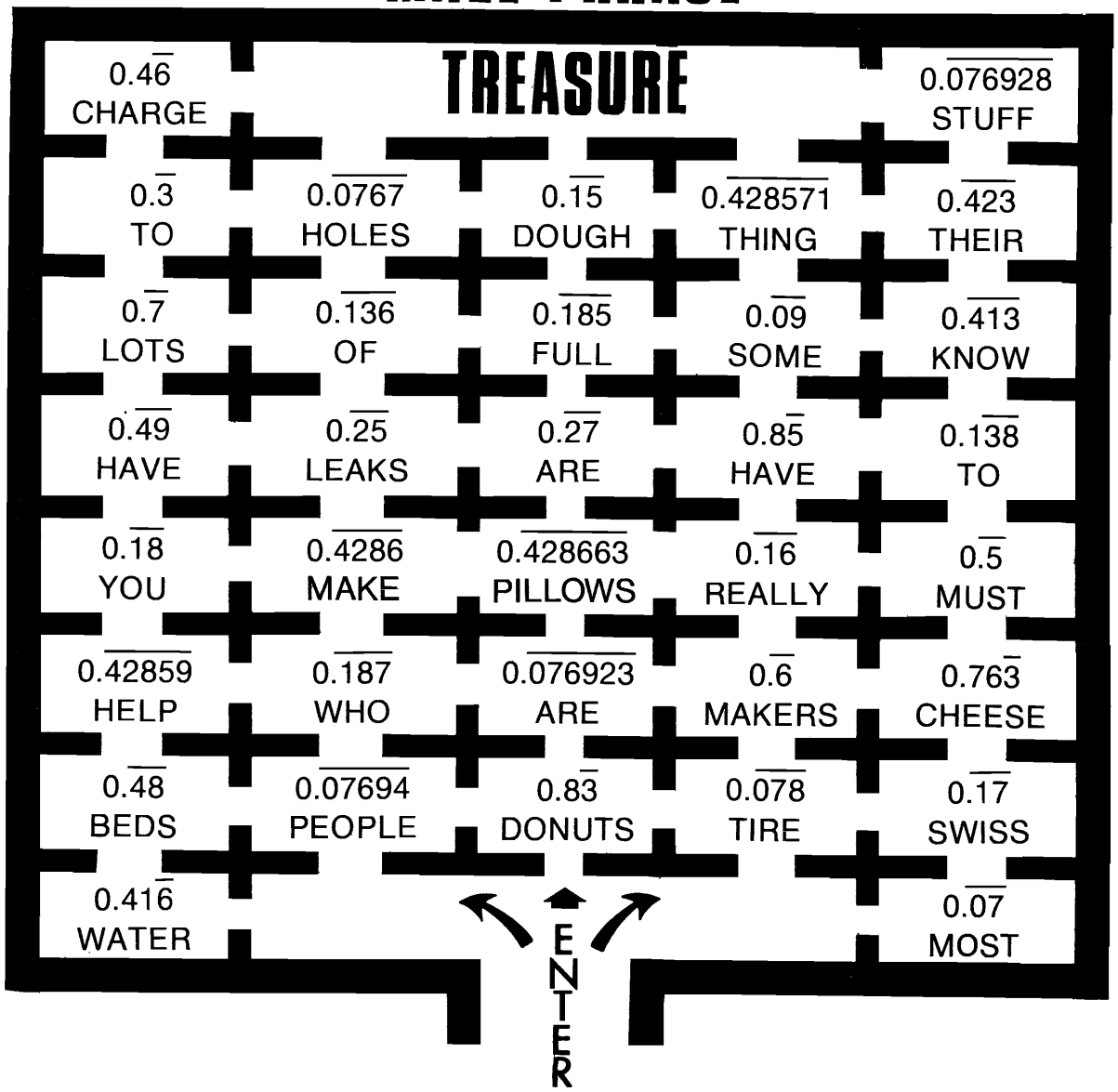
0.8 0.333 0.8 0.667 0.75 0.8 0.07 0.667 0.867 0.583 0.889

0.07 0.75 0.583 0.680 0.8 0.375 0.75 0.8 0.667 0.8

0.688 0.75 0.8 0.05 0.594 0.667 0.688 0.75 0.867 0.07 0.833

0.5 0.07 0.571 0.8 0.364 0.667 0.583 0.07 0.680 ?

MAZE PHRASE



DIRECTIONS:

Name each fraction below as a repeating decimal and find these decimals in the maze. SHADE IN each room that contains a correct answer.

Then find a path to the Treasure that goes only through rooms you have NOT shaded in. The words in those rooms will form an a-mazing message.

① $\frac{1}{3}$ =

② $\frac{5}{9}$ =

③ $\frac{5}{6}$ =

④ $\frac{7}{15}$ =

⑤ $\frac{5}{12}$ =

⑥ $\frac{3}{7}$ =

⑦ $\frac{48}{99}$ =

⑧ $\frac{1}{11}$ =

⑨ $\frac{2}{11}$ =

⑩ $\frac{3}{11}$ =

⑪ $\frac{5}{27}$ =

⑫ $\frac{1}{13}$ =

⑬ $\frac{3}{22}$ =

⑭ $\frac{2}{3}$ =

FAMOUS DIETERS' SLOGAN

Name each fraction below as a mixed decimal numeral in hundredths. For example, $\frac{1}{3} = 0.33\frac{1}{3}$.

Find your answers in the rectangle. Cross out the boxes that contain the answers. When you finish, there will be 12 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page. A hidden message will appear!

① $\frac{2}{3} =$ ⑥ $\frac{1}{15} =$ ⑪ $\frac{7}{27} =$ ⑯ $\frac{23}{3} =$

② $\frac{1}{8} =$ ⑦ $\frac{4}{3} =$ ⑫ $\frac{19}{8} =$ ⑰ $\frac{1}{6} =$

③ $\frac{7}{12} =$ ⑧ $\frac{29}{32} =$ ⑬ $\frac{3}{8} =$ ⑱ $\frac{29}{8} =$

④ $\frac{11}{16} =$ ⑨ $\frac{17}{16} =$ ⑭ $\frac{43}{8} =$ ⑲ $\frac{5}{8} =$

⑤ $\frac{8}{9} =$ ⑩ $\frac{7}{8} =$ ⑮ $\frac{20}{3} =$ ⑳ $\frac{5}{6} =$

EA $1.06\frac{1}{4}$	**TA** $7.66\frac{2}{3}$	**DO** $3.62\frac{7}{8}$	**OR** $0.12\frac{1}{2}$	**KE** $0.83\frac{1}{3}$	**NT** $6.65\frac{1}{3}$	**RY** $0.37\frac{1}{2}$	**LE** $2.37\frac{7}{8}$
SS $0.06\frac{2}{3}$	**TG** $0.37\frac{1}{8}$	**OT** $3.62\frac{1}{2}$	**OO** $0.87\frac{1}{8}$	**MU** $0.25\frac{25}{27}$	**CH** $0.66\frac{2}{3}$	**DF** $0.06\frac{2}{5}$	**AB** $6.66\frac{2}{3}$
OO $0.90\frac{3}{16}$	**ST** $5.37\frac{1}{2}$	**DG** $0.12\frac{1}{8}$	**ET** $0.90\frac{5}{8}$	**OP** $0.16\frac{2}{3}$	**OT** $0.58\frac{5}{6}$	**LE** $0.68\frac{3}{4}$	**SS** $1.33\frac{1}{3}$
SL $0.58\frac{1}{3}$	**OW** $0.16\frac{1}{6}$	**IN** $0.62\frac{1}{2}$	**AI** $0.25\frac{4}{27}$	**NT** $0.88\frac{8}{9}$	**UP** $0.87\frac{1}{2}$	**ST** $1.06\frac{7}{8}$	**OP** $2.37\frac{1}{2}$

Converting Decimals, Fractionally

1. "I TORE HIS VALENTINE IN TWO," Cleopatra said

$\frac{80}{333}$ $\frac{14}{11}$ $\frac{11}{9}$ $\frac{11}{45}$ $\frac{80}{333}$ $\frac{136}{99}$ $\frac{14}{11}$ $\frac{10}{11}$ $\frac{2}{3}$ $\frac{136}{99}$ $\frac{8}{33}$ $\frac{11}{9}$ $\frac{4}{3}$

2. "IF I ONLY HAD A BRAIN," said the Scarecrow

$\frac{14}{11}$ $\frac{23}{33}$ $\frac{2}{111}$ $\frac{136}{99}$ $\frac{2}{55}$ $\frac{2}{3}$ $\frac{1}{6}$ $\frac{51}{333}$ $\frac{2}{55}$ $\frac{8}{33}$ $\frac{136}{99}$ $\frac{8}{33}$ $\frac{11}{9}$ $\frac{4}{3}$

3. "MY HORSE WON'T STOP," Wild Bill said

$\frac{4}{9}$ $\frac{7}{18}$ $\frac{136}{99}$ $\frac{11}{45}$ $\frac{2}{15}$ $\frac{11}{9}$ $\frac{11}{9}$ $\frac{4}{3}$

4. "ACCIDENTS WILL HAPPEN," said Captain Hook

$\frac{7}{18}$ $\frac{11}{45}$ $\frac{11}{45}$ $\frac{80}{333}$ $\frac{14}{11}$ $\frac{2}{55}$ $\frac{8}{33}$ $\frac{136}{99}$ $\frac{8}{33}$ $\frac{11}{9}$ $\frac{4}{3}$

THESE FOUR STATEMENTS WERE NOT MERELY "SAID." EACH WAS SAID IN A CERTAIN WAY. TO FIND OUT HOW EACH STATEMENT WAS SAID, FOLLOW THESE DIRECTIONS:

Name any repeating decimal numeral below as a fraction in lowest terms. Then find this fraction in the code. Each time it appears in the code, write the letter of that exercise above it. Keep working and you will discover how each statement was said.

(T) $0.\overline{6} =$ (L) $1.\overline{2} =$ (I) $0.\overline{153} =$ (A) $1.\overline{27} =$

(W) $0.\overline{4} =$ (R) $0.\overline{90} =$ (M) $0.1\overline{6} =$ (N) $0.0\overline{36} =$

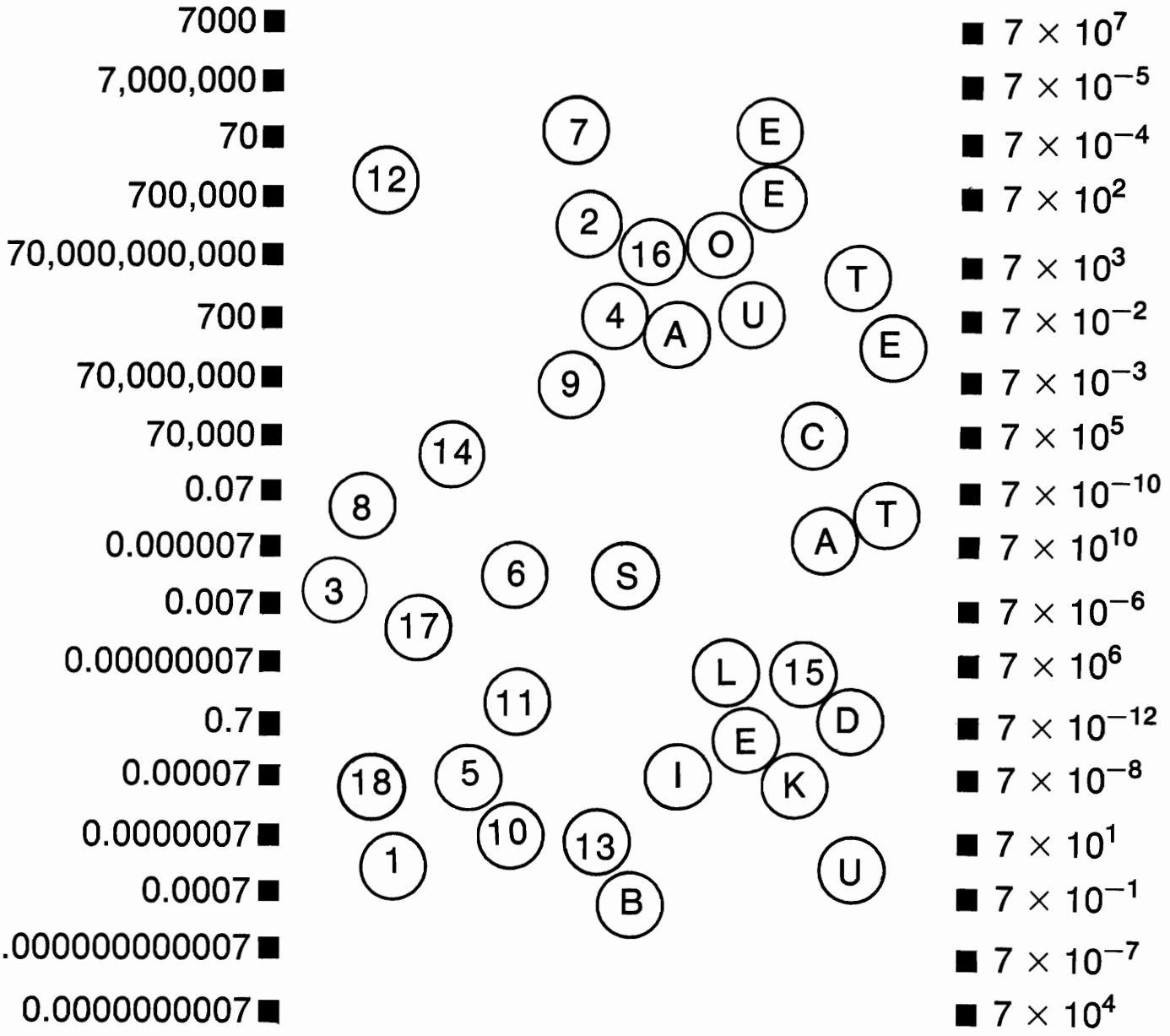
(Y) $1.\overline{3} =$ (E) $1.\overline{37} =$ (U) $0.1\overline{3} =$ (D) $0.\overline{24} =$

(B) $0.\overline{69} =$ (S) $0.\overline{018} =$ (O) $0.3\overline{8} =$ (H) $0.\overline{240} =$

(F) $0.2\overline{4} =$

WHY COULDN'T ORGO KEEP HIS WATERBED A SECRET?

TO ANSWER THIS IMPORTANT QUESTION:
Express any number in the left column in SCIENTIFIC NOTATION. Find your answer in the right column and draw a straight line connecting the two numbers. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

What Has Long Hair And Purple Feet?

Express the number in each statement below in scientific notation. Select your answer from the two choices given. Write the letter of the correct choice in each box at the bottom of the page that contains the statement number.

1	The mean distance from the surface of the earth to the surface of the moon is 376,000 kilometers. (E) 3.76×10^{5} (R) 3.76×10^{4}
2	The tallest structure in the world is the Warszawa Radio Mast in Plock, Poland, completed in May 1974. It measures 650 meters in height. (S) 6.5×10^{2} (A) 65×10^{2}
3	The heaviest bell in the world is the Tsar Kolokol, cast in 1733 in Moscow, U.S.S.R. It weighs 196,000 kilograms. (I) 1.96×10^{3} (H) 1.96×10^{5}
4	One light-year, the distance traveled by light in one year, is 9,460,000,000,000 kilometers. (T) 9.46×10^{10} (O) 9.46×10^{12}
5	Sirius A (the Dog Star) is the brightest star visible in the heavens. It has a mass of 46,500,000,000,000,000,000,000,000,000,000 kilograms. (D) 4.65×10^{30} (K) 4.65×10^{31}
6	The nearest star beyond our sun is the very faint *Proxima Centauri,* which is 40,300,000,000,000 kilometers from the earth. (T) 4.03×10^{13} (S) 4.03×10^{11}
7	The smallest known insects are the "hairy-winged" beetles of the Trichopterygidae family. They measure only 0.02 centimeters in length. (B) 2×10^{-3} (M) 2×10^{-2}
8	The wavelength of yellow light is 0.000058 centimeters. (A) 5.8×10^{-5} (U) 5.8×10^{-4}
9	The wavelength of one type of X-ray is 0.0000000128 centimeters. (N) 1.28×10^{-8} (L) 1.28×10^{-10}
10	The smallest identified virus is the potato spindle tuber virus, which has a diameter of less than 0.000002 centimeters. (I) 2×10^{-6} (U) 2×10^{-5}
11	One of the least stable atomic particles is the rho prime meson, which has a lifetime of 0.00000000000000000000000016 seconds. (L) 1.6×10^{-24} (P) 1.6×10^{-23}
12	The mass of an electron is 0.000000000000000000000000000009 grams. (F) 9×10^{-26} (W) 9×10^{-28}

8	11	10	4	9	6	3	8	6	7	8	5	1	2	10	6	2	4	12	9	12	10	9	1	
	L		O	N	T			T	M	A	K	_	S	I	T	S	O	W	N		I	N	E	!

FIND A MATCH

Each of the two blocks below is divided into 25 boxes. Boxes in the top block contain numbers in scientific notation. Express any of these numbers as a decimal numeral and find this decimal in the bottom block. Write the word from the top box in the bottom box. Work doggedly and you will spell out a hot message.

8×10^{2} THAT	8×10^{-4} OF	8×10^{-9} BOTH	8×10^{6} ARE	8×10^{-12} THE
8×10^{-11} MANY	8×10^{10} TO	8×10^{9} THESE	4.5×10^{-2} VERY	4.5×10^{4} IS
4.5×10^{-8} GETTING	4.5×10^{11} IT	4.5×10^{-3} SO	4.5×10^{-6} DAYS	4.5×10^{7} DOG
4.5×10^{5} HARD	1.23×10^{3} HOT	1.23×10^{-1} BEEF	1.23×10^{7} MAKERS	1.23×10^{-10} FINDING
1.23×10^{8} ENDS	1.23×10^{-5} PRICE	1.23×10^{9} HIGH	1.23×10^{-7} MEAT	1.23×10^{-6} MAKE

0.000000000008	0.0000123	0.0008	0.123	45,000
0.000000045	0.0045	1,230,000,000	8,000,000,000	0.0000045
800	0.00000000008	1230	45,000,000	12,300,000
8,000,000	0.000000000123	450,000,000,000	0.045	450,000
80,000,000,000	0.00000123	0.000000008	123,000,000	0.000000123

What did Dr. Watson say about SHERLOCK?

Work any problem below and find your answer in the answer columns. Write the letter of the answer in each box at the bottom of the page that contains the problem number.
KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.

① $(4 \times 10^{5})(2 \times 10^{3})$

② $(3 \times 10^{-4})(3 \times 10^{7})$

③ $(9 \times 10^{3})(7 \times 10^{-1})$

④ $(6 \times 10^{-5})(7 \times 10^{-2})$

⑤ $(8 \times 10^{-13})(5 \times 10^{4})$

⑥ $(3.6 \times 10^{6})(2 \times 10^{3})$

⑦ $(5 \times 10^{-12})(8.1 \times 10^{15})$

⑧ $(7.6 \times 10^{-4})(6 \times 10^{-4})$

⑨ $(3.5 \times 10^{1})(4.5 \times 10^{-10})$

⑩ $(6.8 \times 10^{-18})(2.5 \times 10^{-12})$

⑪ Light travels at a speed of 3×10^{5} kilometers per second. Light from Sirius A, the brightest star in the heavens, takes 2.7×10^{8} seconds to reach the earth. What is the distance to Sirius A?

⑫ In his book, *Six-Legged Science,* Brian Hocking estimates that the insect population of the world is at least 1×10^{18} If the average weight of each insect is 2.5×10^{-3} grams, what is the total weight of the insect population?

⑬ The human population of the world is estimated at 4.5×10^{9}. If the average weight of each human is 5.5×10^{4} grams, what is the total weight of the human population?

Ⓛ 1.7×10^{-30}	Ⓔ 1.575×10^{-10}
Ⓡ 4.05×10^{4}	Ⓚ 9×10^{3}
Ⓥ 8×10^{7}	Ⓓ 7.2×10^{8}
Ⓐ 8.1×10^{14} km	Ⓗ 1.7×10^{-29}
Ⓑ 4.2×10^{-5}	Ⓢ 6.3×10^{3}
Ⓝ 4.2×10^{-6}	Ⓟ 2.5×10^{15} g
Ⓘ 8×10^{8}	Ⓑ 2.5×10^{5}
Ⓨ 4.05×10^{5}	Ⓜ 7.2×10^{9}
Ⓣ 4.56×10^{-7}	Ⓐ 2.475×10^{13} g
Ⓔ 8.1×10^{13} km	Ⓞ 1.575×10^{-8}
Ⓐ 4×10^{-9}	Ⓛ 2.475×10^{14} g
Ⓒ 4×10^{-8}	Ⓖ 4.56×10^{-8}

8 T	10	11	7	11	3	4	9	12	9	13	1	5	11 ⌐	13	1	2	11	10	9	13	6	11	3

Did You Hear About. . .

A	B	C	D	E	F	G
H	I	J	K	L	M	N ?

2×10^{10}—AWAY
2×10^{12}—FIVE
2.6×10^{4}—TEN
8×10^{-2}—MUSIC
1.5×10^{12}—WERE
1.2×10^{-2}—WHO
2×10^{-4}—TIGERS
3×10^{5}—A
4×10^{-6}—TWO
5×10^{-1}—CASH
5×10^{2}—GOT
2.6×10^{3}—THE
3×10^{-8}—STORE
4×10^{-5}—FOR

DIRECTIONS: Work any problem below. Find your answer in one of the answer columns and notice the word next to it. Write this word in the box with the same letter as the problem.
KEEP WORKING AND YOU WILL HEAR ABOUT SOMETHING NOTEWORTHY!

Ⓐ $\dfrac{9 \times 10^{6}}{3 \times 10^{2}}$ Ⓑ $\dfrac{8 \times 10^{3}}{2 \times 10^{9}}$ Ⓒ $\dfrac{6 \times 10^{-1}}{3 \times 10^{4}}$

Ⓞ $\dfrac{4.8 \times 10^{-7}}{4 \times 10^{-5}}$ Ⓔ $\dfrac{7.5 \times 10^{8}}{5 \times 10^{-2}}$ Ⓕ $\dfrac{3.5 \times 10}{7 \times 10^{-9}}$

Ⓖ $\dfrac{6.4 \times 10^{3}}{8 \times 10^{4}}$ Ⓗ $\dfrac{4.5 \times 10^{-6}}{1.5 \times 10^{2}}$ Ⓘ $\dfrac{7.2 \times 10^{-10}}{1.8 \times 10^{-3}}$

Ⓙ $\dfrac{4 \times 10^{5}}{8 \times 10^{2}}$ Ⓚ $\dfrac{3 \times 10^{3}}{1.5 \times 10^{-7}}$ Ⓛ $\dfrac{8 \times 10^{-1}}{1.6 \times 10^{-8}}$

Ⓜ Jupiter, the largest planet in our solar system, is 7.8×10^{8} kilometers from the sun. The speed of light is 3×10^{5} kilometers per second. How many seconds does it take sunlight to reach Jupiter?

Ⓝ The total length of all the drawers in a library card catalog is 5×10^{3} centimeters. If each card has a thickness of 2.5×10^{-2} centimeters, how many cards will fit in the card catalog?

1.2×10^{-1}—FROM
1.5×10^{10}—ROBBED
5×10^{-6}—TEN
3×10^{4}—THE
3×10^{-10}—HORN
4×10^{-7}—AND
5×10^{7}—WITH
4×10^{-5}—BIG
2×10^{4}—BED
2×10^{5}—LUTE
6×10^{2}—DOUGH
2×10^{-5}—GUYS
5×10^{5}—A
8×10^{2}—BIG

An Important Fact about YOU!

AN IMPORTANT FACT ABOUT YOU IS HIDDEN IN THE MESSAGE BELOW.
TO FIND IT:

Round both numbers in any exercise to one significant digit. Then express the numbers in scientific notation and do the exercise. This gives you an ESTIMATE of the answer to the original exercise.

Find each estimate in the rectangle and shade out the letter above it. When you finish, the important fact about you will remain.

B	U	R	G	E	R	S	A	R	E	F	U	N	I	N	A	S	E	S	A	M	E	B	U	N
2.5×10^{0}	1.5×10^{9}	3×10^{4}	4×10^{1}	4×10^{-2}	2.5×10^{3}	3×10^{-1}	3.6×10^{-6}	1.5×10^{4}	2×10^{-3}	2.8×10^{-1}	2×10^{-4}	6×10^{-7}	6×10^{3}	1.6×10^{-5}	4×10^{3}	2.8×10^{7}	3.6×10^{-7}	1.5×10^{10}	3×10^{3}	2.8×10^{8}	1.6×10^{2}	3×10^{5}	2×10^{2}	6×10^{1}

① (6978) (4180)

② (29.64) (180.3)

③ (3.14) (4580.01)

④ (405) (0.412)

⑤ (56.92) (0.00528)

⑥ (0.076) (0.00019)

⑦ (0.004486) (0.000089)

⑧ (53,900) (0.000754)

⑨ (0.007) (40.37)

⑩ $\frac{784{,}300}{227}$

⑪ $\frac{6185}{30.09}$

⑫ $\frac{78.999}{1588.1}$

⑬ $\frac{907.29}{0.29}$

⑭ $\frac{0.00555}{10{,}004}$

⑮ $\frac{0.00081}{0.409}$

⑯ $\frac{0.05708}{0.0000024}$

⑰ $\frac{320{,}000}{0.00002}$

⑱ $\frac{0.00456}{0.0019807}$

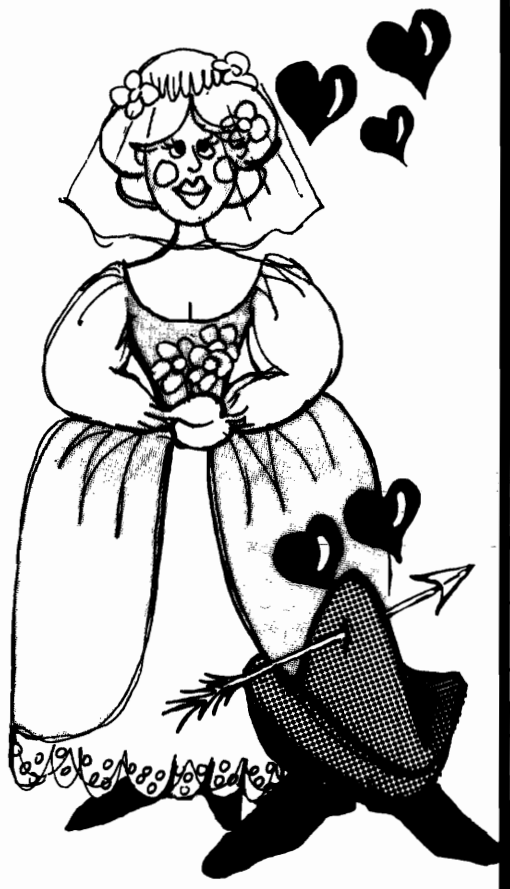
GET THE MESSAGE

DIRECTIONS:

Decide whether each of these decimals represents a rational number or an irrational number. Circle the letter in the appropriate column next to each decimal.

When you finish, print the circled letters in the row of boxes at the bottom of the page. FIRST print those from the column marked "Rational," THEN print those from the column marked "Irrational."

A MESSAGE WILL APPEAR!



	RATIONAL	IRRATIONAL
0.135135135135. . .	M	S
0.6	A	R
$^{-}$2.242242242242242224. . .	N	A
$^{-}$0.292929292929. . .	I	T
$^{-}$0.06006000600006. . .	L	R
0.7105386266520861. . .	N	R
3.407640764076407640764076. . .	D	I
$^{-}$155.23333333. . .	M	D
0.6166116661116666611116. . .	E	I
$^{-}$0.1428571428571428571428. . .	A	V
$^{-}$74.7584630674348297. . .	K	E
6.125	R	S
0.7866666666. . .	I	D
$^{-}$73.00025252525. . .	O	L
40.8643010196548853851 . . .	R	D
$^{-}$9.70712122122212222121. . .	N	A
200.0096009600960096. . .	N	S
0.112123123412345. . .	W	H
17.7002748528108648635 0. . .	H	O
$^{-}$8.0	M	T
$^{-}$0.999919999119999111 9. . .	A	O
3.14159265358979323846. . .	K	D

What Was the Crow Doing on the Telephone Wire?

Circle the letter of the phrase which best completes each statement below. Write this letter in each box at the bottom of the page that contains the statement number.

1	A decimal in which the same sequence of digits repeats again and again is called a(n) (O) repeating decimal (P) irrational number
2	Every repeating decimal represents a (n) (F) irrational number (G) rational number
3	An irrational number is a number that is represented by a (U) repeating decimal (E) nonrepeating decimal
4	Every rational number can be represented either by a repeating decimal or by a (R) nonrepeating decimal (K) terminating decimal
5	A number that can be represented by a fraction is a(n) (T) rational number (N) irrational number
6	An integer is a(n) (D) irrational number (W) rational number
7	Between any two rational numbers there is a(n) (I) rational number (A) integer
8	The union of the set of rational numbers and the set of irrational numbers is called the (D) set of real numbers (B) set of integers
9	Every repeating or nonrepeating decimal represents a (L) real number (H) rational number
10	A real number that is not a rational number is a(n) (P) repeating decimal (M) irrational number
11	A real number that can be represented by a nonrepeating decimal is a(n) (R) rational number (S) irrational number
12	Every point on the number line can be named by a(n) (F) irrational number (N) real number
13	Between any two points on the number line, there is a(n) (H) empty set (C) point
14	Every repeating or nonrepeating decimal numeral determines (A) one point on the number line (U) two points on the number line

10	14	4	7	12	2	14	9	1	12	2	8	7	11	5	14	12	13	3	13	14	6

Ratio Activity

Express any ratio below as a fraction in lowest terms. Find this ratio in the answer columns and notice the number to the left of it. Each time this number appears in the code, write the letter of the problem above it. Keep working and you will decode the message.

Ⓢ 4 : 12

Ⓝ 48 : 6

Ⓨ $\frac{15}{25}$

Ⓚ $\frac{48}{32}$

Ⓕ 21 to 49

Ⓔ 96 to 24

Ⓘ $\frac{1}{5}$ to $\frac{1}{2}$

Ⓡ $\frac{3}{4} : \frac{2}{3}$

Ⓖ $\frac{\frac{5}{8}}{\frac{1}{2}}$

Ⓦ $1\frac{1}{2}$ to 7

Ⓣ $\frac{3}{8} : 2\frac{1}{4}$

Ⓛ $\frac{3\frac{1}{3}}{\frac{5}{4}}$

Ⓤ 40 seconds to 3 minutes

Ⓗ 3 dollars to 65 cents

Ⓓ WORLD RECORD: Wilt Chamberlain scored 100 points in a single basketball game on March 2, 1962. In that game, he made 36 field goals (baskets) in 63 attempts. Find the ratio of field goals to attempts.

Ⓐ Sonny Jurgensen set a record for the most passes completed in a football season. He completed 288 passes in 508 attempts. Find the ratio of completed passes to attempts.

Ⓞ The 1906 Chicago baseball team set a record by losing only 36 games out of 154 games that they played. Find the ratio of games *won* to games played.

Ⓒ The Boston Bruins hockey team set a record by winning 57 games against 7 ties and 14 losses. Find the ratio of games won to games played.

ANSWERS

①	$\frac{60}{13}$	⑩	$\frac{3}{14}$
②	$\frac{9}{8}$	⑪	$\frac{8}{1}$
③	$\frac{1}{6}$	⑫	$\frac{4}{1}$
④	$\frac{72}{127}$	⑬	$\frac{2}{9}$
⑤	$\frac{1}{3}$	⑭	$\frac{5}{4}$
⑥	$\frac{2}{5}$	⑮	$\frac{19}{26}$
⑦	$\frac{3}{5}$	⑯	$\frac{3}{2}$
⑧	$\frac{8}{3}$	⑰	$\frac{3}{7}$
⑨	$\frac{59}{77}$	⑱	$\frac{4}{7}$

15·2·9·15·9·18·6·8·12·5·4·2·12·4·8·10·4·7·5·8·9·9·16·6·11·14·17·9·2·4·1·4·11·18·9·13·3

Crack The Code

Solve any proportion below and find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter in that proportion above the answer. Keep working and you will decode the poem.

① $\frac{10}{6} = \frac{15}{F}$ F =

② $\frac{6}{4} = \frac{H}{10}$ H =

③ $\frac{4}{A} = \frac{9}{18}$ A =

④ $\frac{C}{15} = \frac{21}{9}$ C =

⑤ $\frac{24}{D} = \frac{16}{22}$ D =

⑥ $\frac{15}{20} = \frac{18}{K}$ K =

⑦ $\frac{N}{49} = \frac{10}{35}$ N =

⑧ $\frac{2}{1} = \frac{U}{25}$ U =

⑨ $\frac{16}{40} = \frac{24}{Y}$ Y =

⑩ $\frac{L}{15} = \frac{14}{10}$ L =

⑪ $\frac{2\frac{1}{2}}{5} = \frac{P}{4}$ P =

⑫ $\frac{12}{I} = \frac{14}{3\frac{1}{2}}$ I =

⑬ $\frac{5}{10} = \frac{V}{3}$ V =

⑭ $\frac{E}{5} = \frac{2}{3}$ E =

⑮ $\frac{4}{1} = \frac{11}{B}$ B =

⑯ $\frac{9}{S} = \frac{5}{2}$ S =

⑰ $\frac{M}{4} = \frac{1\frac{1}{2}}{5}$ M =

⑱ $\frac{3}{2} = \frac{3\frac{1}{2}}{O}$ O =

⑲ $\frac{3}{11} = \frac{T}{3}$ T =

⑳ $\frac{7}{R} = \frac{16}{2}$ R =

$\frac{7}{8} \cdot 50 \cdot \frac{9}{11} \cdot 15$ $\quad \frac{7}{8} \cdot 2\frac{1}{3} \cdot 33 \cdot 3\frac{1}{3}$ $\quad 2\frac{1}{3} \cdot 14$ $\quad 1\frac{1}{5} \cdot 60$ $\quad 1\frac{1}{5} \cdot 2\frac{1}{3} \cdot \frac{9}{11} \cdot 2\frac{1}{3} \cdot \frac{7}{8}$ $\quad 2\frac{3}{4} \cdot 3 \cdot 24 \cdot 3\frac{1}{3}$

$2\frac{1}{3} \cdot 14$ $\quad \frac{9}{11} \cdot 15 \cdot 3\frac{1}{3}$ $\quad 3\frac{3}{5} \cdot 3\frac{1}{3} \cdot 8 \cdot \frac{9}{11}$ $\quad 3 \cdot 14$ $\quad 2\frac{3}{4} \cdot 8 \cdot 35 \cdot 24$ $\quad 2\frac{1}{3} \cdot 9$ $\quad 1\frac{1}{5} \cdot 3\frac{1}{3}$

3 $\quad \frac{9}{11} \cdot 2\frac{1}{3} \cdot 2\frac{1}{3} \cdot 24$ $\quad 8$ $\quad 2\frac{3}{4} \cdot 50 \cdot 1\frac{1}{5} \cdot 2$ $\quad 8 \cdot \frac{9}{11}$ $\quad 9 \cdot 3 \cdot 9 \cdot \frac{9}{11} \cdot 60$ $\quad 9 \cdot 3 \cdot 1\frac{1}{2} \cdot 3\frac{1}{3}$

$8 \cdot 14 \cdot 33$ $\quad \frac{7}{8} \cdot 2\frac{1}{3} \cdot 33 \cdot 3\frac{1}{3}$ $\quad 2\frac{1}{3} \cdot 14$ $\quad \frac{7}{8} \cdot 50 \cdot \frac{9}{11} \cdot 15 \cdot 21 \cdot 3\frac{1}{3} \cdot 3\frac{3}{5} \cdot 3\frac{3}{5} \cdot 21 \cdot 60$

What Do Hitchhikers Do When School Lets Out?

This puzzle illustrates two practical uses of ratio and proportion: (1) figuring the size of a reduced or enlarged photograph; and (2) figuring distance on a map.

Use the information given on any line of the two charts to figure out the missing dimension, which is indicated by a box containing a letter. Find your answer at the bottom of the page and print the letter above it. Keep working and you will discover the answer to the title question.

ORIGINAL PHOTO	NEW PHOTO	MAP SCALE	TRIP TO BE TAKEN
7 × 12 cm	14 × **A** cm	1 cm = 50 km	7 cm = **N** km
8 × 10 cm	**R** × 15 cm	2 cm = 25 km	**A** cm = 75 cm
21 × 30 cm	7 × **B** cm	3 in. = 4 mi	10 in = **K** mi
$3\frac{1}{2}$ × 5 cm	**O** × 10 cm	$3\frac{1}{2}$ in. = 5 mi	**H** in = 16 mi
8 × 10 in.	11 × **E** in.	$\frac{1}{2}$ cm = 100 km	4 cm = **T** km
10 × 16 in.	**I** × 4 in.	4 in. = 75 mi	**T** in = 350 mi
7 × 10 in.	5 × **A** in.	$1\frac{1}{2}$ in. = 10 mi	$4\frac{1}{2}$ in = **C** mi
11 × 20 in.	**E** × 8 in.	$2\frac{1}{2}$ in. = 150 mi	**V** in = 100
6 × $9\frac{1}{2}$ in.	4 × **U** in.	1 in. = 3 mi	$\frac{1}{2}$ in. = **M** mi
4 × 7 in.	**A** × $8\frac{1}{4}$ in.	1 in. = 500 mi	**T** in = 800 mi

800	24	$13\frac{1}{3}$	$13\frac{3}{4}$	$4\frac{5}{7}$	$1\frac{3}{5}$	$11\frac{1}{5}$	$6\frac{1}{3}$	$1\frac{1}{2}$	10	$4\frac{2}{5}$	12	$1\frac{2}{3}$	$7\frac{1}{7}$	30	6	$18\frac{2}{3}$	$2\frac{1}{2}$	7	350

What Should You Say When You Meet An Angel?

Work each problem and find your answers at the bottom of the page. Shade in the letter above each correct answer. When you finish, you will know what to say!

1	If 2 cubic feet of sand weigh 90 pounds, how much do 5 cubic feet of sand weigh? ANSWER: ____ pounds
2	If there are 560 calories in 8 ounces of meat, how many calories are in 3 ounces of meat? ____ calories
3	If pencils sell at 6 for 59¢, how many pencils can be bought for $2.95? ____ pencils
4	A car travels 350 miles on 20 gallons of gasoline. How many gallons will be used to travel 875 miles under the same conditions? ____ gallons
5	The ratio of oil to vinegar in a certain salad dressing is 8 : 5. How much oil must be blended with 7 liters of vinegar for that recipe? ____ liters
6	The ratio of the weight of an object on Jupiter to its weight on Earth is 8 to 3. How much would a 100 pound person weigh on Jupiter? ____ pounds
7	If 1 gallon of paint covers 450 square feet, how many gallons are needed to paint a room with 675 square feet of wall surface? ____ gallons
8	If it takes 4 ounces of insecticide to make $2\frac{1}{2}$ gallons of garden spray, how much spray can be made with 6 ounces of insecticide? ____ gallons
9	A flagpole casts a shadow 32 feet long. If a man 6 feet tall casts a shadow 8 feet long at the same time and location, how tall is the flagpole? ____ feet
10	$4\frac{1}{3}$ cans of water must be added to a can of lemonade concentrate to make 64 ounces of lemonade. How many cans of water are needed to make 96 ounces of lemonade? ____ cans
11	Bronze is an alloy of copper and tin. If a certain type of bronze requires 0.3 kilogram of tin per 1.0 kilogram of copper, how much tin must be combined with 50 kilograms of copper? ____ kilograms
12	At a certain college, the ratio of men to women is 5 to 4. If there are 2800 men, how many women are there? ____ women
13	A cookie recipe which calls for $3\frac{1}{2}$ cups of flour makes 5 dozen cookies. How much flour is needed to make 3 dozen cookies? ____ cups
14	3.6 grams of salt will dissolve in 10 grams of water. How many grams of salt will dissolve in 1000 grams of water? ____ grams

W	E	F	I	G	H	T	W	I	T	H	B	A	L	L	O	T	S
360	210	24	15	2240	300	$11\frac{1}{5}$	225	$1\frac{1}{2}$	$266\frac{2}{3}$	$6\frac{1}{2}$	30	2320	$2\frac{2}{5}$	$3\frac{3}{4}$	32	$2\frac{1}{10}$	50

KNOCK KNOCK Who's There? Sensuous. Sensuous Who?

Sensuous _____

500% 11% 200% 35% 0.11% 150% 0.11% 83% 5% 0.11% 500% 5% 74% 200%

65% 0.11% 5% 35% 500% 5% 11% 4% 300% 83% 5% 375% $\frac{2}{3}$% 11% 50% 74% 1% 1% 1% $\frac{2}{3}$% $\frac{1}{2}$% 300%

50% $\frac{2}{3}$% 40% 19% 74% 83% 97.5% 50% 74% 5% 35% 1.1% 300% 40% 200% 300% 83% 5% 500% .

TO DECODE THE LAST LINE OF THIS "KNOCK-KNOCK" JOKE, FOLLOW THESE DIRECTIONS:

Write any expression below as a percent. Each time this percent appears in the code, write the letter of that expression above it.

KEEP WORKING AND YOU WILL DISCOVER THE LAST LINE OF THE "KNOCK-KNOCK" JOKE.

Ⓗ 35 hundredths

Ⓡ 40 hundredths

Ⓝ $\frac{83}{100}$

Ⓘ 0.74

Ⓓ 4 hundredths

Ⓖ 97.5 out of 100

Ⓛ one out of a hundred

Ⓥ $\frac{1}{2}$ of one hundredth

Ⓞ $\frac{2}{3}$ of one hundredth

Ⓚ the ratio of 19 to 100

Ⓜ 65 : 100

Ⓕ the ratio of 150 to 100

Ⓨ 375 hundredths

Ⓒ $\frac{200}{100}$

Ⓔ 3.00

Ⓟ 1.1 out of 100

Ⓐ 0.11 of one hundredth

Ⓤ 0.11

Ⓦ $\frac{50}{100}$

Ⓣ $\frac{50}{1000}$

Ⓢ $\frac{50}{10}$

TEST OF KNOWLEDGE

1. WHAT LIES AT THE BOTTOM OF THE OCEAN AND SHIVERS?

ANSWER: _____

$\frac{3}{20}$	$\frac{1}{200}$	$\frac{1}{50}$	$\frac{2}{3}$	$\frac{5}{2}$	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{9}{25}$	$\frac{5}{4}$	$\frac{2}{3}$	$\frac{1}{50}$	$\frac{1}{5}$	$\frac{1}{100}$

2. WHAT DO YOU CALL AN OVERWEIGHT LION?

ANSWER: _____

$\frac{2}{5}$	$\frac{67}{100}$	$\frac{1}{50}$	$\frac{1}{100}$	$\frac{3}{10}$	$\frac{1}{200}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{300}$	$\frac{1}{50}$	$\frac{9}{25}$	$\frac{1}{50}$

3. WHAT IS THE BEST WAY TO TALK TO A MONSTER?

ANSWER: _____

$\frac{1}{25}$	$\frac{1}{2}$	$\frac{1}{200}$	$\frac{3}{4}$	$\frac{1}{3}$	$\frac{3}{10}$	$\frac{9}{25}$	$\frac{2}{5}$	$\frac{3}{20}$	$\frac{1}{200}$	$\frac{1}{5}$	$\frac{1}{50}$

A TEST OF KNOWLEDGE IS GIVEN ABOVE. THE ANSWER TO EACH QUESTION IS WRITTEN IN CODE UNDER THE QUESTION. TO DECODE:

Express any percent below as a fraction in lowest terms. Each time this fraction appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO EACH QUESTION.

Ⓒ 20% =	Ⓘ 30% =	Ⓝ $\frac{1}{2}$% =
Ⓞ 50% =	Ⓣ 40% =	Ⓥ 250% =
Ⓐ 15% =	Ⓚ 1% =	Ⓛ 4% =
Ⓗ 67% =	Ⓤ 150% =	Ⓡ $66\frac{2}{3}$% =
Ⓢ 36% =	Ⓦ 125% =	Ⓑ $\frac{1}{3}$% =
Ⓖ 75% =	Ⓓ $33\frac{1}{3}$% =	Ⓔ 2% =

Important Consumer Information

Some important consumer information is hidden below. To find it, follow these directions.

Find the percent of the word in each exercise below. As you find each percent, write the letters, in order, in the boxes at the bottom of the page. The first two letters have been filled in for you.

① The first 50% of COPE **CO**

② The last 10% of CRYPTOGRAM ___

③ The first 75% of PAST ___

④ The last 40% of MOOSE ___

⑤ The first 25% of SABOTAGE ___

⑥ The first 60% of REACT ___

⑦ The last $33\frac{1}{3}$% of EEL ___

⑧ 100% of WAY ___

⑨ The last 20% of MOTIONLESS ___

⑩ The first 40% of OLIVE ___

⑪ The first $33\frac{1}{3}$% of DWARFS ___

⑫ The last $66\frac{2}{3}$% of PIT ___

⑬ The first 5% of HYPERCHOLESTEROLEMIA ___

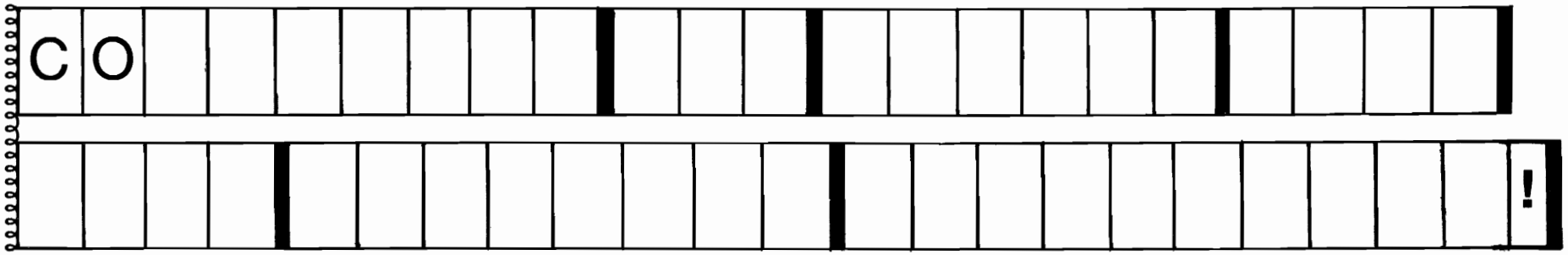
⑭ The first 70% of COMPLETION ___

⑮ The first 30% of EDITORSHIP ___

⑯ The last 80% of ERECT ___

⑰ The last 15% of INTERNATIONALIZATION ___

⑱ The first 20% of SUPER ___

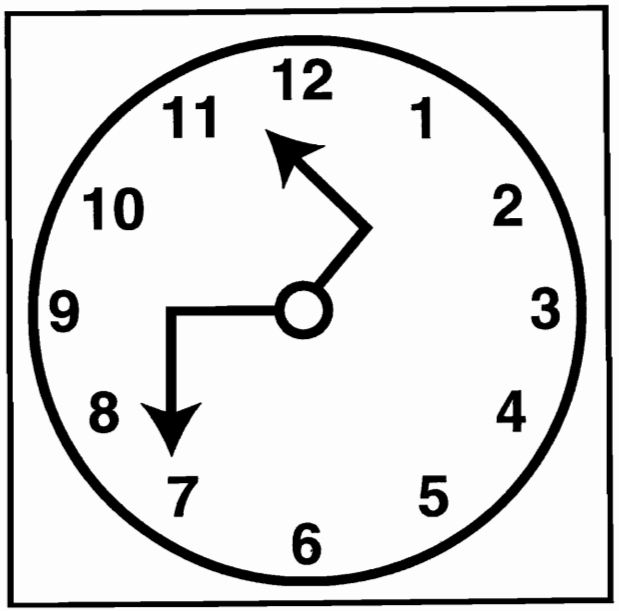


What is the Title of This Picture?

TO DECODE THE TITLE OF THIS PICTURE:

Find a percent for any fraction below. Each time your answer appears in the code, write the letter of the exercise above it.

KEEP WORKING AND YOU WILL DECODE THE TITLE.



CODED TITLE:

72.3 230 45 72.3 15 4.25 45 40 150.5 70 230 230 7 26 84

167 2 75 150.5 150.5 7 2.5 70 7 150.5 167 75 1.5

Ⓔ $\frac{7}{10} = \frac{\quad}{100} =$ % Ⓖ $\frac{21}{25} = \frac{\quad}{100} =$ % Ⓘ $\frac{49}{700} = \frac{\quad}{100} =$ % Ⓒ $\frac{723}{1000} = \frac{\quad}{100} =$ %

Ⓝ $\frac{13}{50} = \frac{\quad}{100} =$ % Ⓡ $\frac{2}{5} = \frac{\quad}{100} =$ % Ⓢ $\frac{3}{200} = \frac{\quad}{100} =$ % Ⓦ $\frac{167}{100} = \frac{\quad}{100} =$ %

Ⓞ $\frac{9}{20} = \frac{\quad}{100} =$ % Ⓗ $\frac{6}{300} = \frac{\quad}{100} =$ % Ⓕ $\frac{17}{400} = \frac{\quad}{100} =$ % Ⓛ $\frac{23}{10} = \frac{\quad}{100} =$ %

Ⓐ $\frac{3}{4} = \frac{\quad}{100} =$ % Ⓚ $\frac{75}{500} = \frac{\quad}{100} =$ % Ⓜ $\frac{30}{1200} = \frac{\quad}{100} =$ % Ⓣ $\frac{301}{200} = \frac{\quad}{100} =$ %

What did the Ape think of the Grape's house?

CIRCLE the BEST ESTIMATE for each exercise without computing the actual answer. Write the letter of the best estimate in the box at the bottom of the page that contains the exercise number.

① $\frac{5}{8} \doteq$ (L) 40% (H) 60% (R) 150%	④ $\frac{27}{14} \doteq$ (S) 150% (I) 190% (U) 220%	⑦ $\frac{17}{12} \doteq$ (B) 70% (M) 110% (T) 140%	⑩ 55% of 18 $\doteq$ (A) 6 (E) 10 (M) 15	⑯ 205% of 48 $\doteq$ (A) 24 (O) 100 (R) 150
			⑪ 89% of 25 $\doteq$ (C) 13 (S) 22 (H) 28	⑰ 1.25% of 300 $\doteq$ (H) 4 (L) 9 (E) 50
② $\frac{6}{7} \doteq$ (F) 15% (A) 60% (E) 90%	⑤ $\frac{7}{15} \doteq$ (S) 45% (T) 55% (H) 150%	⑧ $\frac{13}{24} \doteq$ (R) 45% (E) 55% (S) 200%	⑫ 8% of 99 $\doteq$ (H) 8 (T) 12 (L) 80	⑱ 9.5% of 11 $\doteq$ (N) 1 (T) 2 (R) 3
			⑬ 46% of 52 $\doteq$ (O) 19 (A) 25 (E) 75	⑲ 95% of 79 $\doteq$ (P) 60 (W) 75 (H) 82
③ $\frac{1}{9} \doteq$ (T) 10% (P) 25% (W) 130%	⑥ $\frac{1}{11} \doteq$ (Y) 1% (U) 9% (D) 11%	⑨ $\frac{26}{25} \doteq$ (N) 1% (T) 95% (G) 105%	⑭ 160% of 24 $\doteq$ (S) 13 (C) 30 (T) 37	⑳ 74% of 4.2 $\doteq$ (D) 3 (S) 4 (P) 5
			⑮ 51.5% of 21.2 $\doteq$ (I) 11 (A) 15 (E) 30	㉑ 103% of 57.4 $\doteq$ (L) 56 (F) 57 (V) 58

5	12	10	14	1	16	6	9	17	7	15	3	19	13	11	20	2	21	4	18	8

Career Information

1. A TELEVISION REPAIRMAN IS SOMEBODY WHO . . .

_____

71% 233% 9% 67% 9% 248% 233% 8% 3% 77% 9% 22% 53% 233%

2. A TAXIDERMIST IS SOMEBODY WHO . . .

_____

77% 117% 38% 67% 117% 88% 233% 42% 173% 22% 53% 248% 3% 144% 233%

3. A TREE SURGEON IS SOMEBODY WHO . . .

_____

6% 3% 7% 7% 71% 173% 173% 22% 9% 173% 38% 117% 7% 3% 83% 24%

AN IMPORTANT FACT ABOUT EACH OCCUPATION IS WRITTEN IN CODE UNDER THE OCCUPATION.
TO DECODE:

Express any fraction below as a percent, rounded to the nearest whole percent. Each time this percent appears in the code, write the letter of that exercise above it. Keep working and you will decode these three important facts.

Ⓖ $\frac{5}{7}$ = Ⓢ $\frac{2}{3}$ = Ⓥ $\frac{7}{8}$ = Ⓓ $\frac{23}{16}$ = Ⓟ $\frac{1}{13}$ =

Ⓝ $\frac{3}{8}$ = Ⓨ $\frac{5}{12}$ = Ⓑ $\frac{24}{99}$ = Ⓞ $\frac{19}{11}$ = Ⓣ $\frac{2}{23}$ =

Ⓤ $\frac{2}{9}$ = Ⓦ $\frac{1}{18}$ = Ⓒ $\frac{27}{35}$ = Ⓔ $\frac{7}{3}$ = Ⓛ $\frac{9}{128}$ =

Ⓜ $\frac{5}{6}$ = Ⓡ $\frac{8}{15}$ = Ⓐ $\frac{7}{6}$ = Ⓗ $\frac{159}{64}$ = Ⓘ $\frac{3}{100}$ =

What Do You Call The Situation When Your Parachute Doesn't Open?

Each quotient is given as it would appear on an 8-digit hand calculator. Use this information to express any fraction below as a percent rounded to the nearest tenth of a percent. Find your answer in the answer columns and notice the letter next to it. Write this letter in each box at the bottom of the page that contains the exercise number.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.

① $\frac{11}{12} = 0.9166666 =$ ____%

② $\frac{19}{32} = 0.59375 =$ ____%

③ $\frac{11}{27} = 0.4074074 =$ ____%

④ $\frac{1}{16} = 0.0625 =$ ____%

⑤ $\frac{20}{23} = 0.8695652 =$ ____%

⑥ $\frac{1}{81} = 0.0123456 =$ ____%

⑦ $\frac{4}{3} = 1.3333333 =$ ____%

⑧ $\frac{49}{43} = 1.1395348 =$ ____%

⑨ $\frac{202}{75} = 2.6933333 =$ ____%

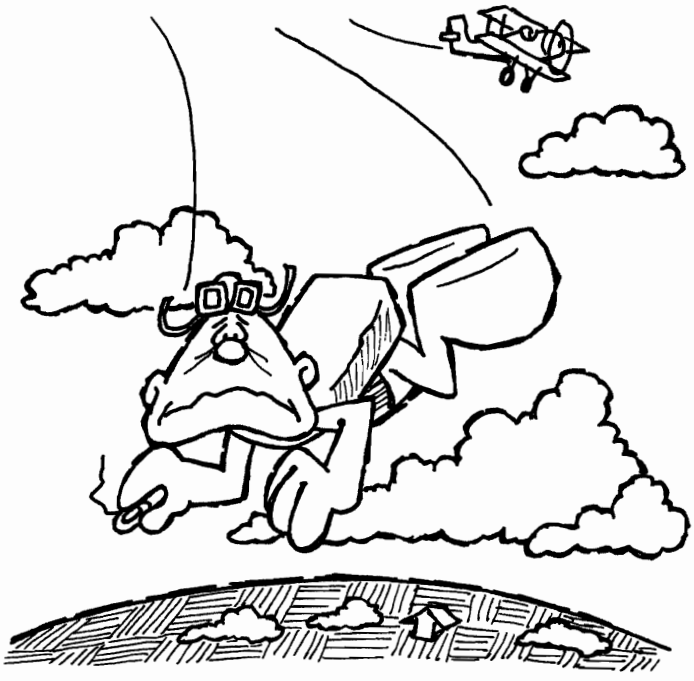
⑩ $\frac{247}{64} = 3.859375 =$ ____%

⑪ $\frac{1}{127} = 0.007874 =$ ____%

⑫ $\frac{11}{2000} = 0.0055 =$ ____%

⑬ $\frac{17}{12{,}500} = 0.00136 =$ ____%

Ⓡ 1.3%	Ⓔ 113.9%
Ⓣ 87.0%	Ⓘ 59.4%
Ⓓ 0.7%	Ⓤ 0.1%
Ⓒ 0.8%	Ⓙ 385.9%
Ⓑ 91.8%	Ⓝ 40.8%
Ⓐ 91.7%	Ⓔ 0.2%
Ⓖ 6.3%	Ⓞ 114.0%
Ⓜ 269.3%	Ⓛ 40.7%
Ⓥ 62.5%	Ⓢ 86.9%
Ⓝ 269.4%	Ⓗ 133.4%
Ⓟ 133.3%	Ⓢ 1.2%
Ⓡ 0.5%	Ⓐ 59.3%
Ⓝ 0.6%	Ⓡ 386.0%



10	13	9	7	2	12	4	5	8	1	11	8	12	11	3	13	6	2	8	12	!

Find the MESSAGE

TO FIND THE HIDDEN MESSSAGE:

Each row across has 6 rectangles. Only 4 of them contain TRUE equations. Circle these 4 equations in each row. Notice the number and letter above each equation that you have circled. The number tells you where to put the letter in the row of boxes at the bottom of the page. You will spell out an 8-word message.

5-E	**13-A**	**10-H**	**16-O**	**20-S**	**8-T**
68% = 0.68	51% = 5.1	7% = 0.07	1% = 0.01	99% = 0.99	6% = 0.006
14-A	**24-D**	**12-L**	**3-O**	**17-B**	**13-E**
5% = 0.05	25% = 0.25	2% = 0.2	8% = 0.08	65% = 0.065	43% = 0.43
2-F	**1-A**	**8-S**	**23-E**	**18-R**	**12-R**
8.3% = 0.83	40% = 0.4	33.3% = 0.333	1.9% = 0.019	70% = 0.07	10% = 0.1
17-A	**7-I**	**2-N**	**11-I**	**19-I**	**6-M**
87.5% = 0.875	0.5% = 0.005	150% = 1.5	37.5% = 3.75	4.5% = 0.045	0.1% = 0.01
11-E	**6-N**	**9-T**	**22-T**	**18-F**	**9-W**
233% = 2.33	0.7% = 0.007	0.01% = 0.001	180% = 0.18	90% = 0.9	1.1% = 0.011
15-S	**22-R**	**4-V**	**15-L**	**21-B**	**21-D**
400% = 0.4	66.7% = 0.667	0.2% = 0.002	30% = 0.3	75% = 0.75	4% = 0.4

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Hidden Message

Do each exercise and find your answers in the rectangle below. Look for the correct answers from left to right across the rectangle.

Shade in the boxes that contain correct answers. When you finish, there will be 31 boxes not shaded in.

STARTING ON THE TOP LINE AND WORKING FROM LEFT TO RIGHT, PRINT THE 31 REMAINING LETTERS IN THE BOXES AT THE BOTTOM OF THE PAGE. A HIDDEN MESSAGE WILL APPEAR!

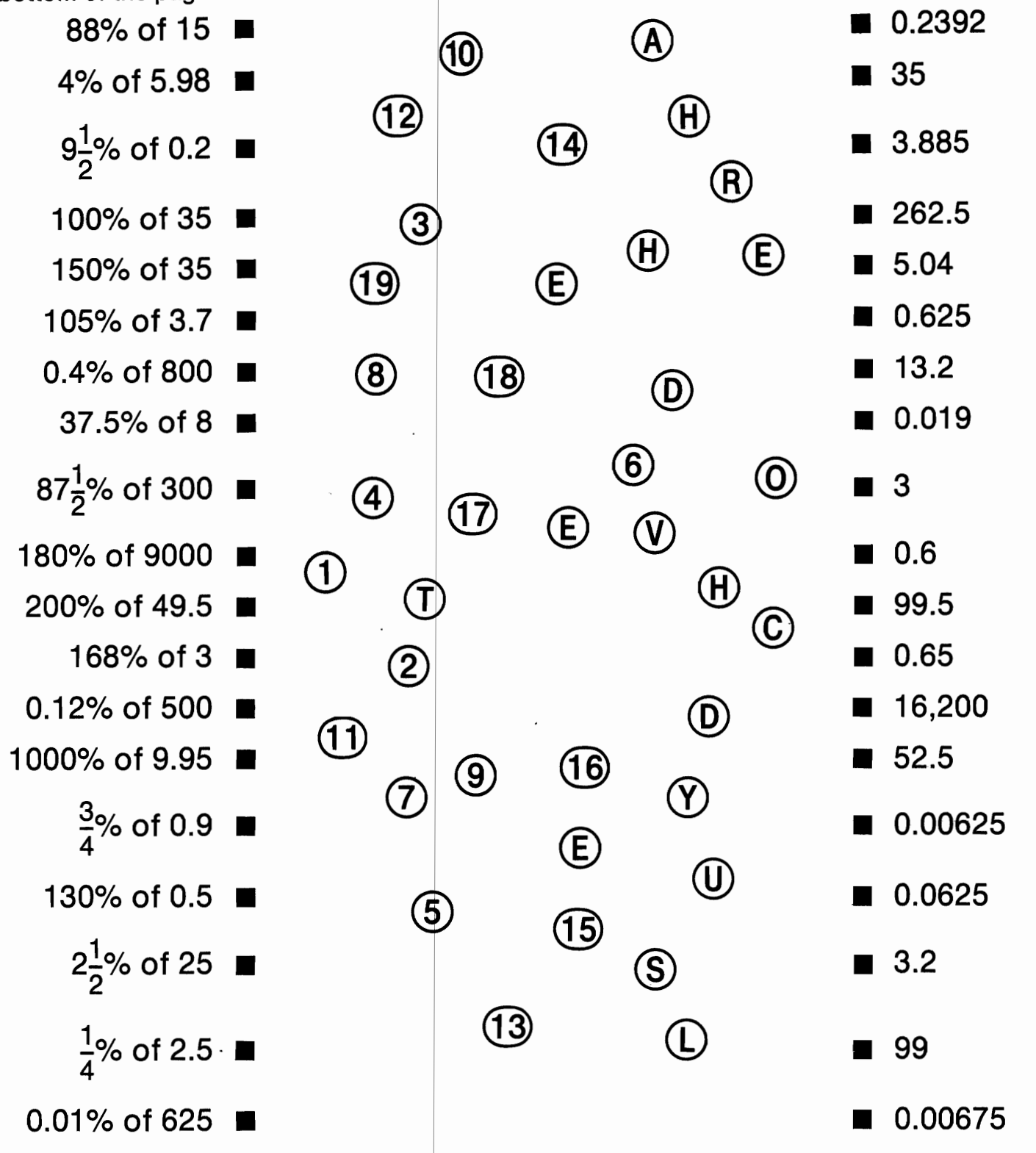
① 21% of 69 =
② 47% of 17 =
③ 75% of 85 =
④ 8% of 248.1 =
⑤ 10% of 16.6 =
⑥ 3.8% of 54 =
⑦ 7.9% of 4 =
⑧ 6.5% of 10.7 =
⑨ 12.5% of 1.75 =
⑩ 66.7% of 8.1 =
⑪ 5.4% of 625 =
⑫ 95% of 0.8 =
⑬ 0.6% of 1234 =
⑭ 0.25% of 6.16 =
⑮ 0.1% of 129,995 =

B	L	O	T	S	O	F	T	E	N	M	Y	E	S	T	O	K	R	M	O	O	N	E	E
0.	3	1	6	9	0.	0	1	5	4	3.	6	3.	7	5	4	6.	1	2	9.	9	9	5	8
Y	T	H	E	N	S	H	E	E	A	C	H	O	T	B	E	L	L	S	T	A	R	H	A
0.	9	1	4.	4	9	3	5	0.	2	1	8	7	5	8.	8	2.	0	5	2	6.	0	8	7
S	E	L	L	A	U	A	F	I	N	E	S	U	R	E	A	T	R	A	P	P	L	A	Y
9	1	9.	8	4	8	6	1	3	3.	7	5	1.	9	7.	9	9	5	5.	4	0	2	7	8
G	O	E	S	A	D	M	O	V	I	N	G	E	T	S	A	S	H	E	T	I	O	N	R
2.	4	1.	6	6	4	3	9	0.	6	9	5	5	7	0.	7	6	3.	3	7.	4	0	4	4

Why Do Lovers Go To Horror Movies?

TO ANSWER THIS QUESTION:

Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

RIDDLE MATH

HE SAID IT TO HIS SISTERS,
HE SAID IT TO HIS BROTHERS.
WHAT DID THE WITTY RAINDROP
EXCLAIM TO ALL THE OTHERS?

DIRECTIONS:

Use the information given in the chart to figure out the missing values, each of which is indicated by a letter. Round the values to the nearest cent. Find each answer in the code and write the corresponding letter above it.

ARTICLE ON SALE	ORIGINAL PRICE	PERCENT DISCOUNT	SALE PRICE	PERCENT SALES TAX	TOTAL AMOUNT
WATCH	$50	10%	D	6%	H
CALCULATOR	$45	25%	E	4%	Y
BICYCLE	$110	20%	U	5%	N
TYPEWRITER	$99.00	15%	W	6%	S
TENNIS RACKET	$59.90	10%	M	4%	R
TURNTABLE	$88.50	30%	A	$5\frac{1}{2}\%$	P
CAMERA	$78	$33\frac{1}{3}\%$	L	$4\frac{1}{2}\%$	T
CASSETTE DECK	$84.95	40%	O	5%	C

THE WITTY RAINDROP SAID:

$54.34 $84.15 $50.97 $89.20 $53.52 $50.97 $53.91 $65.36 $61.95 $92.40 $35.10

$61.95 $92.40 $45 $54.34 $47.70 $56.07 $33.75 $33.75 $89.20

$61.95 $53.52 $52 $50.97 $88 $45

HEXAGON CODE

Figure out the interest on any loan described below. Find your answer in the answer column and notice the design next to it. Each time this design appears in the coded message, write the letter of the exercise above it. Keep working and you will decode the message.

Ⓔ $500 for 1 year at 12% per year

Ⓐ $350 for 1 year at $10\frac{1}{2}\%$ per year

Ⓡ $975 for 1 year at 9% per year

Ⓣ $700 for 2 years at 10% per year

Ⓛ $1000 for $2\frac{1}{2}$ years at 8% per year

Ⓘ $375 for 3 years at 12% per year

Ⓞ $800 for $4\frac{1}{2}$ years at $6\frac{1}{4}\%$ per year

Ⓗ $150 for 3 months at 1% per month

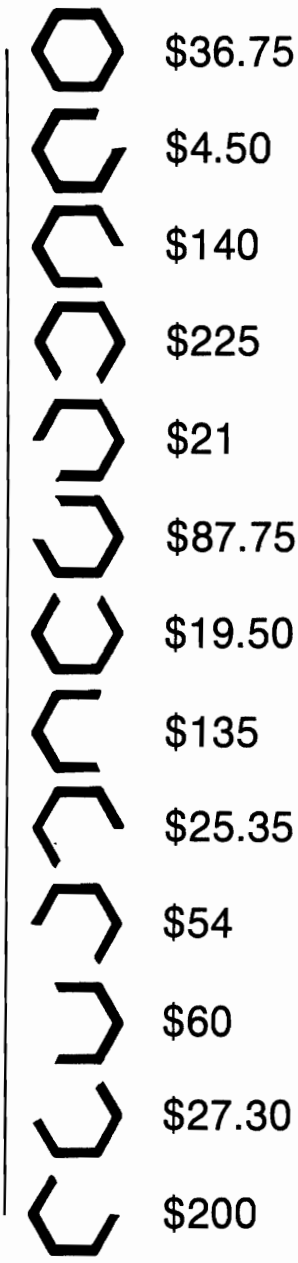
Ⓖ $600 for 6 months at $1\frac{1}{2}\%$ per month

Ⓒ $520 for 5 months at $\frac{3}{4}\%$ per month

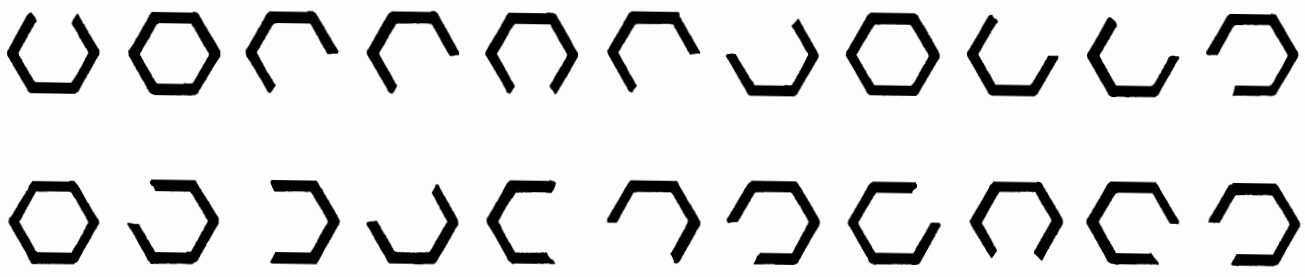
Ⓝ $845 for $1\frac{1}{2}$ months at 2% per month

Ⓢ $1200 for $3\frac{1}{2}$ months at $\frac{1}{2}\%$ per month

Ⓑ $182 for 10 months at $1\frac{1}{2}\%$ per month



CRYPTIC MESSAGE



Percents: Under 1—Over 100

Work any problem below and find your answer at the bottom of the page. Write the letter of the problem above it. Keep working and you will discover a message.

A certain grass seed is guaranteed to contain no more than 0.15% weed seed. What is the greatest amount of weed seed expected in a 450 gram box? ANSWER: grams	S
In the presidential election of 1888, only 0.8% of the popular votes separated the two candidates, Harrison and Cleveland. If 11,000,000 votes were cast, how many votes separated the candidates? ANSWER: votes	O
A steel rod expands 0.11% of its length when its temperature is increased 100°C. How much longer will a 75 centimeter steel rod become with this increase in temperature? ANSWER: centimeters	E
A certain fabric is guaranteed to shrink no more than 0.5 % when washed. What is the maximum amount of shrinkage expected for a piece 0.5 meters long? ANSWER: meters	I
An ore is 0.65% pure gold. How many grams of gold are there in 10,000 grams of ore? ANSWER: grams	S
A credit union lends money to its members at an interest rate of 0.75% per month. What is the interest charge each month on a loan of $3500? ANSWER: $	R
The profits of Burger Bonanza in a recent year were 125% of the profits in the previous year. If the profits in the previous year were $7000, what were the profits the next year? ANSWER: $	E
In 1901 the Olds company built 425 cars. The next year, using mass production methods, the company built 600% of those built in 1901. How many cars did the company build in 1902? ANSWER: cars	R
After 10 years, the price of a certain house was 205% of its original price. If the house originally sold for $30,000, what did it sell for 10 years later? ANSWER: $	A
Orgo borrowed $1700 to buy a used car. He had to pay back 133% of what he had borrowed. How much did he have to pay back? ANSWER: $	D
The human population of the world in the year 2000 is expected to be 160% of the population in 1975. If the population in 1975 was 4.01 billion, what is the population expected in 2000? ANSWER: billion	Q
The amount of money spent on education in the United States in 1977 was 650% of the amount spent in 1950. If $7.2 billion was spent in 1950, how much was spent in 1977? ANSWER: $ billion	W

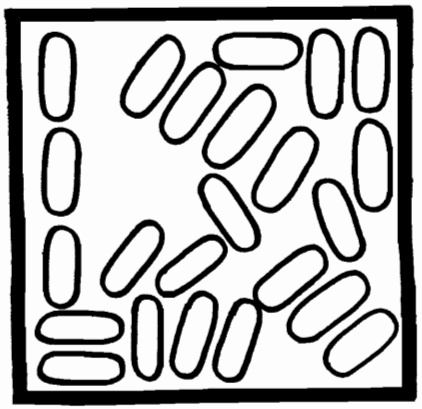
6.416	0.675	6.336	61,500	26.25	0.0825	49.8	46.8	8750	0.0025	2550	2261	2351	88,000	65

What is the Title of This Picture? ↘

CODED TITLE:

5 30 25 150 400 20 50 10 175 60 175 30 20 80 44 175 60 25

50 400 175 200 $33\frac{1}{3}$ 25 300 6 175 $66\frac{2}{3}$ 12 $66\frac{2}{3}$ 200 6 44 50 $66\frac{2}{3}$



TO DECODE THE TITLE OF THIS PICTURE, FOLLOW THESE INSTRUCTIONS:

Try to do these exercises mentally, using paper and pencil as little as possible. Do any exercise and find your answer in the coded title. Each time the answer appears, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE TITLE.

Ⓞ 20 is what % of 40?

Ⓔ 8 is what % of 32?

Ⓝ 15 is what % of 25?

Ⓜ 43 is what % of 430?

Ⓘ 9 is what % of 30?

Ⓤ 50 is what % of 25?

Ⓓ 75 is what % of 25?

Ⓕ 100 is what % of 25?

Ⓦ 3 is what % of 2?

Ⓟ 4 out of 5 is what %?

Ⓢ 10 out of 30 is what %?

Ⓛ 33 out of 75 is what %?

Ⓥ What % of 40 is 2?

Ⓐ What % of 4 is 7?

Ⓣ What % of 18 is 12?

Ⓗ There are 50 states in the United States. Six states are in New England. What percent are in New England?

Ⓡ An orchestra has 60 musicians. Twelve play woodwind instruments. What percent play woodwind instruments?

Ⓑ The average American produces 2000 pounds of trash per year. This includes 120 pounds of bottles. What percent of the trash is bottles?

MYSTERY MESSAGE

Work each problem and find your answers in the rectangle. Cross out each box that contains a correct answer. When you finish, there will be 8 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page. The mystery message will appear.

① 13 = ____% of 16
② 5 = ____% of 12
③ 11 = ____% of 8
④ 1 out of 45 = ____%
⑤ 7 out of 32 = ____%
⑥ 5 out of 6 = ____%
⑦ ____% of 250 = 750
⑧ ____% of 51 = 85
⑨ ____% of 42 = 34

⑩ Of 15 problems on a test, 13 were correct. What percent were correct?

⑪ Barbara made 58 out of 75 free throws. What percent did she make?

⑫ First year profits of a business were $900. Second year profits were $1200. What percent of the first year profits were the second year profits?

⑬ Men outnumber women in 5 out of the 50 states. In what percent of the states do women outnumber men?

⑭ The team won 16 games, lost 6 games, and tied 2 games. What percent of the games did they win?

⑮ The price of an item before tax was $48. The sales tax was $2.16. What percent tax was charged?

⑯ The player was at bat 200 times and made 61 hits. What percent were hits?

SO $2\frac{2}{9}\%$	**KI** $30\frac{1}{2}\%$	**LA** $166\frac{2}{3}\%$	**BA** $31\frac{3}{4}\%$	**LL** 90%	**ME** $41\frac{2}{3}\%$	**SS** $4\frac{1}{2}\%$	**KE** $4\frac{1}{3}\%$
AT $21\frac{7}{8}\%$	**EA** $86\frac{2}{3}\%$	**RS** $78\frac{1}{4}\%$	**KN** 175%	**OW** $77\frac{1}{3}\%$	**IT** $81\frac{1}{4}\%$	**ST** 300%	**EA** $42\frac{1}{4}\%$
MA $80\frac{20}{21}\%$	**DD** 145%	**ON** $83\frac{1}{3}\%$	**OU** $20\frac{1}{8}\%$	**TI** $66\frac{2}{3}\%$	**CH** $137\frac{1}{2}\%$	**GH** $81\frac{2}{3}\%$	**NG** $133\frac{1}{3}\%$

Did You Hear About . . .

A	B	C	D	E	F
G	H	I	J	K	L ?

DIRECTIONS: Do any exercise below. Find your answer in the answer column and notice the word next to it. Write this word in the box that has the same letter as that problem.

KEEP WORKING AND YOU WILL HEAR ABOUT SOMEBODY WHO STOLE AWAY.

Ⓐ The price of a hamburger at McBeef's increased from 50¢ to 60¢. What was the percent increase?

Ⓑ Fink's typing speed increased from 40 words per minute to 45 words per minute. What was the percent increase?

Ⓒ The number of crimes committed in Blinkville decreased from 10 crimes in May to only 4 crimes in June. What was the percent decrease?

Ⓓ The number of students attending Scholarly High School dropped from 1500 to 1300. What was the percent decrease?

Ⓔ A baby weighed 7.2 pounds at birth and 9.0 pounds at the age of one month. What was the percent increase?

Ⓕ During a sale, a 10-speed bike was marked down from $90 to $70. What was the percent discount?

Ⓖ Mr. Shift bought TNT stock at $30 per share and sold it at $45 per share. What was his percent profit?

Ⓗ Mr. Shaft bought IOU stock at $45 per share and sold it at $30 per share. What was his percent loss?

Ⓘ The estimated population of the world was 1.6 billion in 1900 and 4.0 billion in 1975. What was the percent increase?

Ⓙ To conserve energy a factory cut its use of electricity from 12,000 kilowatt-hours per month to 7000 kilowatt-hours per month. What was the percent decrease?

Ⓚ Orgo's salary jumped from $3.20 per hour to $3.40 per hour. What was his percent raise?

Ⓛ The number of subscribers to *Playperson* magazine rose from 400,000 to 1,300,000. What was the percent increase?

150%—AND
$13\frac{1}{3}$%—WHO
$37\frac{1}{2}$%—FAST
$22\frac{2}{9}$%—ON
$6\frac{1}{4}$%—A
$5\frac{1}{2}$%—FORTUNE
$33\frac{1}{3}$%—SCALE
20%—THE
$22\frac{3}{4}$%—DOWN
$43\frac{1}{3}$%—POUNDS
60%—ROBBER
$41\frac{2}{3}$%—GOT
50%—A
28%—TRIED
$12\frac{1}{2}$%—BANK
240%—BUCK
225%—WEIGH
162%—UNTIL
25%—STEPPED
55%—SOME

How's Business?

BOXER: "*Mine is* _____."

100 72 780 25 25 80 100 200

SAILOR: "*Mine is* _____."

36 90 60 50 130 40 198

TAXI DRIVER: "*Mine is* _____."

12 40 70 75 18 780 100 50 12 40 70 75

CIGAR MAKER: "*Mine is* _____."

70 75 40 72 72 24 40 198 70 40 25

EACH PERSON ABOVE IS ANSWERING THE QUESTION, "HOW'S BUSINESS?"
TO DECODE THEIR ANSWERS, FOLLOW THESE INSTRUCTIONS:

Do any exercise and find your answer in the code. Each time the answer appears, write the letter of that exercise above it. Keep working and you will decode the four punny answers.

Ⓗ 25% of what number is 50?
Ⓤ 10% of what number is 78?
Ⓑ 50% of what number is 65?
Ⓔ 20% of what number is 15?
Ⓘ 75% of what number is 60?
Ⓣ 90% of what number is 45?
Ⓞ 40% of what number is 24?
Ⓛ 100% of what number is 72?
Ⓚ 200% of what number is 72?
Ⓨ 300% of what number is 72?
Ⓙ 400% of what number is 72?
Ⓓ 99 is 50% of what number?
Ⓡ 105 is 150% of what number?
Ⓕ 30 is 250% of what number?
Ⓝ 72 is 80% of what number?
Ⓖ 125 is 500% of what number?
Ⓐ 2 is 5 % of what number?
Ⓢ 77 is 77% of what number?

Cryptic Quiz

1. WHO INVENTED THE FIRST AIRPLANE THAT DIDN'T FLY?

ANSWER: _____

800 40 400 15 350 30,000 3500 134

_____

25 350 30,000 800 40 400 350 6

2. WHAT HAPPENED TO THE GUY WHO LOST THE PIE-EATING CONTEST?

ANSWER: _____

40 400 2000 300 50,000 400 3080 3500

_____

6 3080 2000 120 400 3500 400 2275

TO DECODE THE ANSWERS TO THESE TWO QUESTIONS:

Work any problem below and find your answer in the code. Each time the answer appears, write the letter of that problem above it. Keep working and you will decode the two answers.

Ⓐ 15% of _____ = 45

Ⓣ 560 = 70% of _____

Ⓓ 8% of _____ = 182

Ⓗ 72 = 180% of _____

Ⓖ 150% of _____ = 201

Ⓘ 2772 = 90% of _____

Ⓜ 0.5% of _____ = 250

Ⓦ 6.75 = 45% of _____

Ⓢ 225% of _____ = 13.5

Ⓚ $9 = 7\frac{1}{2}\%$ of _____

Ⓞ A salesman earns 5% of his sales as a commission. How much does he have to sell to earn $1500?

ANSWER: $_____

Ⓑ A certain type of fertilizer contains 8% nitrogen. If 2 kilograms of nitrogen are needed to fertilize a lawn, how many kilograms of fertilizer are needed?

ANSWER: _____kilograms

Ⓝ Profits of Calculess Corporation this year were 140% of profits last year. If profits this year were $4900, what were profits last year?

ANSWER: $_____

Ⓒ An ore is $1\frac{1}{2}\%$ pure silver. How much ore is needed to obtain 30 kilograms of silver?

ANSWER: _____kilograms

Ⓔ Safe Side Savings and Loan pays $5\frac{1}{4}\%$ interest per year on savings. How much money must be put into an account to earn $21 annually?

ANSWER: $_____

Ⓡ A scale drawing of an elephant is 1% of actual size. If the drawing is 3.5 centimeters high, what is the actual height of the elephant?

ANSWER: _____centimeters

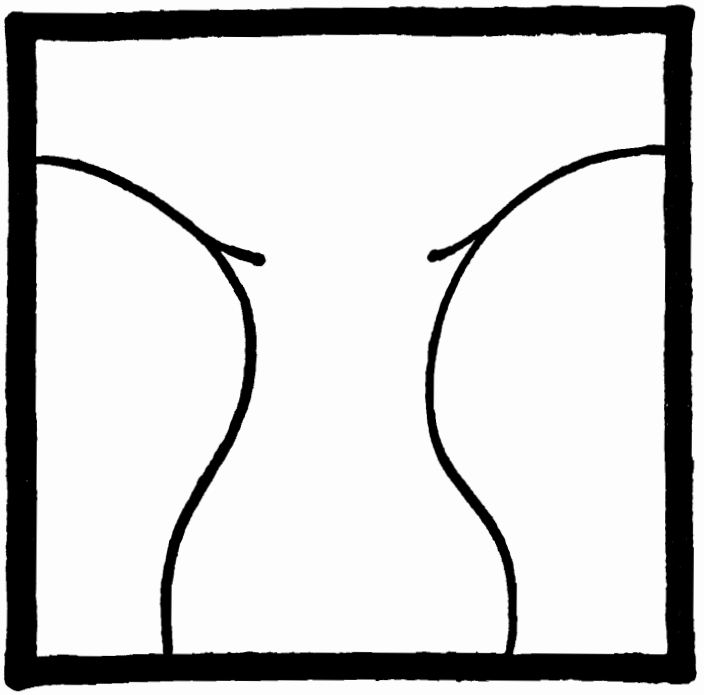
What is the Title of This Picture?

CODED TITLE:

99 6.9 11.96 11.5 72 11.5 89 50 11.9 85 99 20.4

85 11.96 99 11.96 85 20.4 89 11.5 11.9 12 75 85 4

99 11.5 30 24 20.4



TO DECODE THE TITLE OF THIS PICTURE:

Figure out what number should go in the blank in any exercise below. Each time this number appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE TITLE.

Ⓞ 23% of 52 = _____

Ⓡ 12 = _____% of 40

Ⓛ 25% of _____ = 18

Ⓢ 6% of 340 = _____

Ⓘ 15 = _____% of 20

Ⓗ 9% of _____ = 4.5

Ⓐ 70% of 17 = _____

Ⓖ 12 = _____% of 300

Ⓜ 55% of _____ = 13.2

Ⓦ 92% of 7.5 = _____

Ⓝ 51 out of 60 = _____%

Ⓚ 67% of _____ = 8.04

Ⓔ 1% of 1150 = _____

Ⓟ 89 out of 100 = _____%

Ⓣ 50% of _____ = 49.5

Career Information

INFORMATION ABOUT A CERTAIN CAREER IS GIVEN IN CODE AT THE BOTTOM OF THE PAGE. TO DECODE:

Figure out what number should go in the blank in any exercise below. Find your answer in the answer columns and notice the number next to it. Each time this number appears in the code, write the letter of the exercise above it. Keep working and you will decode this important career information.

Ⓚ 70% of 280 = ____

Ⓨ 9 out of 20 = ____ %

Ⓞ 15% of ____ = 30

Ⓐ 7% of 64 = ____

Ⓧ 1 out of 6 = ____ %

Ⓘ 75% of ____ = 39

Ⓢ 150% of 96 = ____

Ⓓ 8 out of 15 = ____ %

Ⓡ 2% of ____ = 9

Ⓒ $5\frac{1}{2}$ % of 800 = ____

Ⓛ 12 = ____ % of 160

Ⓥ 99 = 110% of ____

Ⓗ 0.1% of 880 = ____

Ⓣ 14 = ____ % of 8

Ⓦ 48 = 16% of ____

Ⓔ $37\frac{1}{2}$ % of 6 = ____

Ⓟ 3.5 = ____ % of 28

Ⓝ 7 = 400% of ____

ANSWERS

① 90
② 4.48
③ 450
④ 196
⑤ $12\frac{1}{2}$
⑥ 144
⑦ 0.88
⑧ $16\frac{2}{3}$
⑨ 2.25
⑩ 45
⑪ $7\frac{1}{2}$
⑫ 52
⑬ $53\frac{1}{3}$
⑭ 300
⑮ 1.75
⑯ 200
⑰ 175
⑱ 44

7——16——17——9——11——14——16——3——4——9——3——6——2——3——9——1——9——3——10

12——15——15——9——8——5——9——3——12——9——15——18——9——13

What Do You Call a Knife That Cuts Four Loaves of Bread at Once?

Work any problem below and find your answer in the answer column. Notice the letter next to it. This letter goes in each box at the bottom of the page that contains the problem number.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.

① A person standing on Mars would weigh 38% of his earth weight. What is the Mars weight of a person with an earth weight of 55 kilograms?

② If a person who weighs 70 kilograms has a brain that weighs 1.4 kilograms, what percent of the person's body weight is brain?

③ Students at one school sell magazine subscriptions to raise money for athletic equipment. The school keeps 20% of sales. How many dollars' worth of subscriptions must be sold to make $1500?

④ A ship model is 0.5% of actual size. If the model is 1 meter long, what is the actual length of the ship?

⑤ *Escape velocity* is the speed necessary to escape the gravitational pull of a planet. The escape velocity of Earth is 11.3 kilometers per second, while the escape velocity of Saturn is 310% of that. What is the escape velocity of Saturn?

⑥ The body of a person who weighs 50 kilograms consists of 32.5 kilograms of oxygen, 9 kilograms of carbon, 5 kilograms of hydrogen, and 3.5 kilograms of other elements. What percent of the person's body weight is oxygen?

⑦ Of the babies born in America 51.2% are boys. If 3000 babies are born in a certain hospital this year, what is the expected number of boys?

⑧ A salesman keeps 8% of his sales as a commission. How much does he have to sell to earn $20,000?

⑨ Mr. D.J. Average bought a stock at $30 per share and sold it at $37 per share. What percent profit did he make?

Ⓐ	250 m
Ⓒ	35.03 kps
Ⓘ	$400,000
Ⓞ	$7500
Ⓢ	21.4 kg
Ⓔ	20.9 kg
Ⓐ	$250,000
Ⓢ	1556
Ⓛ	$23\frac{1}{3}\%$
Ⓘ	$7000
Ⓥ	65%
Ⓡ	2%
Ⓣ	34.23 kps
Ⓖ	21%
Ⓓ	60%
Ⓤ	200 m
Ⓕ	1536

8	7	3	4	2	9	3	8	7	5	9	1	8	6	1	2

How Did the Dinosaur Feel Just Before the Big Math Test?

Work each problem and select the correct answer from the two choices given. Write the letter of the correct choice in each box at the bottom of the page that contains the problem number.

1	A "day" on Saturn is 42.6% of a day on earth. How many hours are there in a day on Saturn?	(N) 10.224 hours (L) 11.124 hours
2	In the presidential election of 1860, 39.9% of the voters voted for Abraham Lincoln and 29.4% of the voters voted for Stephen Douglas. What percent voted for other candidates?	(K) 32.7% (U) 30.7%
3	Bowser's dog food is 40% meat. How much dog food must Bowser eat in order to get $1\frac{1}{2}$ kilograms of meat?	(E) 3.7 kilograms (A) 3.75 kilograms
4	Tropical Trip punch is made by mixing 4 liters of pineapple juice, 5 liters of orange juice, and 3 liters of ginger ale. What percent of Tropical Trip is orange juice?	(W) 41.7% (C) 40.3%
5	Mr. J. Doe has a taxable income of $9000. If the income tax rate is 16% on the first $4000 of income, 19% on the next $4000, and 22% on the next $1000, how much is Mr. Doe's tax?	(T) $1580 (H) $1620
6	The human body is 65% oxygen, 18% carbon, 10% hydrogen, 3% nitrogen, $1\frac{1}{2}$% calcium, and 1% phosphorus; the rest is other elements. What percent is composed of other elements?	(O) 1.5% (L) 4.5%
7	Magnificent Marble Makers make red marbles, white marbles, and blue marbles. One week they made 45% red marbles, 17% white marbles, and the rest blue marbles. If they made 456 blue marbles, how many marbles did they make in all?	(X) 1200 (F) 1050
8	Suzi Everthrift spent 20% of her savings, but still had $26. How much money had Suzi saved originally?	(S) $32.50 (R) 31.00
9	Osgood missed 8 out of 30 problems on a math test. What percent of the problems did he get correct?	(M) 75.6% (V) 73.3%
10	The Stegosaurus dinosaur weighed about 2000 kilograms. The weight of his brain was only 0.004% of the weight of his body. How much did the Stegosaurus brain weigh?	(E) 0.08 kilograms (I) 0.8 kilograms
11	Herman Buckets made 19 field goals in 32 attempts. What was his shooting percentage?	(T) 59.9% (R) 59.4%

5	10	4	3	8	3	1	10	11	9	6	2	8	11	10	7

What Did The Girl Rock Say To The Boy Rock?

Find the answer to any question below in the code key. Notice the letter next to it. Print this letter in the box at the bottom of the page that contains the problem number. Keep working and you will discover the answer to the title question.

① If a coin is tossed, what is the probability of getting a head?

② If a coin is tossed, what is the probability of getting a tail?

③ Suppose a coin is tossed 100 times. About how many times would you expect to get heads?

Suppose you roll a regular 6-faced die. What is the probability of rolling:

④ a 6? ⑤ a 2? ⑥ a 4?

⑦ Suppose you roll a 6-faced die 90 times. About how many times would you expect to get a 5?

Suppose a jar contains 5 red marbles, 4 white marbles, and 3 blue marbles. If a marble is drawn at random from the jar, what is the probability that it is:

⑧ red? ⑨ white? ⑩ blue?

A spinner is pictured at the right. If the arrow is spun, what is the probability that the spinner lands on:

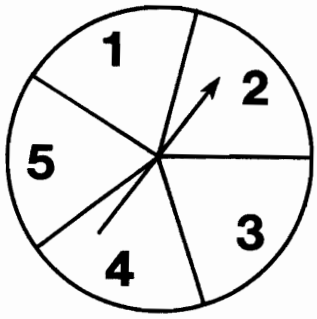
⑪ 2?

⑫ 3?

⑬ 5?

⑭ an even number?

⑮ a number less than 3?



⑯ Suppose the arrow is spun 50 times. About how many times would you expect the spinner to land on an odd number?

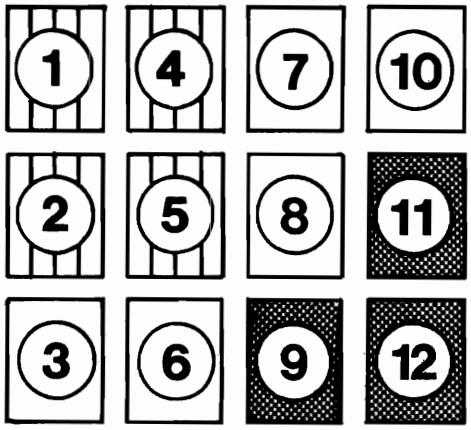
CODE KEY	
$\frac{5}{12}$	R
$\frac{1}{2}$	T
30	D
$\frac{1}{4}$	I
50	O
$\frac{2}{5}$	B
15	A
$\frac{1}{3}$	U
$\frac{1}{6}$	E
$\frac{1}{5}$	L

14	5	7	13	10	2	1	11	4	15	3	9	12	16	6	8

Why Are Oysters Greedy?

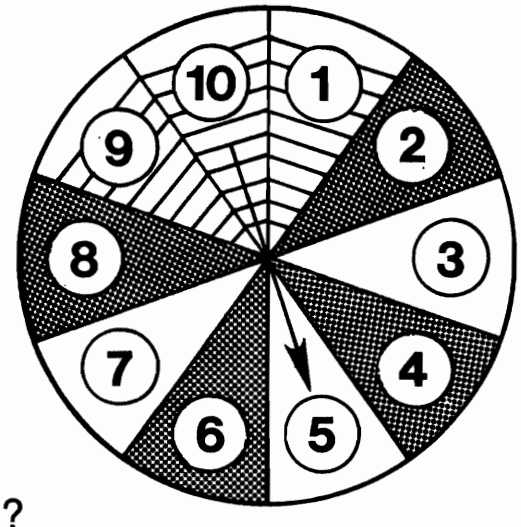
Find the answer to any question below in the boxes at the bottom of the page. Write the letter of that question in the box above its correct answer. Keep working and you will discover the answer to the title question.

Suppose that a card is drawn at random from the 12 cards shown at the right. What is the probability that the card is:



Ⓔ striped?
Ⓣ shaded?
Ⓘ white?
Ⓔ numbered 10?
Ⓛ either striped or shaded?
Ⓔ either white or striped?
Ⓢ either white or numbered 5?
Ⓡ either numbered 3 or numbered 9?

A spinner is shown at the right. If the arrow is spun, what is the probability that it will stop on a region that is:



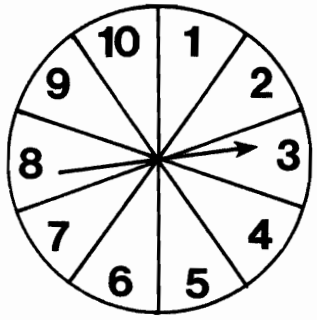
Ⓗ striped?
Ⓛ either white or shaded?
Ⓐ either striped or numbered 7?
Ⓨ either numbered 6 or numbered 3?
Ⓢ numbered 4?
Ⓗ not numbered 4?
Ⓕ not shaded?
Ⓗ either striped or shaded or numbered 7?

$\frac{1}{4}$	$\frac{3}{10}$	$\frac{1}{12}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{1}{6}$	$\frac{3}{4}$	$\frac{1}{10}$	$\frac{4}{5}$	$\frac{1}{3}$	$\frac{7}{10}$	$\frac{7}{12}$	$\frac{3}{5}$	$\frac{5}{12}$	$\frac{1}{2}$	$\frac{9}{10}$

What Is Long And Yellow And Never Rings?

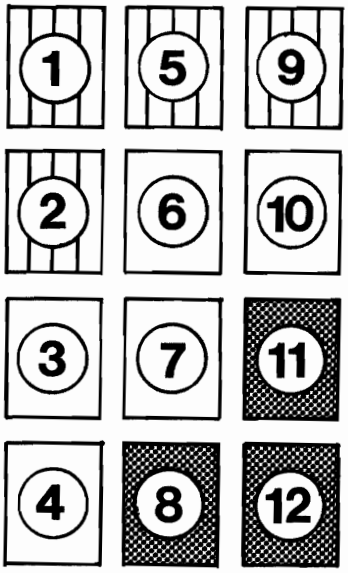
Find the answer to any question below in the boxes at the bottom of the page. Write the letter of that question in the box above its correct answer. Keep working and you will discover the answer to the title question.

A spinner is shown at the right. If the arrow is spun, what is the probability that it will stop on:



(E) a multiple of 3?
(N) a multiple of 2?
(A) a multiple of 3 *and* a multiple of 2?
(I) a multiple of 3 *or* a multiple of 2?

Suppose that one card is drawn at random from the 12 cards shown at the right. What is the probability that the card is:



(A) white?
(N) numbered with a multiple of 3?
(D) white *and* numbered with a multiple of 3?
(N) white *or* numbered with a multiple of 3?
(T) shaded?
(A) numbered with a number less than 10?
(N) shaded *and* numbered with a number less than 10?
(U) shaded *or* numbered with a number less than 10?

Pink and Purple Car Company owns the following cars: 1 pink Ford, 4 pink Chevrolets, 5 purple Fords, and 3 purple Chevrolets. If one of these cars is chosen at random, what is the probability that it is:

(A) a Ford?
(S) pink?
(B) pink *and* a Ford?
(L) pink *or* a Ford?

	PINK	PURPLE
FORD	1	5
CHEVROLET	4	3

$\frac{1}{10}$	$\frac{7}{12}$	$\frac{11}{12}$	$\frac{1}{3}$	$\frac{10}{13}$	$\frac{7}{10}$	$\frac{5}{13}$	$\frac{1}{4}$	$\frac{3}{10}$	$\frac{1}{6}$	$\frac{1}{13}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{6}{13}$	$\frac{1}{12}$	$\frac{5}{12}$

What Did The Electrician Say When His Son Came Home Late?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS: This puzzle contains 15 blocks of information and questions, called *FRAMES*. Read the frames in order. For each frame, select the correct answer from the two choices given. Write the letter of the correct choice in the box at the bottom of page 2 that contains the frame number.

1

Suppose you toss two coins at the same time. There is a certain probability of getting two heads. Or, suppose you roll two dice. There is a certain probability of getting a total of 7. This puzzle will help you figure out these probabilities.

First, let's consider tossing coins. How many outcomes are possible if you toss one coin?

(I) 2 outcomes (R) 4 outcomes

2

The answer to the first frame is, of course, *2 outcomes*. If you toss one coin, you get either a head or a tail. Each of these outcomes is *EQUALLY LIKELY*—that is, each will happen about as often as the other.

When you toss a coin, the probability of getting a head is 1 out of 2, or:

(E) $\frac{1}{2}$ (L) $\frac{1}{3}$

3

Suppose you toss a penny and a dime together. How many *EQUALLY LIKELY* outcomes are there? You might guess there are three: 2 heads; 2 tails; 1 head and 1 tail. This is incorrect. Actually, there are *FOUR* equally likely outcomes. They are listed at the right.

PENNY	DIME
heads	heads
tails	tails
heads	tails
tails	heads

Now, answer the question. How many equally likely outcomes are there when you toss a penny and a dime?

(A) 5 (S) 4

4

One outcome is getting 2 heads. Another outcome is getting 2 tails. The third outcome is getting penny heads and dime tails. The fourth outcome is getting penny tails and dime heads.

Since getting two heads is 1 of 4 equally likely outcomes, what is the probability of getting two heads?

(I) $\frac{1}{4}$ (M) $\frac{1}{2}$

5

What is the probability of getting two tails? (S) $\frac{1}{5}$ (E) $\frac{1}{4}$

6

The answer to both questions 4 and 5 is, of course, $\frac{1}{4}$. Now, what is the probability of getting 1 head and 1 tail? Remember, there are *TWO WAYS* to do this: penny heads and dime tails; penny tails and dime heads. So the probability is 2 out of 4, or:

(E) $\frac{1}{5}$ (O) $\frac{1}{2}$

7

If the probability of getting 1 head and 1 tail is $\frac{1}{2}$, then if you toss 2 coins together 100 times, about how many times would you expect to get 1 head and 1 tail?

(T) 30 (A) 50

8 The method we used for the coin problem has two steps: (1) listing all equally likely outcomes; and (2) seeing how many of these outcomes are in the *EVENT* we are talking about. An *EVENT* is a certain subset of outcomes, like getting 1 head and 1 tail.

Let's apply this method to dice rolling. How many equally likely outcomes are there if you roll 1 regular 6-faced die?

(U) 6 (R) 4

9 Suppose you roll two dice, 1 red and 1 green. We can make a chart to see all equally likely outcomes. This chart is at the right. The first number in each pair is on the red die; the second number is on the green die.

By counting the number of pairs, you discover how many equally likely outcomes there are. How many are there?

(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

(S) 32 (Y) 36

10 Usually when you roll two dice, you are interested in the SUM of the two numbers you get. For example, red 1 and green 4 adds up to 5. But there are actually *FOUR* different ways to get a sum of 5: (red 1, green 4); (red 2, green 3); (red 3, green 2); (red 4, green 1).

So, of the 36 equally likely outcomes, four of them are sums of 5. The probability of getting 5 is 4 out of 36, or:

(T) $\frac{1}{9}$ (R) $\frac{1}{7}$

11 There is only one way to get a sum of 2. (Both dice have to come up 1.) So the probability of getting 2 is:

(L) $\frac{1}{36}$ (H) $\frac{5}{36}$

12 How many of the 36 outcomes are sums of 10? The probability of getting 10 is:

(F) $\frac{1}{6}$ (N) $\frac{1}{12}$

13 The probability of getting 8 is: (R) $\frac{5}{36}$ (T) $\frac{7}{36}$

14 The probability of getting 7 is: (F) $\frac{1}{4}$ (W) $\frac{1}{6}$

15 The method we used for both the coin problem and the dice problem has two steps. These two steps are: (1) listing all equally likely outcomes; and (2) seeing how many of those outcomes are:

(U) in the event we are talking about.

(G) not in the event we are talking about.

14	1	13	2	9	6	8	4	12	3	15	11	7	10	5	?

Why Don't We Wear Paper Clothes?

Find the answer to any question below in the code key. Notice the letter next to it. Print this letter in the box at the bottom of the page that contains the problem number. Keep working and you will discover the answer to the title question.

CODE KEY

$\frac{1}{4}$	B
$\frac{1}{2}$	R
$\frac{1}{8}$	E
$\frac{6}{25}$	T
$\frac{4}{25}$	H
$\frac{3}{5}$	Y
$\frac{1}{16}$	A
$\frac{9}{25}$	L

Suppose a coin is tossed 3 times. What is the probability of:

① getting 3 heads?

② getting 3 tails?

③ getting *ANY* particular outcome (such as head, tail, tail)?

Suppose a coin is tossed 4 times. What is the probability of:

④ getting 4 heads?

⑤ getting any particular outcome?

⑥ Suppose you toss a coin 4 times and get 4 heads. What is the probability of getting a head on the 5th toss?

⑦ Suppose you toss a coin 10 times and get 10 tails. What is the probability of getting a tail on the 11th toss?

⑧ Suppose a jar contains 3 red marbles and 2 white marbles. If a marble is drawn at random, what is the probability it is red?

Suppose a jar contains 3 red marbles and 2 white marbles. If one marble is drawn at random, then replaced, and then another marble is drawn at random, what is the probability of:

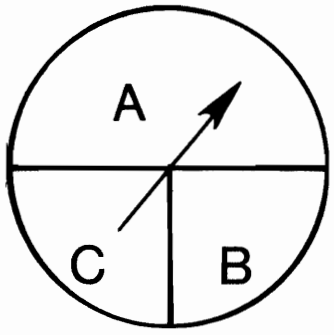
⑨ drawing a red marble on both draws?

⑩ drawing a red marble, then a white marble?

⑪ drawing a white marble on both draws?

⑫ drawing a white marble, then a red marble?

The spinner at the right is designed so that $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{4}$, and $P(C) = \frac{1}{4}$. If the arrow is spun twice, what is the probability of the spinner landing on:



⑬ A on both spins?

⑭ A, then B?

⑮ B on both spins?

10	11	3	8	5	6	1	12	14	4	7	15	13	9	2

ON THE BUTTON

TO DECODE THE BUTTON:

Solve any equation at the right and find the solution around the rim of the button. Each time the solution appears on the button, write the letter of that equation above the solution. Keep working and you will decode the button.

Ⓔ $4! = n$

Ⓐ $5! = n$

Ⓝ $7! = n$

Ⓘ $3!\,4! = n$

Ⓢ $2!\,5! = n$

Ⓡ $6 \cdot 5! = n!$

Ⓗ $11 \cdot 10! = n!$

Ⓛ $9 \cdot 8 \cdot 7! = n!$

Ⓤ $\frac{5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{3 \cdot 2 \cdot 1} = n$

Ⓜ $\frac{6!}{4!} = n$

Ⓣ $\frac{7!}{6!} = n$

Ⓕ $\frac{8!}{5!} = n$

Ⓞ $\frac{6!}{4!\,2!} = n$

Ⓩ $\frac{9!}{6!\,3!} = n$

Ⓦ $\frac{7!}{2!\,5!} = n$

Ⓓ $\frac{5!}{3!\,2!} = n$

CODE LINE

DIRECTIONS:

Figure out the answer to any question below. Then find your answer in the coded line at the bottom of the page.

Each time the answer appears in the code, write the letter of that question above it.

KEEP WORKING AND YOU WILL DECODE THE LINE.

Ⓐ How many arrangements of the letters M, A, T, and H are possible if each letter can be used only once in each arrangement?

Ⓢ Six people are to be seated in a row of six chairs. How many different seating arrangements are possible?

Ⓓ There are 3 roads connecting Towns A and B, and 4 roads connecting Towns B and C. How many different routes are there from Town A to Town C?

Ⓞ The GT Dragger offers 5 different engines, 4 different paint jobs, and 2 different radios. How many different "packages" are possible?

Ⓘ How many different batting orders are possible for the 9 men on a baseball team?

Ⓥ Orgo has 5 pairs of pants, 6 sport shirts, and 3 belts. How many different outfits can he make using these items?

Ⓛ How many different 2-letter arrangements can be selected from the set {S,H,A,R,K}?

Ⓟ How many 3-letter arrangements are possible using the 26 letters of the alphabet if no letter can be used more than once?

Ⓡ If a school offers 9 different subjects, how many different schedules of 5 classes are possible?

Ⓒ In how many different ways can a president, vice president, and secretary be elected from a class of 22 students?

Ⓔ How many different 4-digit numerals are there? (Hint: zero cannot be used as the first digit.)

TITLE: BIG DRIPS

362,880 9240 362,880 9240 20 9000 720 24 15,120 9000

9000 24 90 9000 720 12 15,120 40 15,600 15,600 9000 15,120 720

Combination Code

Figure out the number of COMBINATIONS for any problem below. Find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter of that problem above it. Keep working and you will decode the message.

Ⓡ 5 objects taken 3 at a time
Ⓞ 4 objects taken 2 at a time
Ⓔ 6 objects taken 4 at a time
Ⓣ 7 objects taken 2 at a time
Ⓛ 5 objects taken 5 at a time
Ⓓ 9 objects taken 6 at a time

Ⓝ How many committees of 3 members can be formed from 6 people?

Ⓢ How many committees of 2 members can be formed from 8 people?

Ⓖ A student must work any 4 of the 5 problems on a math quiz. How many different selections of problems can be made?

Ⓘ A basketball team has 8 players. How many different 5-man teams are possible if each player can play any position?

Ⓟ Thumba likes to wear 2 rings, one on each thumb. If she has 9 rings to choose from, how many combinations are possible?

Ⓕ Gorgeous Gertrude has 7 boy friends. If she can see only 3 of them on a weekend, how many different combinations could she see?

Ⓒ A student may choose to read any 4 books from a list of 8 books. How many choices does the student have?

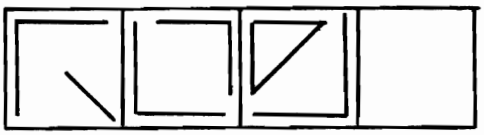
Ⓗ In the year 2525, astronauts Milky and Way are blasting around the solar system. If they decide to visit 5 of the 9 planets, how many different selections could they make?

Ⓐ Mergatroid has just enough money to buy 2 candy bars. If there are 10 kinds to choose from, how many choices does she have?

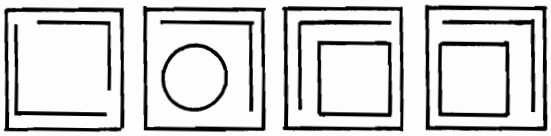
TITLE: EVEN ODDS

70-6-56-20-35-1-56-36-36-15-10-28-70-45-20-5-15-21-45-126-15-45-84

Test of Genius

① 

Which of the four figures below should go in the empty box above?



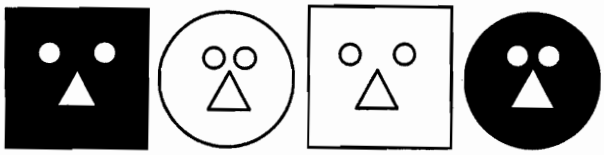
② Tom, Dick, and Harry work in a bank. One is the manager, one is the cashier, and one is the teller.

The teller, who was an only child, earns the least.

Harry, who married Tom's sister, earns more than the manager.

What position does each man fill?

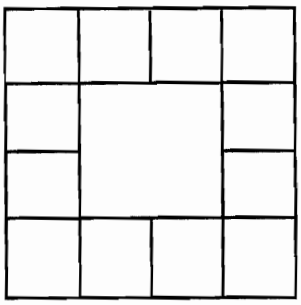
③ Two boys weighing 100 pounds each and a man weighing 200 pounds wish to cross a river. Their boat will hold only 200 pounds safely. How can they cross the river in the boat?

④ 

You have your choice of one of the four pets above. You are told that white squares eat more than white circles, black squares eat more than white squares, and black squares eat less than black circles. Which pet would be cheapest to feed?

⑤ Arrange nine dots in such a way that you have 8 rows with 3 dots in each row.

⑥ Try to put the numbers 1 to 12 in the twelve boxes below so that the numbers along each side add to 26.

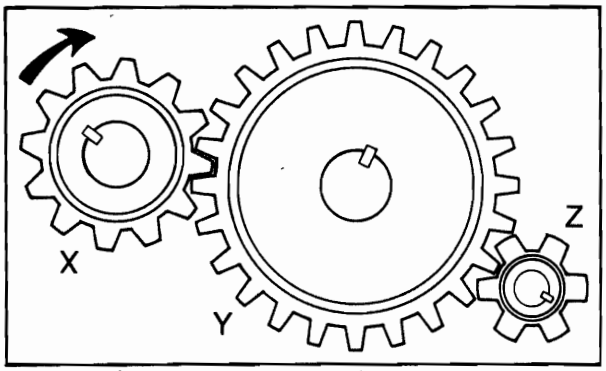


⑦ A clock takes 4 seconds to strike 5 o'clock. How long will it take to strike 10 o'clock? *(Hint: The answer is not 8 seconds.)*

⑧ John, Jack, Jim, and Joe all decided to take up horseback riding. Jim went twice as many times as Jack, and John went four more times than Joe but three less times than Jim. Joe went 15 times altogether. How many times did Jack go?

⑨ Gear X has 12 cogs (teeth) and turns clockwise at 30 revolutions per minute. Gear Y has 24 cogs and gear Z has 6 cogs.

How fast and in which direction does gear Z turn?



SCORING KEY

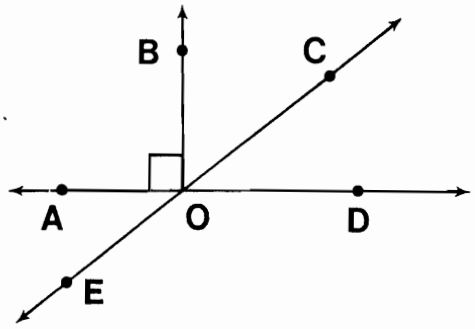
8 or 9 -- *Superstar Genius*
6 or 7 -- *Star Genius*
4 or 5 -- *Genius*
3 or less -- *Genius of the Future*

Why is a Leaky Faucet Like a Race Horse?

TO ANSWER THE IMPORTANT QUESTION ABOVE:

Complete any statement below with one of the answers given at the bottom of the page. Then write the letter of the statement above its correct answer.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER.



Ⓐ The figure formed by two rays with the same endpoint is an _____.

Ⓘ The basic unit by which angles are measured is the _____.

Ⓝ The intersection of the two sides of an angle is called the angle's _____.

Ⓞ The small box at the vertex of ∠AOB indicates that ∠AOB measures _____.

Ⓤ An angle with a measure of 90° is called a _____ angle.

Ⓢ Point C is in the _____ of ∠BOD.

Ⓝ An angle whose measure is between 90° and 180° is an _____ angle.

Ⓖ Two angles whose measures have a sum of 90° are _____ angles.

Ⓣ ∠BOC and ∠BOA are _____ angles.

Ⓝ Two angles whose measures have a sum of 180° are _____ angles.

Ⓓ An angle whose measure is between 0° and 90° is an _____ angle.

Ⓕ ∠AOE and _____ are supplementary angles.

Ⓘ ∠COD and _____ are complementary angles.

Ⓝ Two angles having the same measure are said to be _____.

Ⓕ ∠COD and ∠AOE are congruent because they are _____ angles.

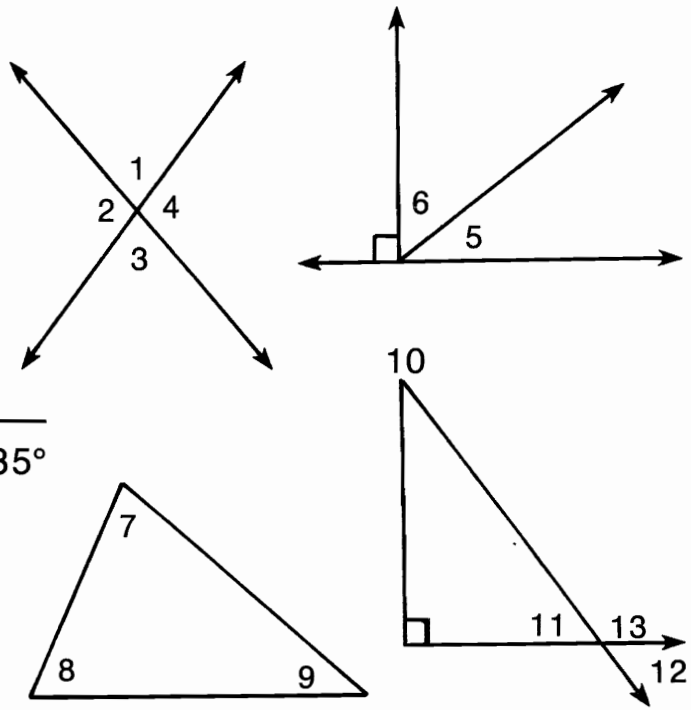
Ⓡ The two rays that form an angle are called the _____ of the angle.

DEGREE	ADJACENT	INTERIOR	90°	∠EOD	VERTICAL	ANGLE	OBTUSE	ACUTE	SIDES	RIGHT	CONGRUENT	SUPPLEMENTARY	∠BOC	VERTEX	COMPLEMENTARY

Cryptic Quiz

TO DECODE THE ANSWERS TO THESE TWO QUESTIONS:

Figure out the measure of the unknown angle in any exercise. Then find this measure in the code. Each time it appears, write the letter of that exercise above it. Keep working and you will decode both answers.



1. WHAT IS ROUND AND VERY DANGEROUS?

_____

112° 62° 120° 40° 120° 53° 45° 76° 40° 120° 104° 40° 54° 35°

2. WHAT HAS FIFTY LEGS BUT CAN'T WALK?

_____

65° 112° 54° 60° 112° 40° 35° 119° 127° 120° 74° 35° 43° 35°

Ⓢ IF m∠1 = 76°, THEN m∠3 =

Ⓡ IF m∠1 = 76°, THEN m∠2 =

Ⓐ IF m∠2 = 112°, THEN m∠4 =

Ⓝ IF m∠3 = 61°, THEN m∠4 =

Ⓞ IF m∠11 = 53°, THEN m∠12 =

Ⓣ IF m∠11 = 53°, THEN m∠13 =

Ⓛ IF m∠5 = 36°, THEN m∠6 =

Ⓤ IF m∠6 = 45°, THEN m∠5 =

Ⓓ IF m∠7 = 73° AND m∠8 = 64°, THEN m∠9 =

Ⓟ IF m∠8 = 57° AND m∠9 = 49°, THEN m∠7 =

Ⓗ IF m∠7 = 80° AND m∠9 = 35°, THEN m∠8 =

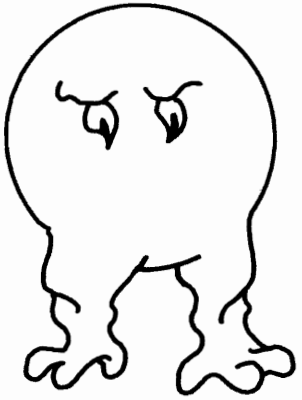
Ⓥ IF m∠10 = 28°, THEN m∠11 =

Ⓔ IF m∠11 = 55°, THEN m∠10 =

Ⓕ IF m∠10 = 30°, THEN m∠12 =

Ⓘ IF m∠10 = 30°, THEN m∠13 =

Ⓒ IF m∠13 = 130°, THEN m∠10 =



Daffynition Decoder

TO DECODE THESE THREE DAFFYNITIONS, FOLLOW THESE DIRECTIONS:

Figure out the measure of the unknown angle in any exercise. Then find this measure in the code. Each time it appears, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE THREE DE-FUN-ITIONS.

RAINCOAT: _____

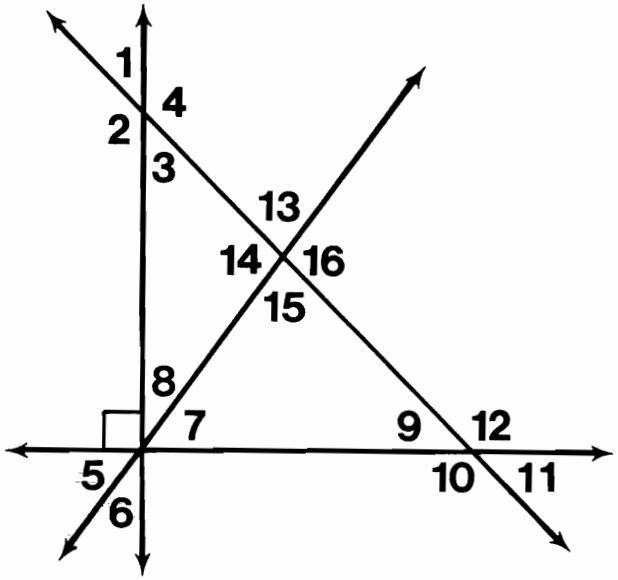
40°	80°	132°	35°	95°	90°	48°	66°	90°	36°	48°

PASTEURIZE: _____

40°	130°	130°	105°	36°	48°	40°	130°	30°	90°	90°

WILL: _____

36°	95°	90°	36°	95°	55°	33°	50°	90°	36°	66°	36°	31°



Ⓡ IF m∠1 = 48°, THEN m∠3 = ___

Ⓤ IF m∠1 = 48°, THEN m∠4 = ___

Ⓥ IF m∠6 = 40°, THEN m∠5 = ___

Ⓐ IF m∠7 = 54°, THEN m∠8 = ___

Ⓨ IF m∠7 = 59°, THEN m∠6 = ___

Ⓘ IF m∠5 = 57°, THEN m∠8 = ___

Ⓣ IF m∠3 = 50°, THEN m∠9 = ___

Ⓢ IF m∠12 = 120°, THEN m∠3 = ___

Ⓗ IF m∠7 = 55° AND m∠9 = 45°, THEN m∠15 = ___

Ⓝ IF m∠3 = 46° AND m∠14 = 99°, THEN m∠8 = ___

Ⓦ IF m∠9 = 29° AND m∠15 = 85°, THEN m∠7 = ___

Ⓕ IF m∠8 = 37° AND m∠3 = 38°, THEN m∠14 = ___

Ⓞ IF m∠7 = 40° AND m∠15 = 90°, THEN m∠12 = ___

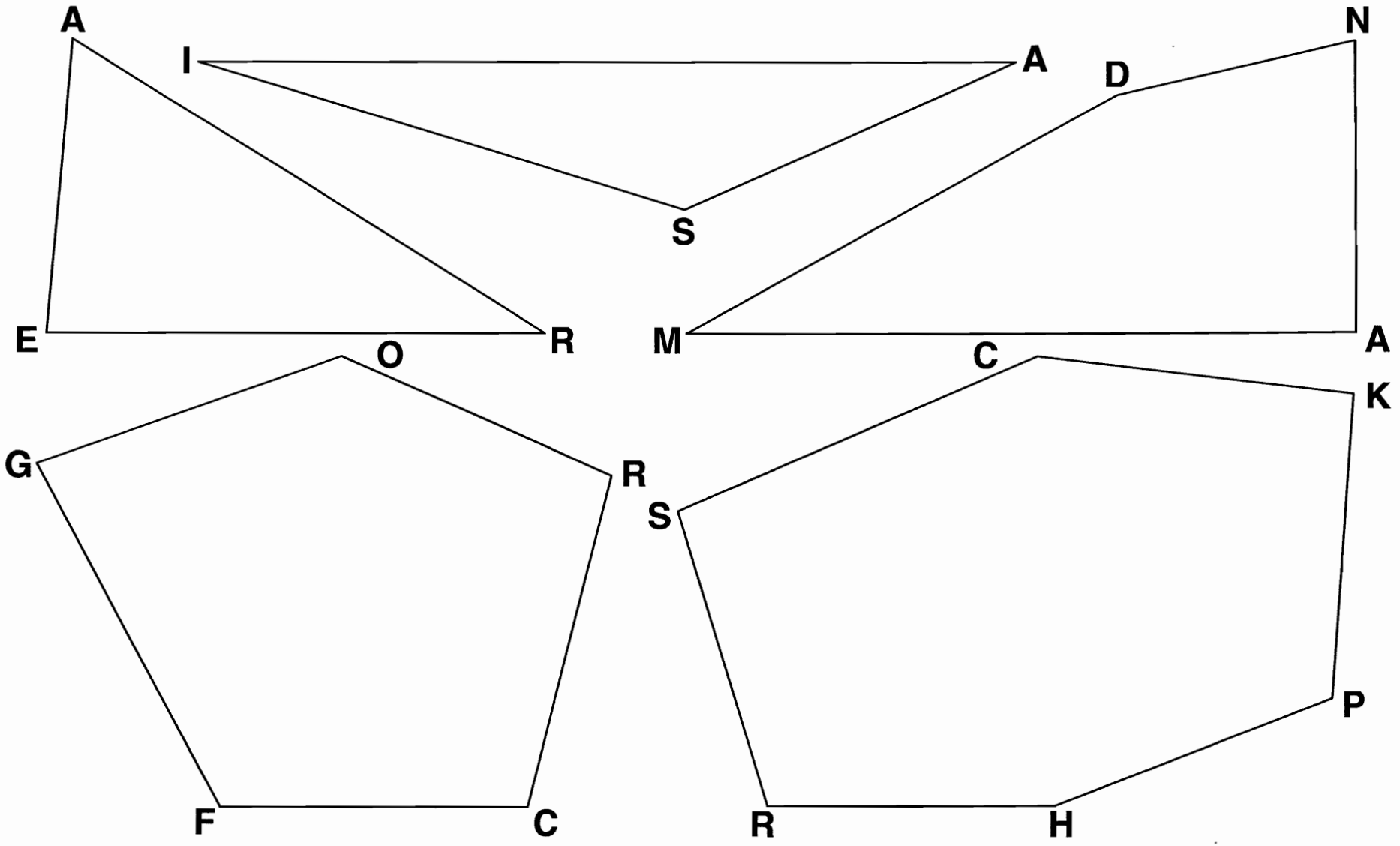
Ⓖ IF m∠3 = 35° AND m∠16 = 90°, THEN m∠8 = ___

Ⓔ IF m∠8 = 40° AND m∠12 = 140°, THEN m∠15 = ___

Ⓓ IF m∠7 = 55° AND m∠1 = 50°, THEN m∠16 = ___

How do Bulldogs get Flat Noses?

DIRECTIONS: Measure any angle below and find your answer in one of the boxes at the bottom. Write the vertex letter of the angle in the box. Keep working and you will discover the answer to the title question.

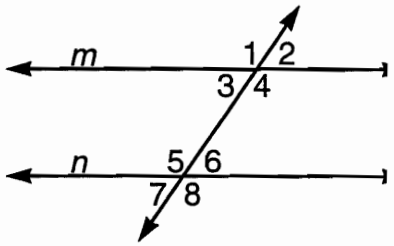


118°	32°	136°	29°	104°	159°	63°	96°	17°	77°	82°	115°	24°	107°	93°	85°	164°	150°	90°	100°	139°

Why Did Orgo Iron His Four-leaf Clover?

Circle the letter of the phrase that best completes any statement below. Write this letter in each box at the bottom of the page that contains the statement number. (The exercises refer to the figure at the right, where $m \parallel n$.)

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION.



1	Two lines that intersect at right angles are	(L) parallel	(N) perpendicular
2	Two lines in the same plane that never intersect are	(C) parallel	(K) perpendicular
3	A line that intersects two or more lines at different points is a	(E) transversal	(A) bisector
4	In the figure, the angles labeled 1, 2, 7, and 8 are	(B) interior angles	(G) exterior angles
5	The angles labeled 3, 4, 5, and 6 are	(A) interior angles	(T) exterior angles
6	Pairs of angles such as those labeled 1 and 5, or 4 and 8, are	(I) corresponding angles	(U) adjacent angles
7	The angles labeled 3 and 6 are	(K) alternate interior angles	(D) alternate exterior angles
8	The angles labeled 4 and 5 are	(W) alternate interior angles	(P) alternate exterior angles
9	If two parallel lines are cut by a transversal, then corresponding angles are	(T) supplementary	(R) congruent
10	If $m\angle 1$ is 125°, then $m\angle 5$ is	(S) 60°	(H) 125°
11	Alternate interior angles are	(U) congruent	(O) complementary
12	If $m\angle 3$ is 60°, then $m\angle 6$ is	(B) 40°	(L) 60°
13	If $m\angle 3$ is 60°, then $m\angle 8$ is	(S) 120°	(T) 60°
14	When two lines in a plane are cut by a transversal, and if corresponding angles are congruent, then the two lines are	(F) intersecting	(P) parallel

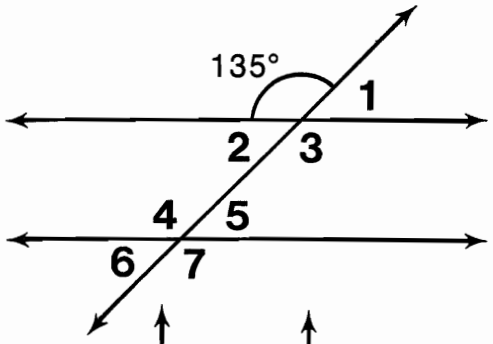
10	3	8	5	13	14	9	3	13	13	6	1	4	10	6	13	12	11	2	7

What is Unusual About The New Surgeon Doll?

Find the answer for any exercise below in the CODE KEY. Notice the letter next to it. Print this letter in the box at the bottom of the page that contains the exercise number. Keep working and you will discover the answer to the title question. (Assume that lines in each figure which do not intersect are parallel.)

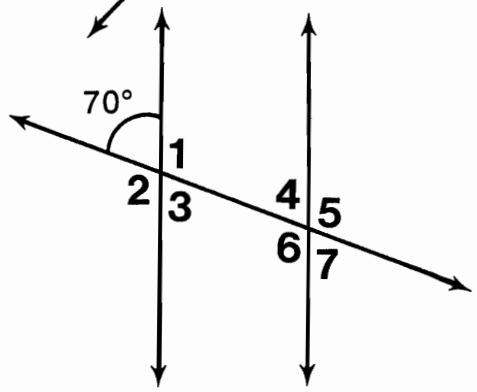
In the first figure at the right, find:

① m∠3 =
② m∠4 =
③ m∠2 =
④ m∠5 =
⑤ m∠6 =
⑥ m∠1 =



In the second figure, find:

⑦ m∠1 =
⑧ m∠6 =
⑨ m∠5 =
⑩ m∠7 =
⑪ m∠3 =
⑫ m∠2 =

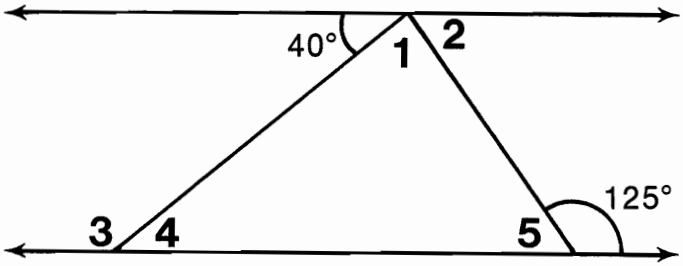


CODE KEY

40°	N
45°	E
55°	A
65°	O
70°	S
85°	B
110°	T
115°	R
135°	I
140°	P

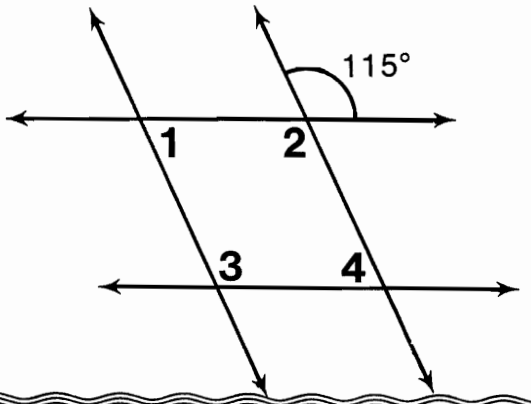
In the third figure, find:

⑬ m∠4 =
⑭ m∠3 =
⑮ m∠5 =
⑯ m∠2 =
⑰ m∠1 =



In the fourth figure, find:

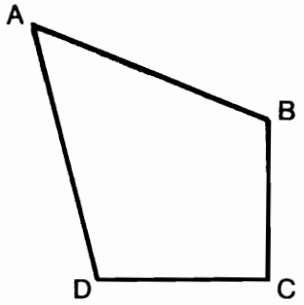
⑱ m∠2 =
⑲ m∠4 =
⑳ m∠1 =
㉑ m∠3 =



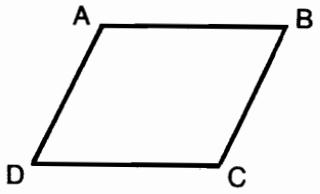
2	9	20	14	4	21	15	8	3	11	19	13	17	16	12	7	5	18	1	6	10

Why do Arctic Explorers Wash Their Clothes In Tide?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS:
Under each figure, circle the letter of each word that correctly names the figure. Rearrange the circled letters under each figure to make a word. Write these words, in order, in the boxes at the bottom of the page.

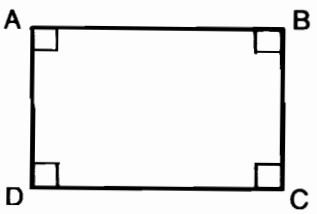


(O) Parallelogram
(T) Polygon
(H) Trapezoid
(E) Rectangle
(I) Quadrilateral



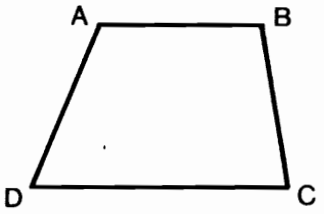
$\overline{AB} \parallel \overline{DC}$ $\overline{AD} \parallel \overline{BC}$

(O) Rectangle
(A) Rhombus
(S) Parallelogram
(I) Quadrilateral
(T) Square



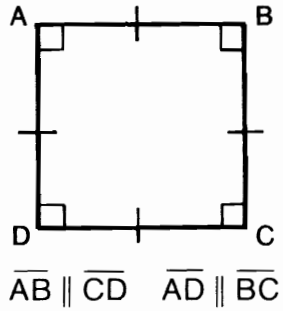
$\overline{AB} \parallel \overline{CD}$ $\overline{AD} \parallel \overline{BC}$

(U) Polygon
(M) Quadrilateral
(H) Parallelogram
(C) Rectangle
(A) Trapezoid



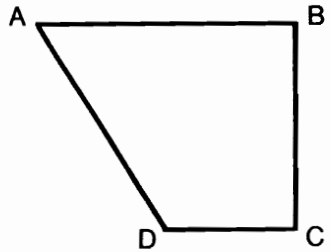
$\overline{AB} \parallel \overline{DC}$

(P) Parallelogram
(O) Trapezoid
(T) Quadrilateral
(U) Rhombus
(O) Polygon



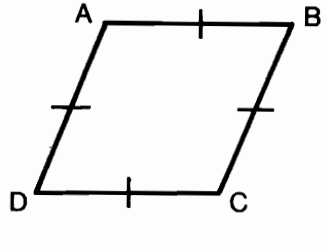
$\overline{AB} \parallel \overline{CD}$ $\overline{AD} \parallel \overline{BC}$

(O) Parallelogram
(L) Rectangle
(C) Square
(B) Trapezoid
(D) Quadrilateral



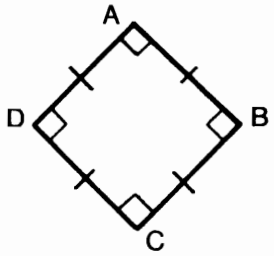
$\overline{AB} \parallel \overline{DC}$

(T) Quadrilateral
(S) Parallelogram
(G) Rhombus
(N) Rectangle
(O) Trapezoid



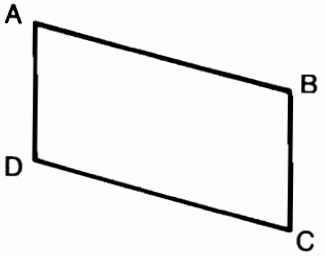
$\overline{AB} \parallel \overline{CD}$ $\overline{AD} \parallel \overline{BC}$

(A) Parallelogram
(H) Rhombus
(M) Square
(S) Polygon
(W) Quadrilateral



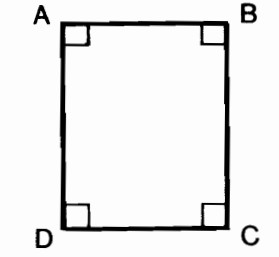
$\overline{AB} \parallel \overline{CD}$ $\overline{AD} \parallel \overline{BC}$

(E) Parallelogram
(H) Rectangle
(T) Square
(M) Polygon
(A) Trapezoid



$\overline{AB} \parallel \overline{DC}$ $\overline{AD} \parallel \overline{BC}$

(T) Parallelogram
(N) Rectangle
(E) Trapezoid
(O) Polygon
(U) Quadrilateral

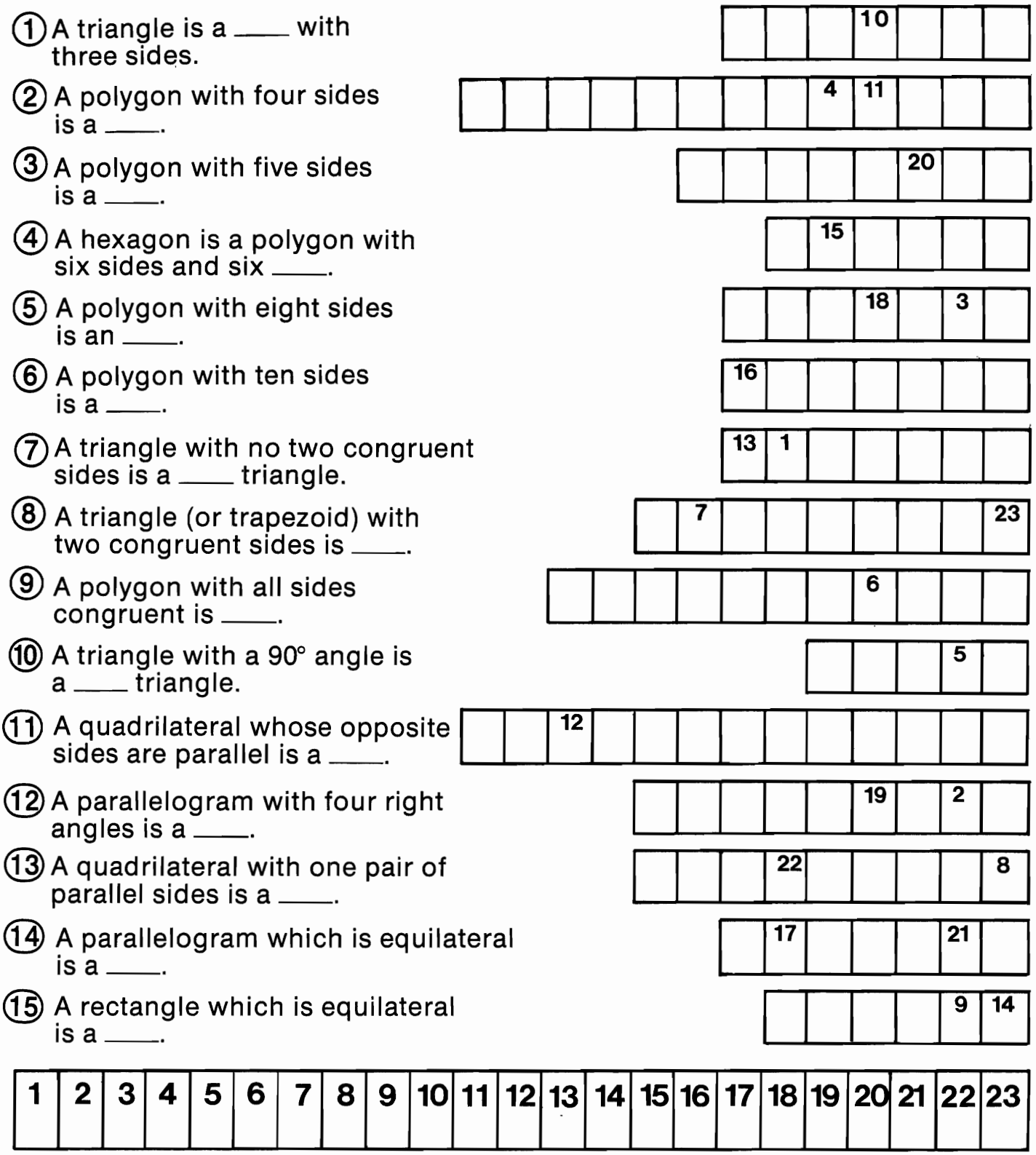


$\overline{AB} \parallel \overline{CD}$ $\overline{AD} \parallel \overline{BC}$

(E) Parallelogram
(R) Rhombus
(I) Rectangle
(D) Polygon
(T) Quadrilateral

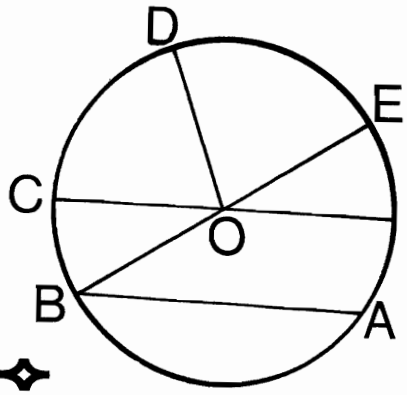
Getting Into Shapes

Figure out the best word to complete any statement below and write it in the boxes next to the statement. One or more of the boxes has a number. This number tells you where to put that letter in the box at the bottom of the page. Keep working and you will spell out a message. Good luck!



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

What Can You Wear to a Costume Party?



Complete any statement below with one of the answers given at the bottom of the page. The write the letter of the statement above its correct answer. Keep working and you will discover the answer to the above question.

(T) The set of points in a plane at a fixed distance from a given point is a _____.

(I) The points on a circle are all the same distance from the _____.

(S) A line segment from the center to any point on a circle is a _____.

(E) A line segment with both endpoints on a circle, such as $\overline{AB}$ is a _____.

(U) A chord that passes through the center of a circle is a _____.

(I) The length of a radius is _____ the length of a diameter.

(T) An angle whose vertex is at the center of a circle is a _____.

(E) Part of a circle is an _____.

(I) If m∠DOF is 110°, then m $(\overset{\frown}{DF})$ is _____.

(S) If m∠DOF is 110°, then m $(\overset{\frown}{FBD})$ is _____.

(H) If m∠BOF is 150°, then m $(\overset{\frown}{CE})$ is _____.

(L) If m∠BOF is 150°, then m $(\overset{\frown}{EAC})$ is _____.

(I) If m∠BOF is 150°, then m $(\overset{\frown}{BC})$ is _____.

(D) If m∠BOF is 150°, then m $(\overset{\frown}{CEB})$ is _____.

(M) An arc with a degree measure less than 180° is a _____.

(G) An arc with a degree measure more than 180° is a _____.

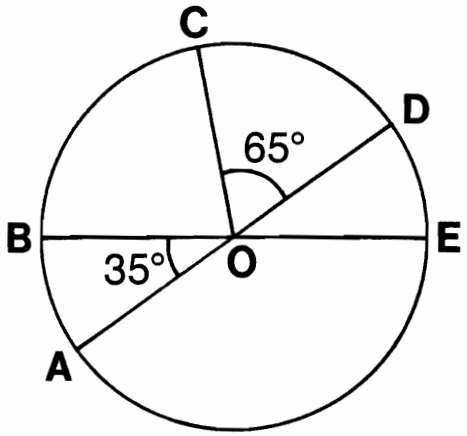
330°	half	250°	major arc	diameter	30°	radius	arc	circle	150°	chord	210°	110°	minor arc	center	central angle

How Can You Tell When There Are 1001 Pickles Under Your Bed?

Find the answer for any exercise below in the CODE KEY. Notice the letter next to it. Print this letter in the box at the bottom of the page that contains the exercise number. Keep working and you will discover the answer to the title question.

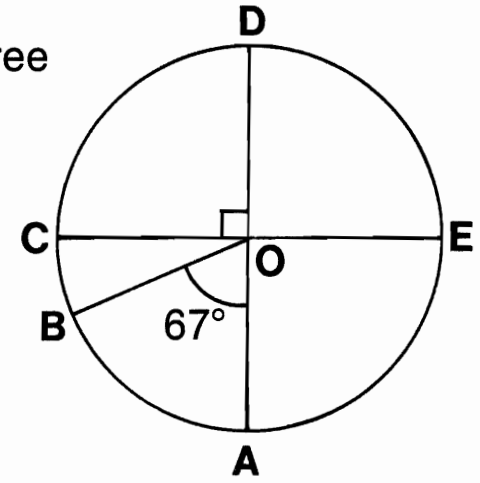
In the first figure, find the degree measure of:

① $\angle DOE$ ___
② $\angle AOE$ ___
③ $\angle COB$ ___
④ $\overset{\frown}{BC}$ ___
⑤ $\overset{\frown}{DE}$ ___
⑥ $\overset{\frown}{EAD}$ ___
⑦ $\overset{\frown}{EA}$ ___
⑧ $\overset{\frown}{ACE}$ ___



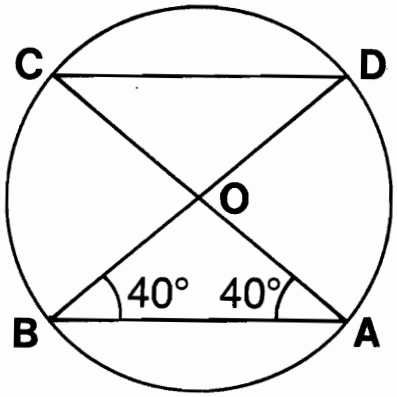
In the second figure, find the degree measure of:

⑨ $\angle COA$ ___
⑩ $\angle COB$ ___
⑪ $\overset{\frown}{AB}$ ___
⑫ $\overset{\frown}{BDA}$ ___
⑬ $\overset{\frown}{EA}$ ___
⑭ $\overset{\frown}{ABE}$ ___
⑮ $\overset{\frown}{DE}$ ___
⑯ $\overset{\frown}{CE}$ ___



In the third figure, find the degree measure of:

⑰ $\angle BOA$ ___
⑱ $\angle DOA$ ___
⑲ $\overset{\frown}{DA}$ ___
⑳ $\overset{\frown}{CD}$ ___
㉑ $\overset{\frown}{DAC}$ ___
㉒ $\overset{\frown}{ACD}$ ___
㉓ $\overset{\frown}{BCA}$ ___
㉔ $\overset{\frown}{BD}$ ___



CODE KEY

23°	Y
35°	R
67°	A
80°	E
90°	O
100°	L
145°	T
180°	I
215°	G
260°	C
270°	U
280°	S
293°	H
325°	N

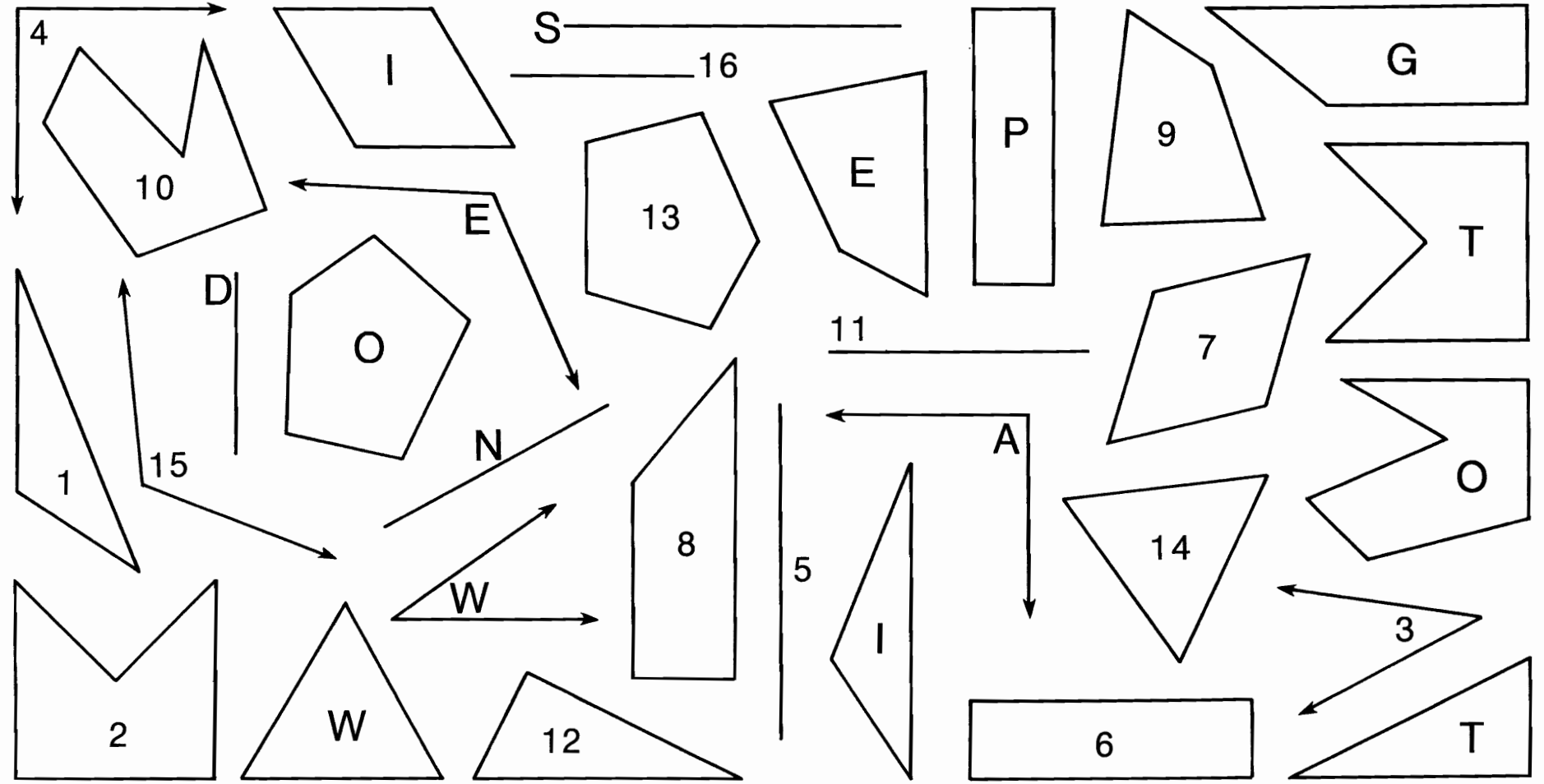
10	15	14	11	1	18	21	20	9	22	3	5	7	13	2	12	4	23	19	24	17	16	6	8

How Did The Baby Pigeon Manage To Fly South In The Winter?

TO ANSWER THE TITLE QUESTION:

Find a pair of CONGRUENT FIGURES below. One of them will have a number and the other will have a letter. The number tells you where to put the letter in the boxes at the bottom of the page.

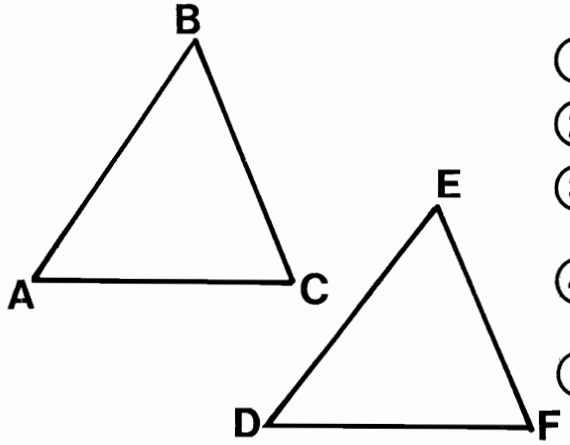
KEEP WORKING AND YOU WILL DISCOVER THE PUNNY ANSWER.



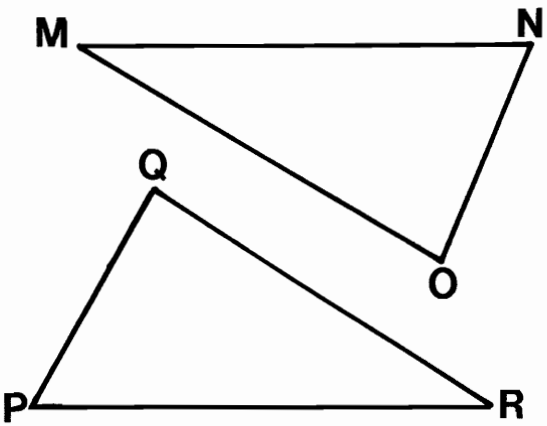
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Why Did Orgo Think His Pants Were Too Short?

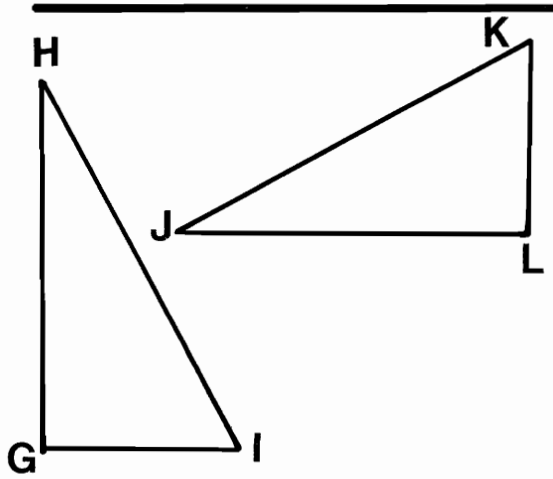
Next to each pair of congruent triangles below are listed all the angles and sides of the two triangles. Find a pair of CORRESPONDING PARTS. One of the corresponding parts will have a number, and the other will have a letter. Write the letter in the box at the bottom of the page that contains the number of the corresponding part.



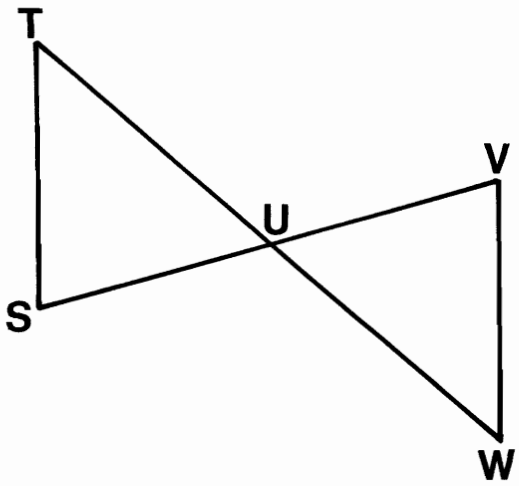
① $\angle A$	Ⓞ $\overline{EF}$
② $\angle B$	Ⓢ $\angle F$
③ $\angle C$	Ⓔ $\angle D$
④ $\overline{AB}$	Ⓢ $\overline{FD}$
⑤ $\overline{BC}$	Ⓒ $\angle E$
⑥ $\overline{CA}$	Ⓔ $\overline{DE}$



⑬ $\angle M$	Ⓞ $\angle P$
⑭ $\angle N$	Ⓗ $\overline{PQ}$
⑮ $\angle O$	Ⓤ $\overline{RP}$
⑯ $\overline{MN}$	Ⓕ $\angle R$
⑰ $\overline{NO}$	Ⓖ $\overline{QR}$
⑱ $\overline{OM}$	Ⓣ $\angle Q$



⑦ $\angle G$	Ⓣ $\overline{LJ}$
⑧ $\angle H$	Ⓘ $\overline{JK}$
⑨ $\angle I$	Ⓣ $\angle L$
⑩ $\overline{GH}$	Ⓢ $\overline{KL}$
⑪ $\overline{HI}$	Ⓞ $\angle J$
⑫ $\overline{IG}$	Ⓚ $\angle K$

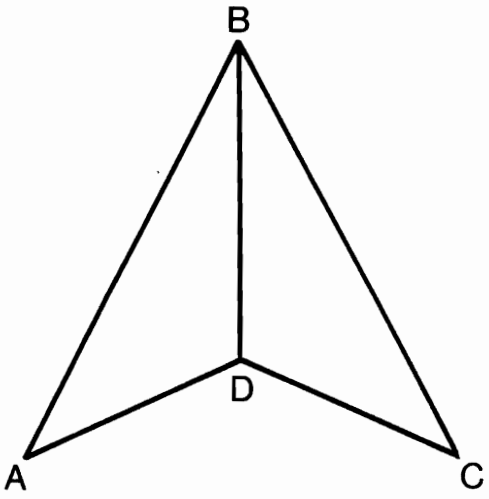


⑲ $\angle S$	Ⓛ $\overline{WU}$
⑳ $\angle T$	Ⓤ $\angle V$
㉑ $\angle TUS$	Ⓦ $\overline{VW}$
㉒ $\overline{ST}$	Ⓔ $\angle W$
㉓ $\overline{TU}$	Ⓣ $\angle VUW$
㉔ $\overline{US}$	Ⓕ $\overline{UV}$

7	22	14	24	1	20	15	8	13	17	11	6	23	4	18	3	12	21	16	2	9	5	19	10

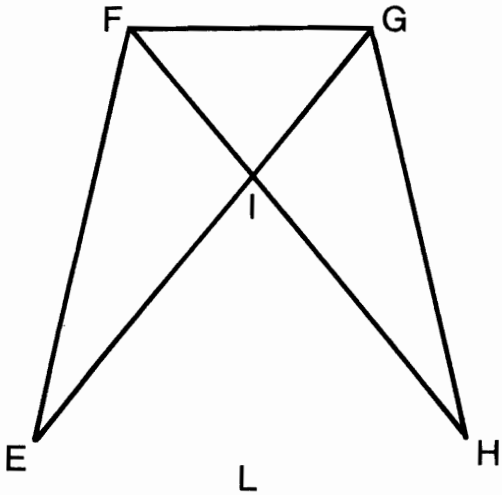
Triangle Treat

All the sides and angles are listed for each triangle. Find a pair of CORRESPONDING PARTS. One will have a number, and the other will have a letter. Write the letter in the box at the bottom of the page that contains the number of the corresponding part.



$\triangle ABD \cong \triangle CBD$

① $\angle A$	Ⓢ $\overline{BD}$
② $\angle ABD$	Ⓘ $\angle CDB$
③ $\angle BDA$	Ⓔ $\angle C$
④ $\overline{AB}$	Ⓐ $\overline{CD}$
⑤ $\overline{BD}$	Ⓔ $\overline{BC}$
⑥ $\overline{AD}$	Ⓞ $\angle DBC$

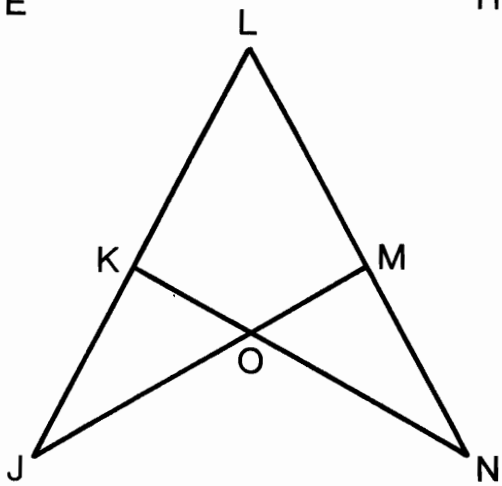


$\triangle EFG \cong \triangle HGF$

⑦ $\angle E$	Ⓡ $\overline{FH}$
⑧ $\angle EFG$	Ⓞ $\angle H$
⑨ $\angle FGE$	Ⓔ $\angle FGH$
⑩ $\overline{EF}$	Ⓔ $\overline{FG}$
⑪ $\overline{FG}$	Ⓘ $\angle GFH$
⑫ $\overline{GE}$	Ⓢ $\overline{GH}$

$\triangle EFI \cong \triangle HGI$

⑬ $\angle E$	Ⓢ $\angle HGI$
⑭ $\angle EFI$	Ⓒ $\overline{IH}$
⑮ $\angle FIE$	Ⓤ $\angle GIH$
⑯ $\overline{FE}$	Ⓔ $\overline{GH}$
⑰ $\overline{FI}$	Ⓔ $\angle H$
⑱ $\overline{IE}$	Ⓡ $\overline{GI}$



$\triangle JLM \cong \triangle NLK$

⑲ $\angle J$	Ⓣ $\angle LKN$
⑳ $\angle L$	Ⓡ $\angle L$
㉑ $\angle LMJ$	Ⓣ $\overline{KN}$
㉒ $\overline{LJ}$	Ⓥ $\overline{LN}$
㉓ $\overline{LM}$	Ⓓ $\overline{LK}$
㉔ $\overline{MJ}$	Ⓔ $\angle N$

$\triangle JKO \cong \triangle NMO$

㉕ $\angle J$	Ⓒ $\overline{ON}$
㉖ $\angle JKO$	Ⓟ $\overline{MO}$
㉗ $\angle KOJ$	Ⓢ $\angle NMO$
㉘ $\overline{KJ}$	Ⓝ $\angle MON$
㉙ $\overline{KO}$	Ⓣ $\angle N$
㉚ $\overline{OJ}$	Ⓣ $\overline{MN}$

5	25	7	17	8	23	13	28	1	18	24	3	22	11	14	6	20	16	30	2	15	27	21	4	12	26	29	9	19	10

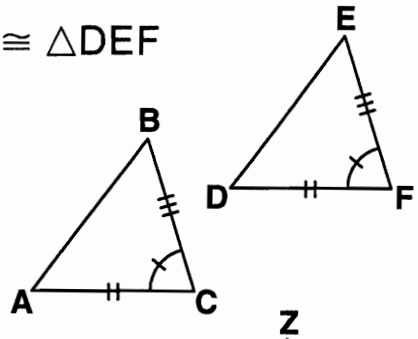
Why Did Mrs. Washington Go Into George's Bedroom Early in the Morning?

TO ANSWER THIS QUESTION FOLLOW THESE INSTRUCTIONS:

Two congruent triangles are indicated for each exercise. Assuming you know only that the marked parts are congruent, circle the theorem that proves the two triangles are congruent. Write the letter of the correct choice in each box at the bottom of the page that contains the exercise number.

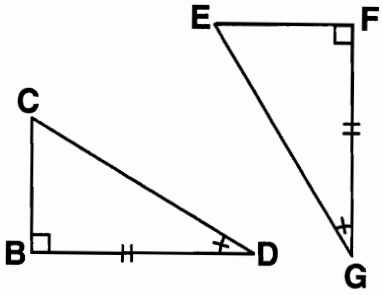
① $\triangle ABC \cong \triangle DEF$

Ⓤ SSS
Ⓗ SAS
Ⓚ ASA



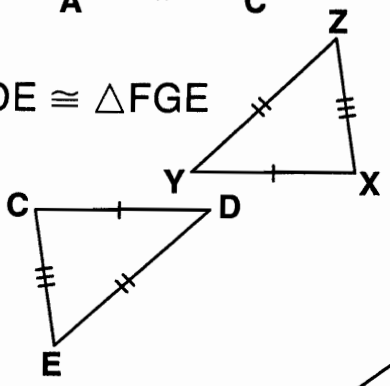
② $\triangle BCD \cong \triangle FEG$

Ⓜ SSS
Ⓐ SAS
Ⓞ ASA



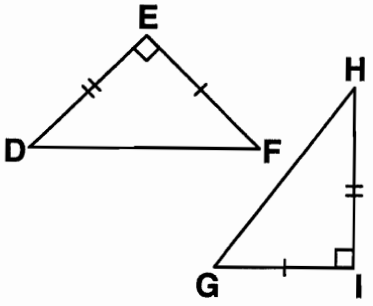
③ $\triangle CDE \cong \triangle FGE$

① SSS
Ⓕ SAS
Ⓟ ASA



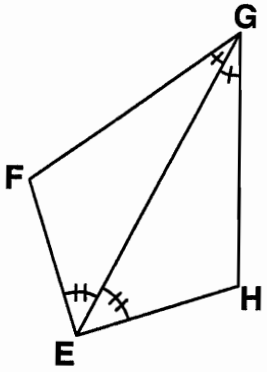
④ $\triangle DEF \cong \triangle HIG$

Ⓛ SSS
Ⓡ SAS
Ⓑ ASA



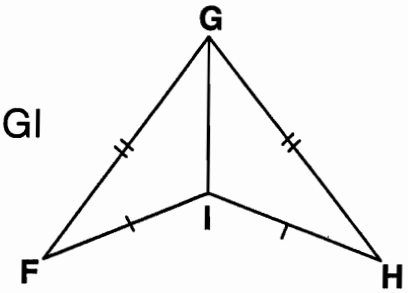
⑤ $\triangle EFG \cong \triangle EHG$

Ⓖ SSS
Ⓢ SAS
Ⓣ ASA



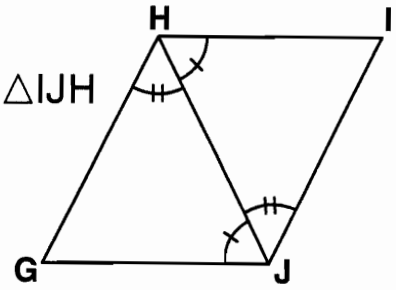
⑥ $\triangle FGI \cong \triangle HGI$

Ⓝ SSS
Ⓕ SAS
Ⓤ ASA



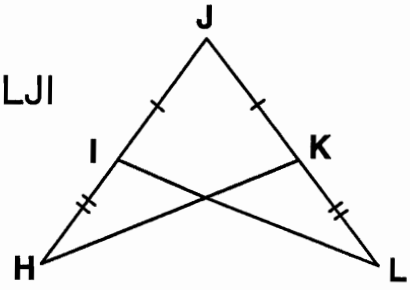
⑦ $\triangle GHJ \cong \triangle IJH$

Ⓓ SSS
Ⓛ SAS
Ⓔ ASA



⑧ $\triangle HJK \cong \triangle LJI$

Ⓟ SSS
Ⓢ SAS
Ⓒ ASA



	5	2	8	7	7	5	1	7	8	2	6	4	3	8	7

Monster Mysteries

1. HOW CAN YOU STOP A MONSTER FROM BITING HIS NAILS?

_____

12.5 10 $3\frac{8}{9}$ 9 4.39 11 12.5 1.92 9 10 $9\frac{1}{3}$ 3.91 4.39 $8\frac{1}{4}$ 9 3.91

2. HOW CAN YOU TELL WHEN THERE IS A MONSTER IN BED WITH YOU?

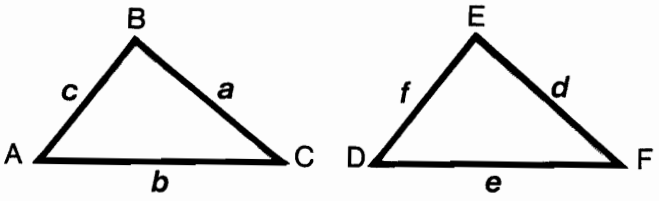
_____

$2\frac{2}{5}$ 6 20 4.39 9 12.5 $8\frac{1}{4}$ 35 4.39 11 3.91 $5\frac{3}{5}$ 10 $\frac{2}{3}$ 10 12.5 10 3.91

TO DECODE THE ANSWERS TO THE TWO QUESTIONS ABOVE:

Find the length of the side indicated in any exercise below. Each time this length appears in the code, write the letter of that exercise above it. Keep working and you will decode the two mystery answers.

△ ABC ~△ DEF. The letters ***a***, ***b***, ***c***, ***d***, ***e***, and ***f*** represent the lengths of the sides.



Ⓘ Find ***e***, if $a = 8, d = 22, b = 4$.

Ⓣ Find ***d***, if $b = 6, e = 15, a = 8$.

Ⓔ Find ***a***, if $f = 32, c = 12, d = 24$.

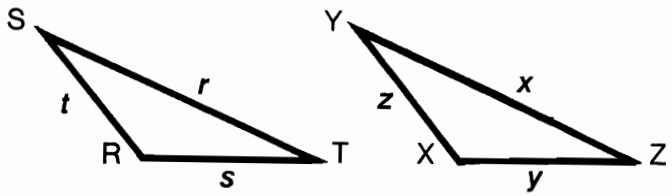
Ⓝ Find ***c***, if $f = 15, b = 7, e = 3$.

Ⓨ Find ***f***, if $c = 2\frac{1}{2}, d = 24, a = 10$.

Ⓚ Find ***b***, if $c = 5, e = 7, f = 9$.

Ⓞ Find ***a***, if $b = 11, e = 8, d = 6$

△ RST ~△ XYZ. The letters ***r***, ***s***, ***t***, ***x***, ***y***, and ***z*** represent the lengths of the sides.



Ⓑ Find ***t***, if $s = 1\frac{1}{2}, y = 5, z = 8$.

Ⓡ Find ***y***, if $s = 42, r = 9, x = 2$.

Ⓟ Find ***r***, if $z = 5, x = 2\frac{1}{3}, t = 12$.

Ⓢ Find ***x***, if $s = 2, r = 2.3, y = 3.4$.

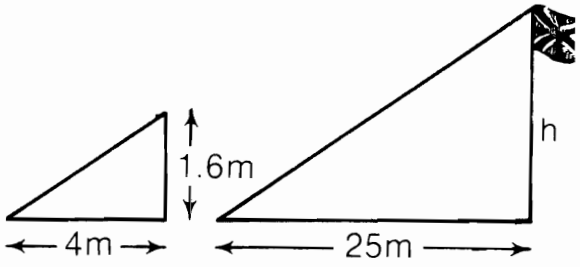
Ⓦ Find ***s***, if $z = 3, y = 4.8, t = 1.2$.

Ⓗ Find ***z***, if $r = x, t = 4.39$.

Ⓙ Find ***t***, if $y = 3, s = 2, z = 1$.

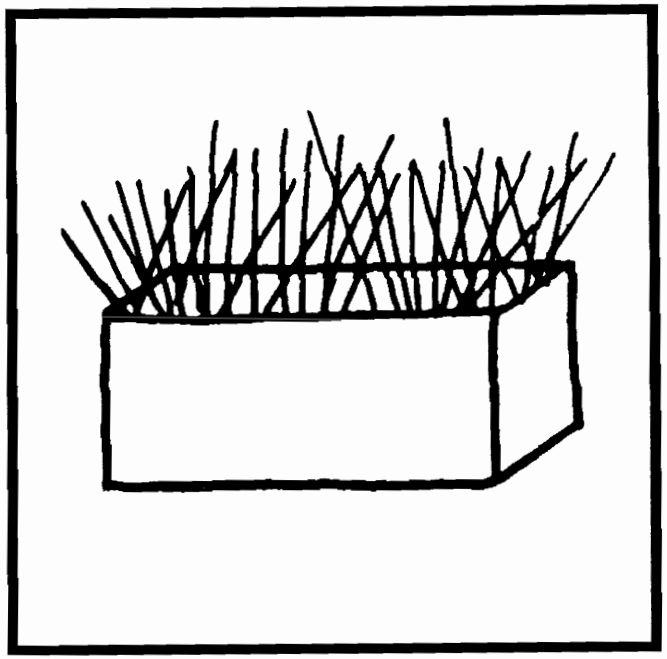
Ⓐ A flagpole casts a shadow 25 meters long. If a woman who is 1.6 meters tall casts a shadow 4 meters long at the same time and location, the flagpole is ___ meters tall.

Ⓜ A building casts a shadow 37.5 meters long. If a meter stick casts a shadow 3 meters long at the same time and location, the building is ___ meters high.



What is the Title of This Picture?

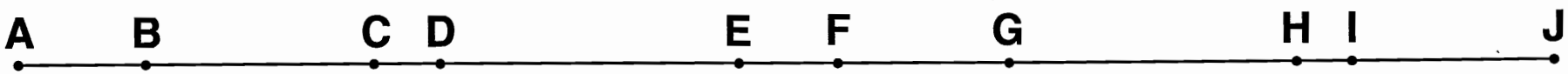
1.5	1.9	9.2	70	1.9	7.0	8	19	192	7.0	192	7.0	81
8	0.8	192	167	8	14.7	200	192	13.0	8.6			
1.0	173	19	167	8.6	173	19	167	8	1.0	200	1.9	167
19	173	1.9	167	70	130	173	192	7.0	8.6			



TO DECODE THE TITLE OF THIS PICTURE:

Measure to the nearest millimeter the line segment named in any exercise below. Express the measurement in millimeters or centimeters, as indicated, and find it in the code. Each time it appears, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE TITLE.



Ⓞ = Length of $\overline{AB}$ = cm

Ⓔ = Length of $\overline{DG}$ = cm

Ⓨ = Length of $\overline{CI}$ = cm

Ⓐ = Length of $\overline{AB}$ = mm

Ⓖ = Length of $\overline{GJ}$ = mm

Ⓘ = Length of $\overline{AH}$ = mm

Ⓑ = Length of $\overline{EF}$ = cm

Ⓢ = Length of $\overline{CD}$ = cm

Ⓥ = Length of $\overline{BG}$ = cm

Ⓤ = Length of $\overline{BG}$ = mm

Ⓕ = Length of $\overline{AI}$ = mm

Ⓣ = Length of $\overline{HI}$ = mm

Ⓗ = Length of $\overline{HI}$ = cm

Ⓧ = Length of $\overline{EI}$ = cm

Ⓝ = Length of $\overline{CF}$ = cm

Ⓒ = Length of $\overline{CF}$ = mm

Ⓡ = Length of $\overline{DJ}$ = mm

Ⓟ = Length of $\overline{BH}$ = mm

Did You Hear About . . .

A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P

DIRECTIONS:

Write the appropriate number in the blank in any exercise below. Find this number in one of the answer columns and notice the word next to it. Write this word in the box that has the same letter as that exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT SOMETHING CINEMATIC!

Ⓐ 2.5 m = _____ cm

Ⓑ 2.5 m = _____ mm

Ⓒ 890 m = _____ km

Ⓓ 4320 cm = _____ m

Ⓔ 4320 cm = _____ mm

Ⓕ 70.7 km = _____ m

Ⓖ 64.9 mm = _____ cm

Ⓗ 64.9 mm = _____ m

Ⓘ 0.0028 km = _____ cm

Ⓙ 0.0028 km = _____ mm

Ⓚ 90 cm = _____ mm

Ⓛ 0.2 mm = _____ cm

Ⓜ 1000 mm = _____ km

Ⓝ 1000 cm = _____ km

Ⓞ 7800 m = _____ km

Ⓟ 7800 km = _____ m

0.01—DOING

43.2—WANTED

78,000—TRUCK

8.9—HEAD

250—THE

280—MOVIE

6490—BETTER

0.0649—BIG

432—A

0.09—ALTHOUGH

0.89—WHO

7,800,000—PARTS

10—THE

0.02—ENDED

25—DOOR

2500—HORSE

200—BECAME

900—BUT

6.49—A

0.001—UP

780—A

707—LAUGH

2800—STAR

70,700—BE

0.432—JUMPED

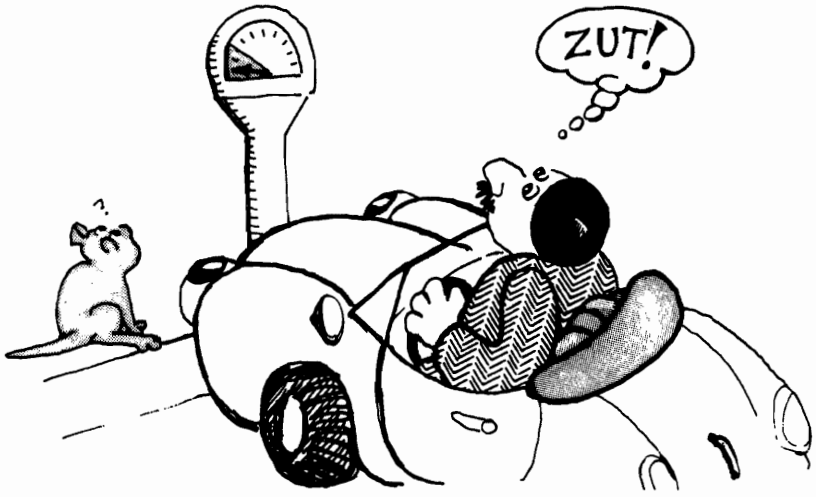
7.8—BIT

43,200—TO

0.28—ELEPHANT

The Meter is Neater

Express each measurement in meters. Find your answers in the rectangle below. Cross out each box containing a correct answer. When you finish, there will be 9 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page. A hidden message will appear.



① 57.5 cm = _____ m

② 5.75 km = _____ m

③ 4700 dm = _____ m

④ 933 hm = _____ m

⑤ 80,000 mm = _____ m

⑥ 399.1 dam = _____ m

⑦ 0.69 km = _____ m

⑧ 0.008 hm = _____ m

⑨ 20.05 mm = _____ m

⑩ 690 cm = _____ m

⑪ 0.47 dam = _____ m

⑫ 70.2 dm = _____ m

⑬ 9.33 mm = _____ m

⑭ 20,050 dam = _____ m

⑮ 0.02 km = _____ m

⑯ 4366.6 hm = _____ m

⑰ 0.5 dm = _____ m

⑱ 200,000 cm = _____ m

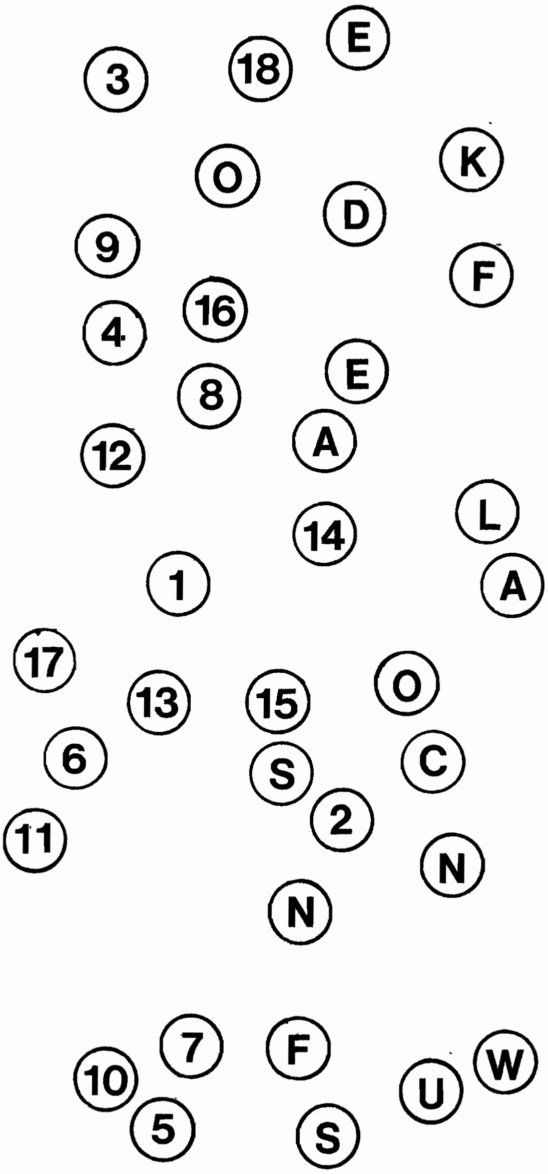
INV	PAR	ADE	TSO	REA	DWR	ITE	LOC	KIN
436,660	200	2000	80	0.8	20	5750	0.00933	4700
DLE	GTI	LEA	CKE	EPS	TAR	TSA	ILK	REF
7.02	93.3	690	575	0.575	6.9	7020	3991	436.66
INE	DOT	SMA	THI	NKS	SLA	PSO	NGS	TER
200.5	470	4.7	50	0.02005	93,300	0.05	3.991	200,500

✳✳✳✳✳What is White And Goes Up? ✳✳✳✳✳

TO ANSWER THIS QUESTION:
Fill in the blank in any exercise below. Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.

✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳✳

85 cm = _____ m ■	■ 8500
0.85 km = _____ m ■	■ 4.9
8.5 cm = _____ mm ■	■ 2770
85,000 dm = _____ m ■	■ 8.5
0.85 dam = _____ m ■	■ 0.0277
850 km = _____ dam ■	■ 49
4900 m = _____ hm ■	■ 27.7
49 mm = _____ dam ■	■ 0.85
4.9 hm = _____ km ■	■ 0.49
49 dam = _____ cm ■	■ 0.277
49,000 dm = _____ km ■	■ 850
49 m = _____ dm ■	■ 85,000
2.77 hm = _____ m ■	■ 2.77
2770 mm = _____ dm ■	■ 490
2.77 m = _____ dam ■	■ 85
0.0277 km = _____ cm ■	■ 0.0049
27.7 dam = _____ hm ■	■ 49,000
0.277 cm = _____ dm ■	■ 277



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

CODE LINE

DIRECTIONS:

Figure out the PERIMETER of any polygon described below. Then find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter of that problem above it.

KEEP WORKING AND YOU WILL DECODE THE LINE.

Ⓐ	Triangle with sides measuring 6.3 m, 2.9 m, and 10.5 m
Ⓣ	Rectangle with sides measuring 9.6 m and 3.8 m
Ⓘ	Square with side measuring 4.65 m
Ⓙ	Equilateral triangle with side measuring 15.8 m
Ⓞ	Pentagon with sides measuring 6.0 m, 7.5 m, 14.2 m, 9.1 m, and 0.9 m
Ⓤ	Parallelogram with sides measuring 5.32 m and 8.05 m
Ⓔ	Equilateral octagon with side measuring 4.325 m
Ⓓ	Isosceles triangle with base measuring 12.6 m and legs measuring 7.5 m
Ⓒ	Quadrilateral with sides measuring 9.4 m, 8.0 m, 15.0 m, and 6.8 m
Ⓢ	Rhombus with side measuring 17.005 m
Ⓗ	Equilateral decagon with side measuring 13.597 m
Ⓨ	Isosceles trapezoid with bases measuring 2.1 m and 0.6 m, and legs measuring 3.8 m
Ⓝ	Hexagon with sides measuring 0.2 m, 3.7 m, 5.1 m, 4.0 m, 3.0 m, and 0.7 m
Ⓡ	Rectangle with sides measuring 17.4 m and 8.0 m
Ⓖ	Equilateral pentagon with side measuring 10.06 m

TITLE: HOLE OF FAME

26.8 m 135.97 m 34.6 m 50.3 m 50.8 m 19.7 m 16.7 m 27.6 m

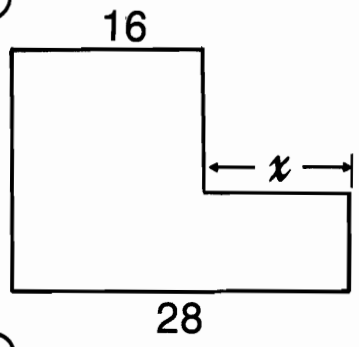
39.2 m 19.7 m 16.7 m 10.3 m 37.7 m 16.7 m 18.6 m 68.02 m

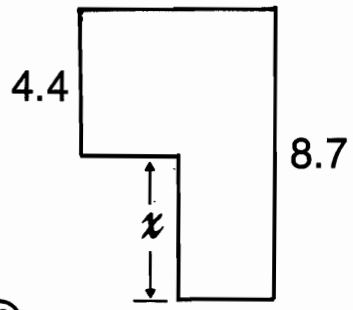
47.4 m 26.74 m 68.02 m 26.8 m

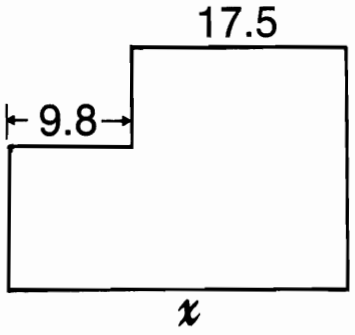
50.3 m 37.7 m 50.8 m 50.3 m 34.6 m 68.02 m

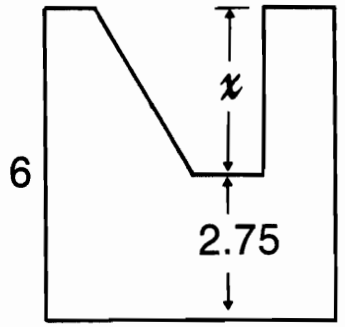
What Do They Call the Golden Gate Bridge At 5 P.M.?

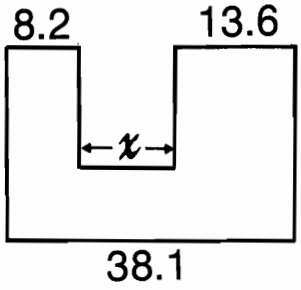
Compute the distance **x** for any figure below and find your answer in the answer column. Notice the letter next to it. Write this letter in each box at the bottom of the page that contains the number of that figure. (Assume that all angles that appear to be right angles are right angles.)

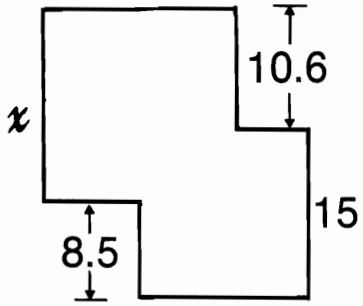
① 

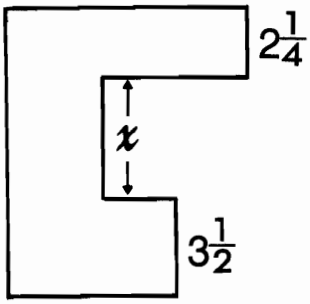
② 

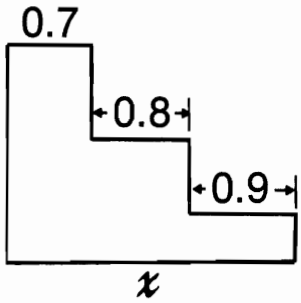
③ 

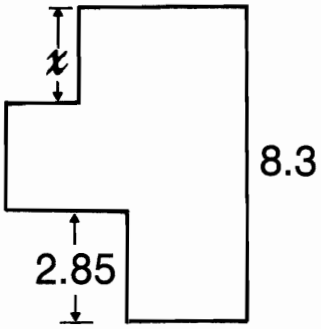
④ 

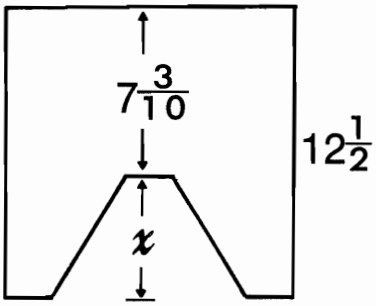
⑤ 

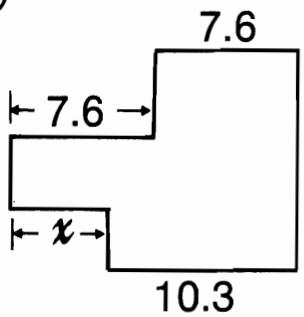
⑥ 

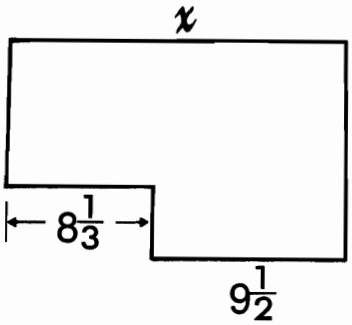
⑦ 

⑧ 

⑨ 

⑩ 

⑪ 

⑫ 

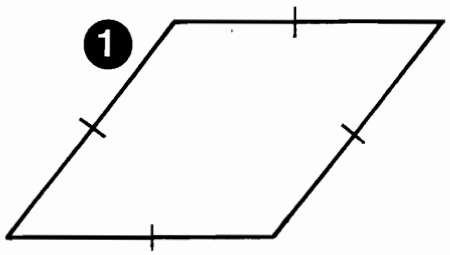
G	2.75
T	27.3
B	$5\frac{1}{2}$
C	17.1
N	$17\frac{5}{6}$
D	12
E	3.25
H	2.4
I	3.8
P	4.9
S	4.3
R	$4\frac{1}{4}$
O	$5\frac{7}{10}$
A	$5\frac{1}{5}$
L	16.3

3	8	4	6	10	7	2	11	10	12	9	5	4	1	2	11	10	12	12	4	7

Measuring Around

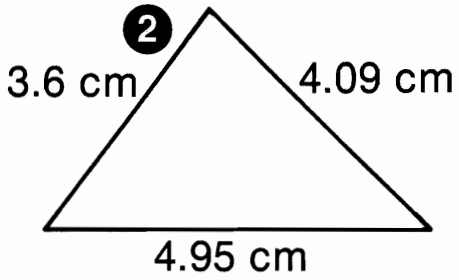
Figure out the PERIMETER of each polygon and find your answers in the rectangle. Cross out each box containing a correct answer. When you finish, there will be 7 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page.

1



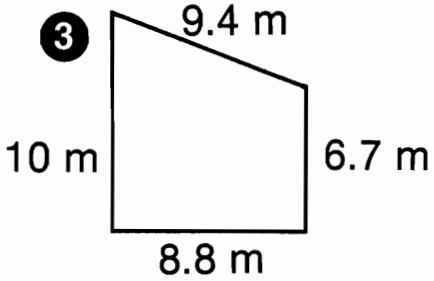
p = ____ mm

2



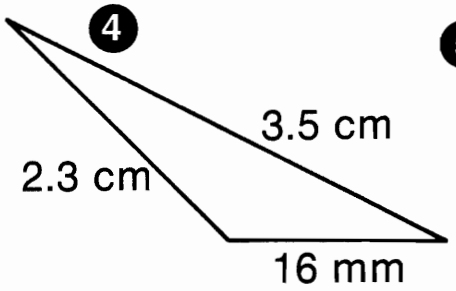
p = _____cm

3



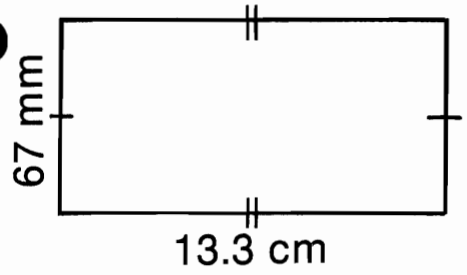
p = _____ m

4



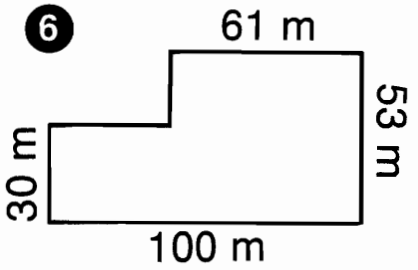
p = ____ cm

5



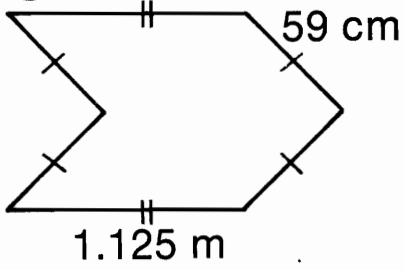
p = ___ cm

6



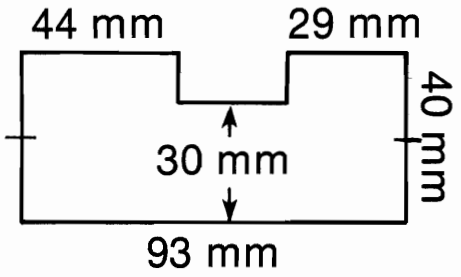
p = ___ m

7



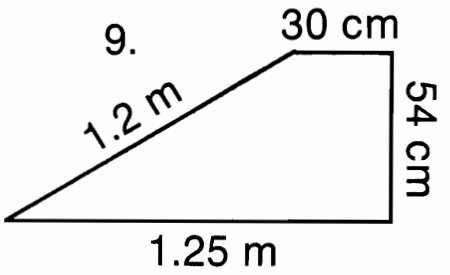
p = ___ m

8



p = ___ mm

9

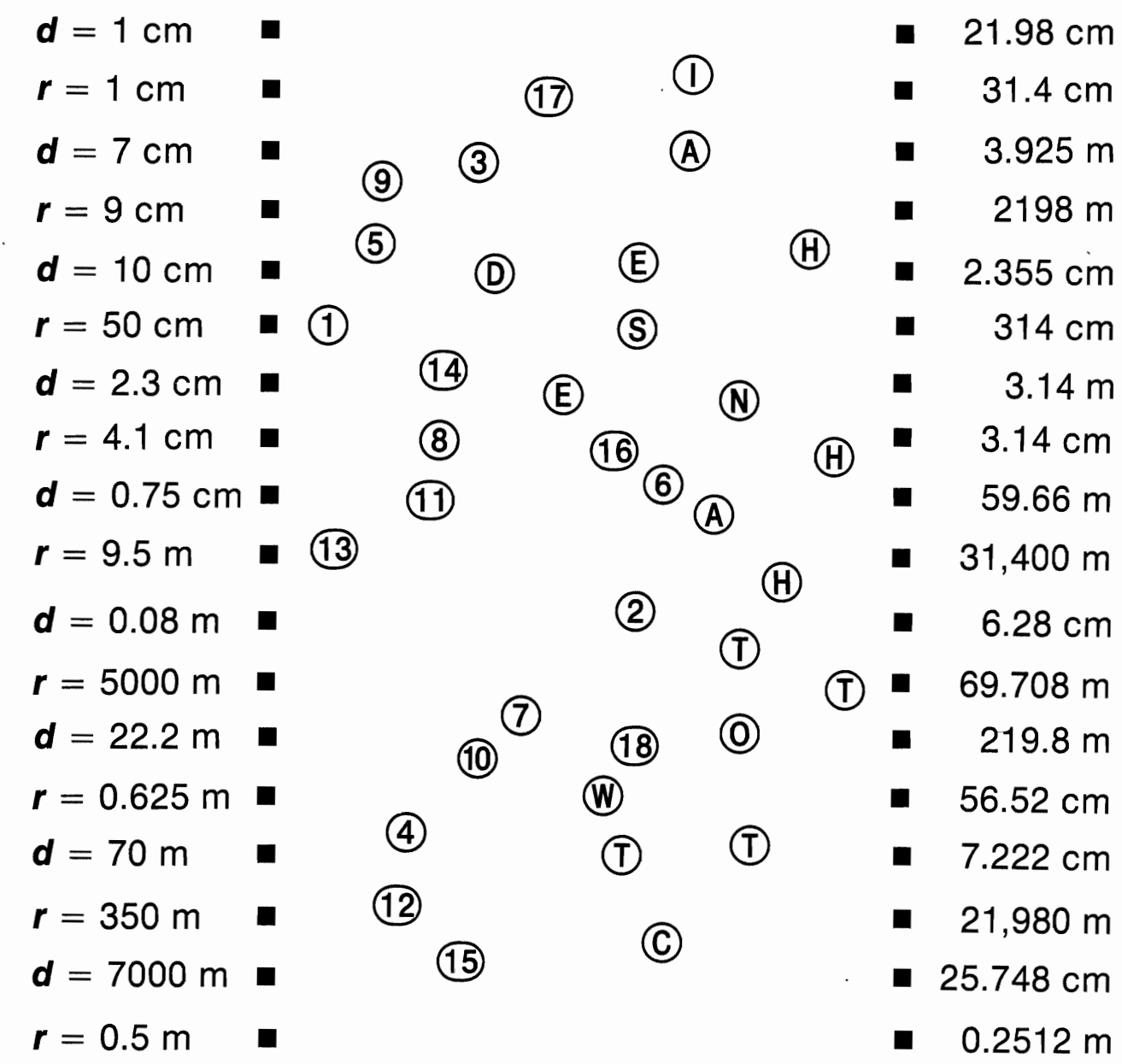


p = _____m

SKI 40	TEA 4.61	MAG 4.31	NET 3.29	WIN 12.64	ICI 35.7	GAR 7.4	STR 91.9
ICK 295	ISS 306	YBU 8.1	CKA 93.6	SIN 3.16	GLE 34.9	SSM 286	ESS 51

Why Did The Chicken Hit Her Egg With An Ax?

Find the CIRCUMFERENCE of each circle with diameter (***d***) or radius (***r***) as indicated (use $\pi \doteq 3.14$). Draw a straight line connecting each exercise with its correct answer. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.

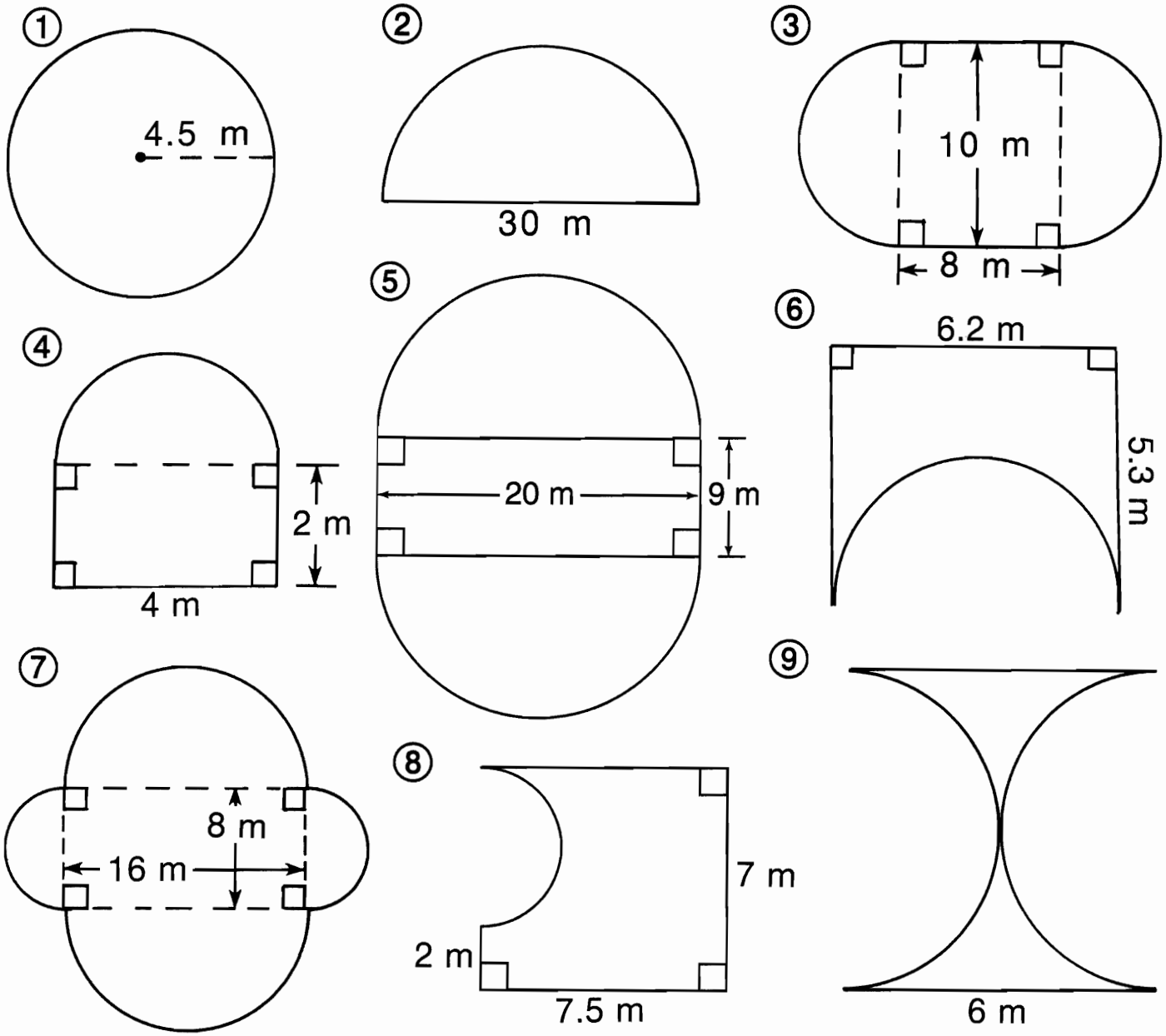


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Famous Honolulu Typing School

Figure out the PERIMETER of each figure and find your answers in the rectangle below. Cross out each box containing a correct answer. When you finish, there will be 3 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page. (All curves shown are semicircles; use $\pi \doteq 3.14$)

THE NAME OF A FAMOUS HONOLULU TYPING SCHOOL WILL APPEAR!



PAL 77.1 m	TYP 30.84 m	EHO 31.85 m	WHA 31.24 m	LES 80.8 m	SON 47.4 m
MPE 26.534 m	CKA 33.75 m	RAT 28.26 m	EMA 75.36 m	KEY 77.46 m	OYO 14.28 m

Why are Square drinking glasses better than Round ones?

Count the number of SIGNIFICANT DIGITS in any measurement below. In some cases, the number cannot be determined. Write your answer in the blank. Then find the answer at the bottom of the page and write the letter of that exercise in ANY ONE of the boxes under it.

When you finish, rearrange the letters in each group to make a word. Write the words from each group in the BOTTOM row of boxes. You will have the answer to the title question!

(E) 645 cm ____	(E) 54,000 m ____	(T) 45.001×10^{-3} g ____	(T) 0.090 mm ____
(L) 8300 kg ____	(H) 5.4×10^{4} m ____	(A) 880 ml ____	(T) 98,000,000 m ____
(Y) 0.75 km ____	(I) 5.400×10^{4} m ____	(G) 880.8 dm ____	(R) 9.800×10^{7} m ____
(S) 2.807 mm ____	(O) 5.4000×10^{4} m ____	(E) 0.00625 kl ____	(L) 106 km/sec ____
(H) 0.02 sec ____	(E) 0.0007 mg ____	(T) 0.3 km ____	(D) 4.0700×10^{-4} g ____
(A) 6.25×10^{3} l ____	(O) 30,000.5 hm ____	(E) 0.30 km ____	(B) 500 sec ____
(N) 807.009 mm ____	(V) 8.33×10^{-8} sec ____	(N) 0.30000 km ____	(N) 500.0 sec ____

2	5	3	4	6	1	NUMBER CANNOT BE DETERMINED

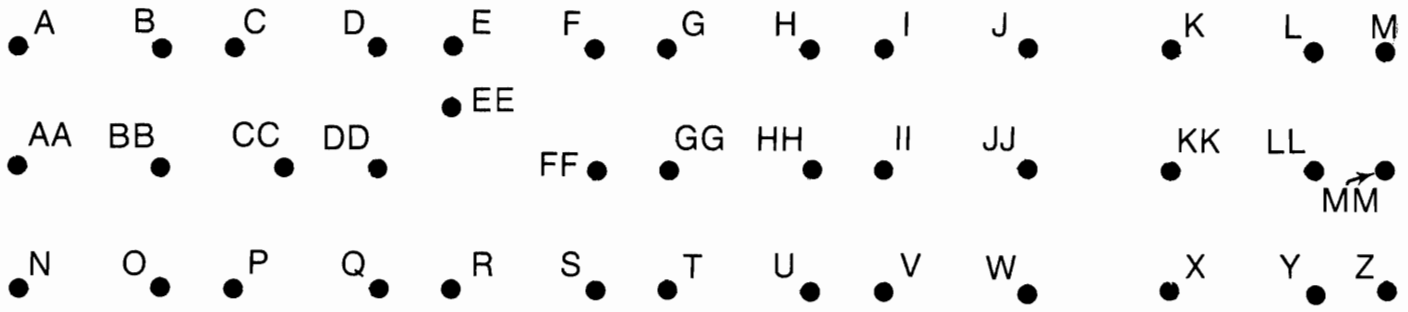
REARRANGE EACH GROUP OF LETTERS TO MAKE A WORD

What is a GOLFER'S Favorite Number?

Find the GREATEST POSSIBLE ERROR for any measurement below. Circle the correct answer. Then connect the points given for that answer.

WHEN YOU FINISH, YOU WILL KNOW A GOLFER'S FAVORITE NUMBER!

		CONNECT:			CONNECT:
5.2 m	< 0.5 m, 0.05 m	K→L→X, G→H→U	4.7×10^3 cm	< 0.5 cm, 50 cm	F→E→R, M→Z
9.13 cm	< 0.005 cm, 0.0005 cm	P→Q→DD, O→N	6.2×10^6 km	< 5000 km, 50,000 km	GG→G, CC→DD
67.07 mm	< 0.05 mm, 0.005 mm	F→S→E, L→K→KK	7.34×10^{-2} m	< 0.00005 m, 0.0005 m	U→T→G, DD→D→E
24 km	< 5 km, 0.5 km	X→Y→K, J→W	1.8×10^{-5} m	< 0.00005 m, 0.0000005 m	JJ→II, I→II
8.8 kg	< 0.005 kg, 0.05 kg	CC→D→C, BB→AA	2.002×10^8 l	< 500,000 l, 50,000 l	A→N, C→D→DD
150.7 cm	< 0.05 cm, 0.5 cm	KK→LL, Z→M→L	9.062×10^{-3} g	< 0.000005 g, 0.0000005 g	A→B→BB, EE→E→F
0.065 m	< 0.0005 m, 0.005 m	BB→O→N, U→T→H	8.0×10^2 kg	< 5 kg, 0.5 kg	II→JJ, Y→X→L
0.80 sec	< 0.005 sec, 0.5 sec	F→S, M→L→Y	8×10^2 kg	< 50 kg, 5 kg	AA→A→B, X→W→KK
72.203 g	< 0.00005 g, 0.0005 g	I→V, L→Y	8.00×10^2 kg	< 5 kg, 0.5 kg	J→K→W, Y→X→KK



Why Did the Chef Throw Vegetables in the Air?

Use a calculator for each computation. Round each answer to the decimal place indicated. Find your answer in the answer columns and notice the letter next to it. Write this letter in each box at the bottom of the page that contains the exercise number.

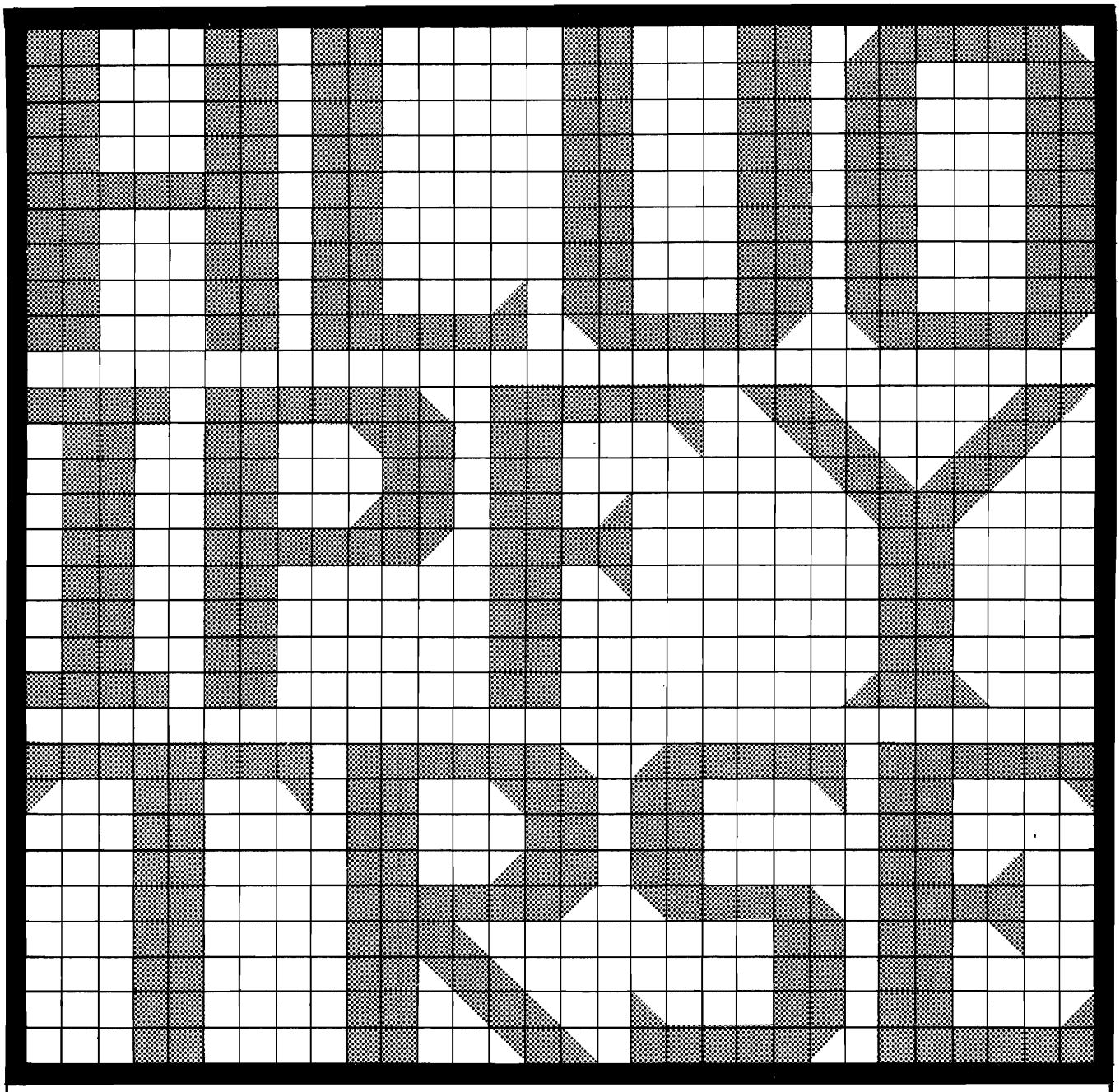
① 6.47 cm ÷ 3 =	to the nearest hundredth	Ⓑ 1.62 mm	Ⓐ 180.0000 km
② 1.975 m × 3.5 m =	to the nearest tenth	Ⓡ 1.95	Ⓕ 389.9 cm^2
③ 9.27 km ÷ 1.15 km =	to the nearest hundredth	Ⓘ 8.06	Ⓖ 62.7778 cm
④ 6.71 m ÷ 15.3 sec =	to the nearest thousandth	Ⓞ 180.00 km	Ⓙ 62.778 cm
⑤ 37.6667 cm ÷ 0.6 =	to the nearest ten thousandth	Ⓛ 0.0610	Ⓝ 15.91 km/h
⑥ 13.43 mm × 9.751 mm =	to the nearest tenth	Ⓥ 6.8 m^2	Ⓐ 0.0140 km/sec
⑦ 4.0075 km × 5 =	to the nearest thousandth	Ⓨ 20.037 km	Ⓓ 131.0 mm^2
⑧ 68.80 km ÷ 4.325 h =	to the nearest hundredth	Ⓣ 2.16 cm	Ⓛ 15.9 km/h
⑨ 0.0481 m ÷ 0.789 m =	to the nearest ten thousandth	Ⓕ 2.15 cm	Ⓤ 0.438 m/sec
⑩ 17.37 cm ÷ 22.45 cm =	to the nearest tenth	Ⓢ 2.0	Ⓜ 0.439 m/sec
⑪ 485.5 mm ÷ 300 =	to the nearest thousandth	Ⓔ 6.9 m^2	Ⓚ 390.0 cm^2
⑫ 12.857 km × 14 =	to the nearest hundredth	Ⓑ 0.0610000	Ⓡ 130.9 mm^2
⑬ 0.839 km ÷ 60.0 sec =	to the nearest ten thousandth	Ⓗ 1.618 mm	Ⓟ 0.013 km/sec
⑭ 12,500 mm ÷ 6400 mm =	to the nearest tenth	Ⓒ 8.1	Ⓦ 20.038 km

11	2	7	13	14	4	13	10	3	8	5	13	1	12	14	14	2	6	14	13	9	13	6

A Square Deal

DIRECTIONS: Figure out the AREA of any letter below and find your answer in the code at the bottom of the page. Each time the answer appears in the code, write the letter above it.

KEEP WORKING AND YOU WILL DECODE THE MESSAGE.



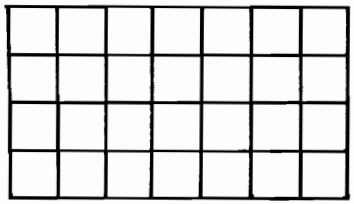
TITLE: SNOOZE NEWS

29-22$\frac{1}{2}$-30-30-34-22-29-25-39-30-41$\frac{1}{2}$-30-29-25-40-25$\frac{1}{2}$-26-40-38-41$\frac{1}{2}$-22$\frac{1}{2}$-22-25$\frac{1}{2}$-30

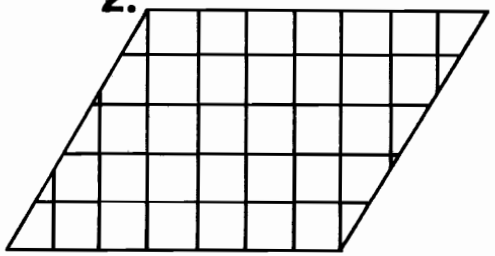
What is GREEN and makes HOLES?

Find the AREA of each figure below and circle your answers in the answer column. When you finish, arrange the letters in order from the letter of the smallest correct answer to the letter of the largest correct answer. Write the letters in this order in the boxes at the bottom of the page. (In the first four problems, assume each box = 1 cm^2.)

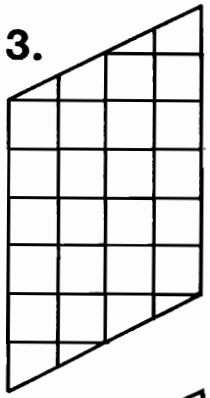
1.



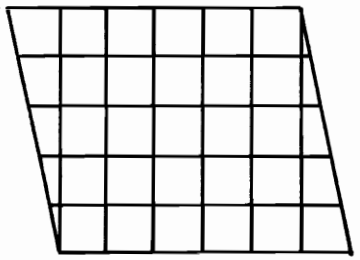
2.



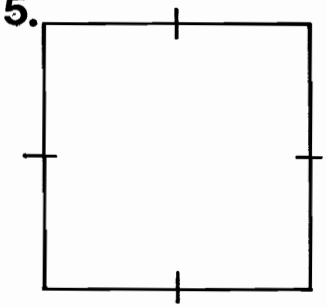
3.



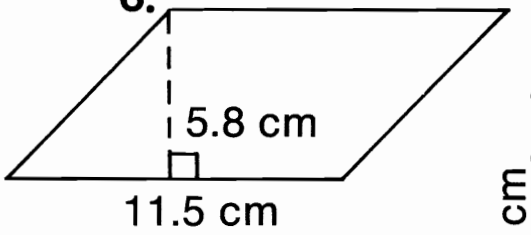
4.



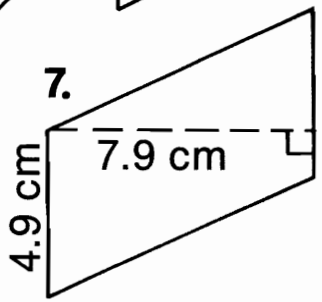
5.



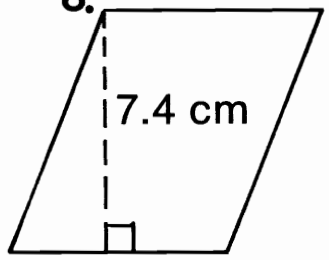
6.



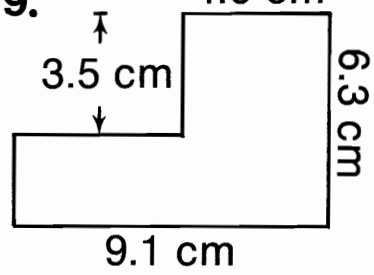
7.



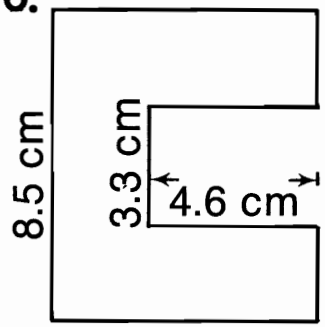
8.



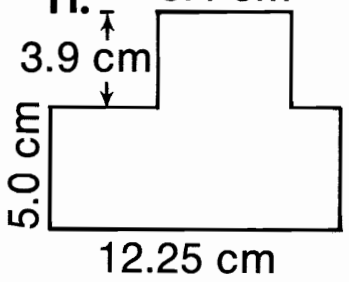
9.



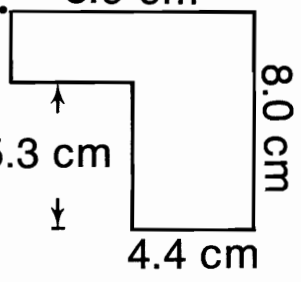
10.



11.



12.



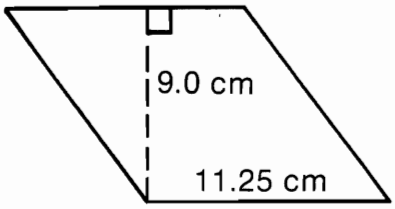
Ⓚ	49.95 cm^2
Ⓡ	28 cm^2
Ⓔ	82.31 cm^2
Ⓛ	35 cm^2
Ⓣ	29.83 cm^2
Ⓘ	46.02 cm^2
Ⓢ	55.54 cm^2
Ⓐ	24 cm^2
Ⓟ	39.48 cm^2
Ⓛ	66.7 cm^2
Ⓡ	42 cm^2
Ⓘ	30 cm^2
Ⓒ	47.35 cm^2
Ⓝ	75.41 cm^2
Ⓓ	27.04 cm^2
Ⓖ	22.4 cm^2
Ⓛ	38.71 cm^2

LETTER OF SMALLEST CORRECT ANSWER → | | | | | | | | | | | | | ← LETTER OF LARGEST CORRECT ANSWER

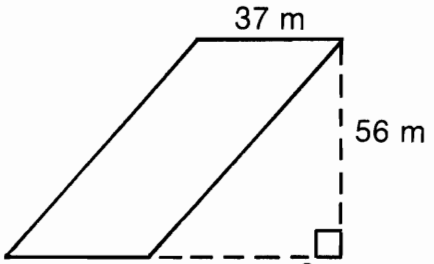
What happened when Orgo tore up a PUZZLE Book?

Work each problem below and circle the letter of the correct answer. Write the letter of the correct choice in each box at the bottom of the page that contains the problem number.

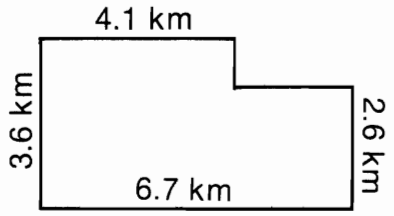
In the first six problems, find the area of the figure.



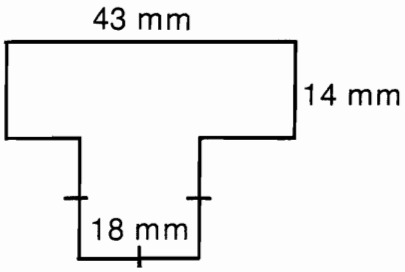
1. (I) 101.25 cm^2
   (E) 99.75 cm^2



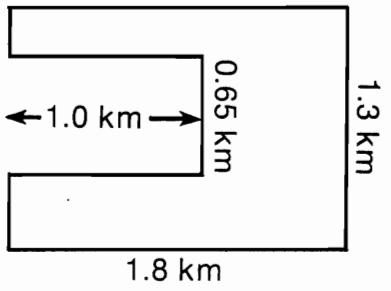
2. (V) 2162 m^2
   (T) 2072 m^2



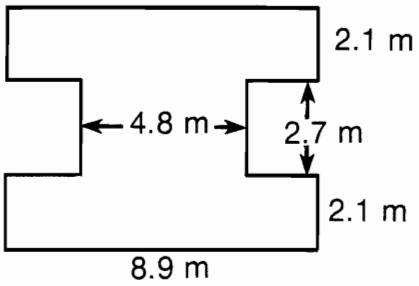
3. (H) 21.52 km^2
   (S) 23.84 km^2



4. (W) 926 mm^2
   (B) 874 mm^2



5. (N) 1.73 km^2
   (A) 1.69 km^2



6. (R) 45.7 m^2
   (C) 50.34 m^2

7. A rectangular room is 4.8 meters wide and 6.5 meters long. What would it cost to carpet this room if carpeting costs $17 per square meter?
   (O) $526.60 (E) $530.40

8. What is the height of a parallelogram with a base measuring 9.4 meters and an area of 126.9 square meters? (N) 14.3 m (D) 13.5 m

9. What is the base of a parallelogram with a height of 0.75 kilometers and an area of 1.38 square kilometers? (M) 1.84 km (L) 1.73 km

A rectangular wall is 6.0 meters long and 2.5 meters high. It has a rectangular window that is 1.2 meters wide and 1.75 meters high.

10. What is the area of the window? (O) 2.1 m^2 (U) 2.25 m^2

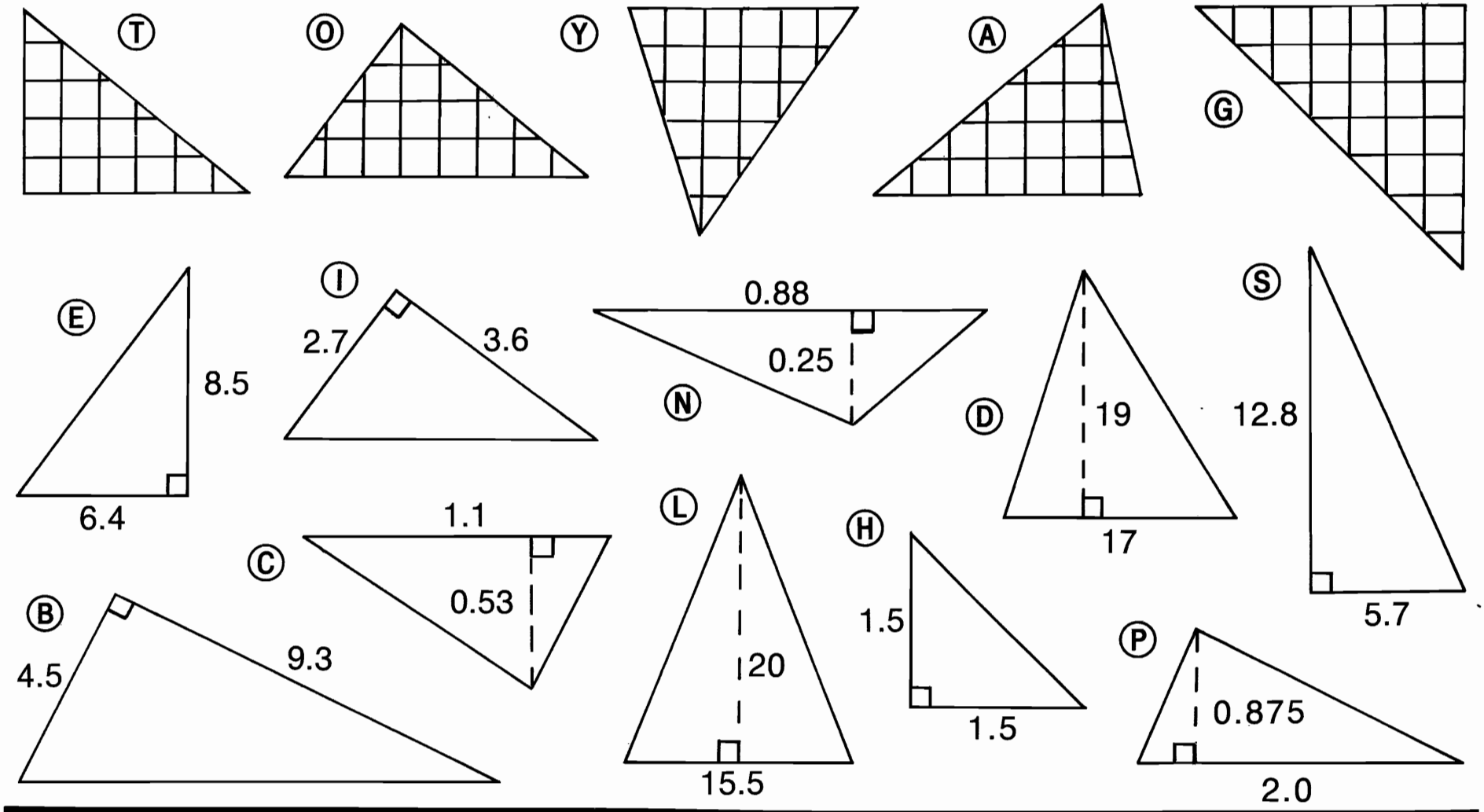
11. What is the area of the wall (not including the window)?
    (R) 12.9 m^2 (N) 13.4 m^2

12. How many liters of paint are needed to paint the wall if one liter covers 10 square meters? (P) 134 l (S) 1.29 l

3	1	12	9	10	2	3	7	11	12	5	1	8	5	6	11	10	12	12	4	10	11	8

Crack The Code

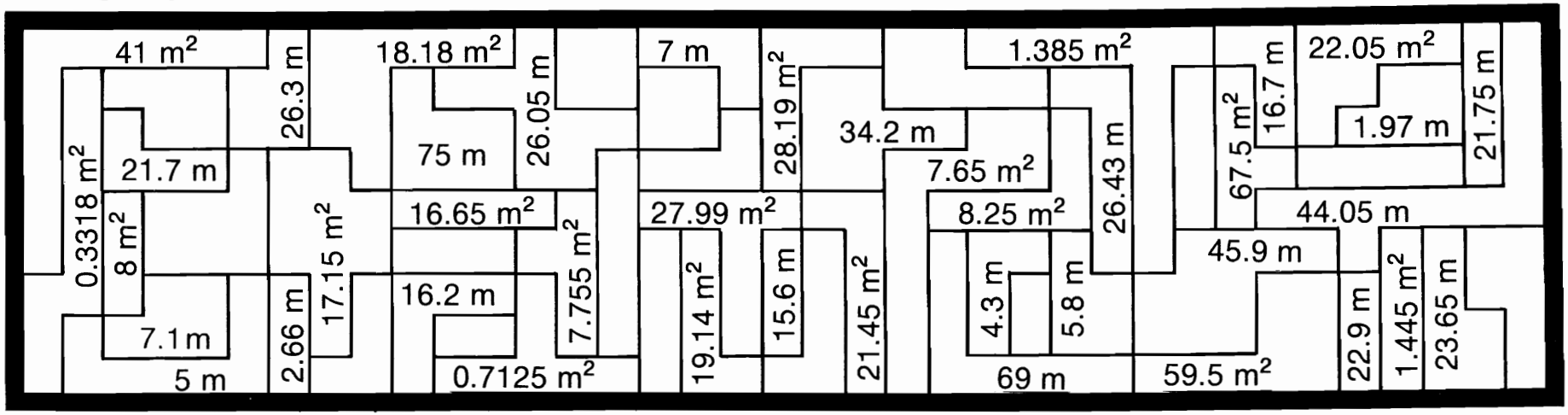
Figure out the AREA of any triangle below and find your answer in the code. Each time it appears in the code, write the letter of that triangle above it. Keep working and you will crack the code.



TITLE:

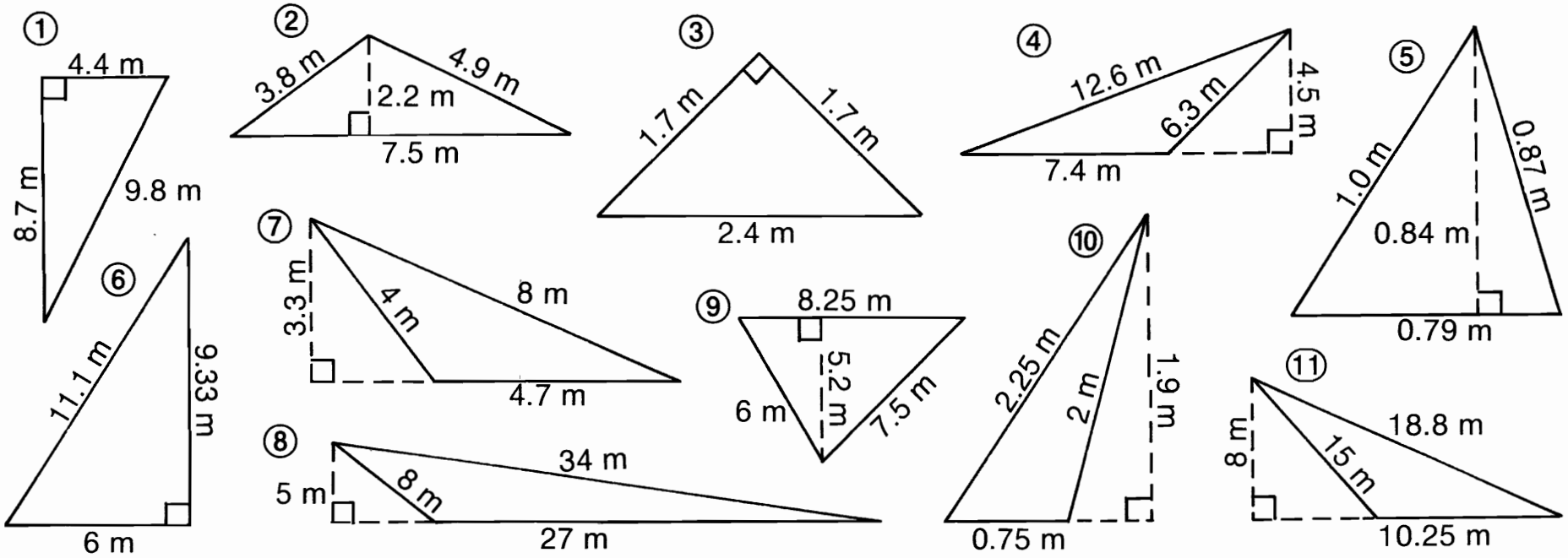
WHEELER DEALERS	17.5	20.925	4.86	0.2915	18	0.2915	155	27.2	36.48	1.125	16	0.875	
1.125	17.5	36.48	15	1.125	4.86	0.11	24.5	36.48	15	16	0.875	27.2	161.5	17.5	155

What are the two favorite letters of children?



THE ANSWER TO THE TITLE QUESTION IS HIDDEN IN THE RECTANGLE. TO FIND IT:

Figure out the AREA and the PERIMETER of each triangle below. Find your answers in the rectangle. Shade in each area containing a correct answer.



Did you hear about . . .

A	B	C	D	E	F	G
H	I	J	K	L	M	N
O	P	Q	R	S	T	U

?

DIRECTIONS: Figure out the AREA of a circle with radius (***r***) or diameter (***d***) as indicated (use $\pi \doteq 3.14$). Find your answer in one of the answer columns and notice the word next to it. Write this word in the box that contains the same letter as that exercise.

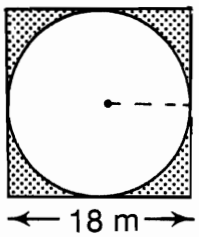
KEEP WORKING AND YOU WILL HEAR ABOUT SOMEBODY WHO RODE A ROUND.

0.000314 m^2 - SO	Ⓐ $r = 3$ cm
11.44 cm^2 - SOME	Ⓑ $d = 20$ cm
50.24 cm^2 - ASKED	Ⓒ $r = 2$ m
0.00314 m^2 - ROUND	Ⓓ $d = 8$ cm
3.14 m^2 - FOR	Ⓔ $r = 1.2$ cm
28.26 cm^2 - THE	Ⓕ $d = 5$ m
51.74 cm^2 - WAS	Ⓖ $r = 0.1$ m
2.5434 m^2 - COULD	Ⓗ $d = 30$ cm
38.465 cm^2 - MONEY	Ⓘ $r = 3.5$ cm
12.56 m^2 - WHO	Ⓙ $d = 7$ m
0.19625 m^2 - A	Ⓚ $r = 5$ cm
72.5 cm^2 - TABLE	Ⓛ $d = 6.2$ m
38.465 m^2 - FROM	Ⓜ $r = 0.01$ m
32.1536 m^2 - COME	Ⓝ $d = 3$ cm
0.0314 m^2 - TO	Ⓞ $r = 0.9$ m
7.245 cm^2 - THAT	Ⓟ $d = 200$ m
19.625 m^2 - KNIGHT	Ⓠ $r = 0.25$ m
314 cm^2 - LANDLORD	Ⓡ $d = 50$ cm
2.1734 m^2 - UP	Ⓢ $r = 3.2$ m
7.065 cm^2 - HE	Ⓣ $d = 2$ m
1962.5 cm^2 - SIR	Ⓤ $r = 1$ cm
706.5 cm^2 - COLLECT	
725.5 cm^2 - HIT	
30.1754 m^2 - TENANTS	
32.2726 m^2 - ON	
27.56 m^2 - HORSE	
4.5216 cm^2 - A	
3.14 cm^2 - RENTS	
78.5 cm^2 - HIS	
31,400 m^2 - SEE	

Just Plane Geometry

THERE IS ONE KIND OF PERSON WHO LOVES PLANE GEOMETRY. TO FIND OUT WHO:

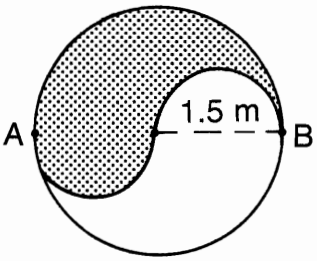
Solve each problem (use $\pi \doteq 3.14$) and find your answers at the bottom of the page. Shade in the letter above each correct answer. When you finish, you will know who loves plane geometry!



① A What is the area of the inscribed circle?

B What is the area of the shaded region?

C What is the circumference of the inscribed circle?



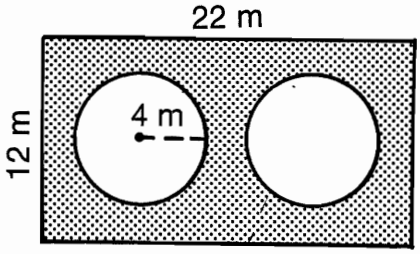
② A What is the area of the large circle?

B What is the area of the shaded region?

C What is the distance from A to B along the S-shaped curve?

D What is the circumference of the large circle?

③ If a circle has a circumference of 8.4 cm, what is the diameter of the circle to the nearest 0.1 cm?

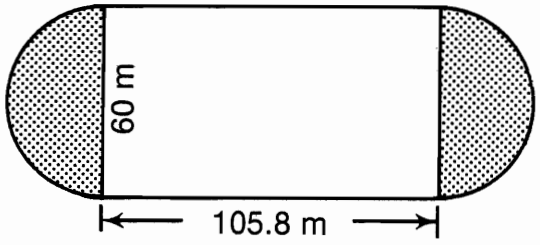


④ A What is the circumference of each small circle?

B What is the area of each small circle?

C What is the area of the shaded region?

⑤ If a circle has a circumference of 14.5 cm, what is the radius of the circle to the nearest 0.1 cm?



⑥ A What is the distance around this track?

B What is the area of the shaded region?

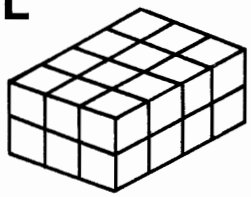
C What is the area of the complete region inside the track?

O	L	D	F	L	A	G	S	H	A	V	E	4	8	S	T	A	R	S
56.52 m	9174 m^2	400 m	4.71 m	254.34 m^2	5426 m^2	50.24 m^2	2.3 cm	3.5325 m^2	2.7 cm	2.5 cm	163.52 m^2	25.12 m	98.24 m^2	7.065 m^2	2826 m^2	69.66 m^2	440 m	9.42 m

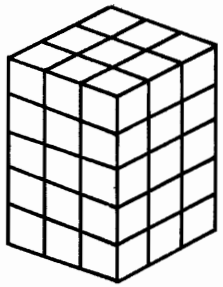
What Problem Does A Five-Foot Man Have?

TO ANSWER THIS QUESTION: Figure out the volume of any rectangular solid below and find your answer in the code. Each time it appears in the code, write the letter of that exercise above it. Keep working and you will discover the answer to the question.

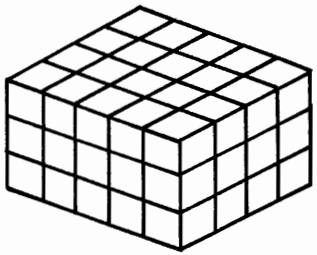
L



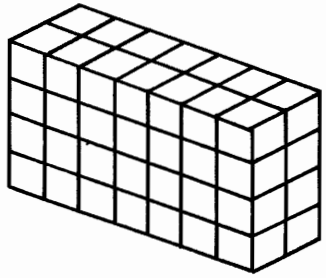
G



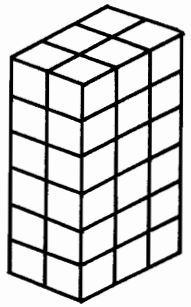
N



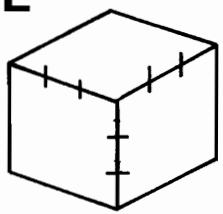
R



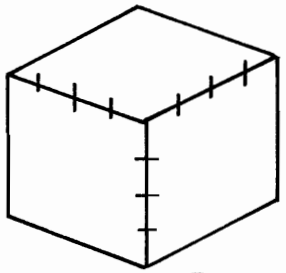
D



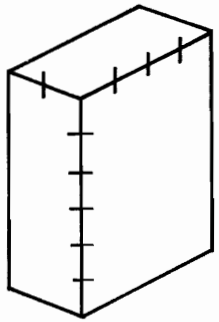
E



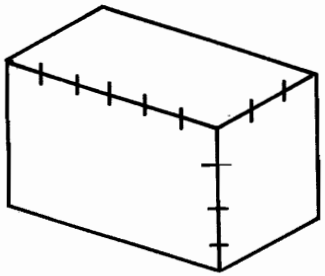
O



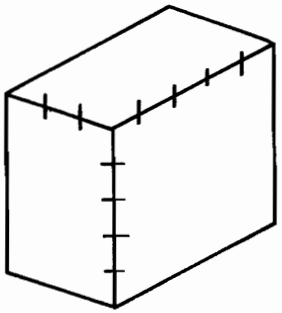
U



W



F



Ⓘ LENGTH: 9
WIDTH: 7
HEIGHT: 10

Ⓑ LENGTH: 15
WIDTH: 4
HEIGHT: 8

Ⓨ LENGTH: 12
WIDTH: 12
HEIGHT: 5

Ⓗ LENGTH: 16
WIDTH: 11
HEIGHT: 15

Ⓣ LENGTH: 18
WIDTH: 6
HEIGHT: 25

Ⓐ LENGTH: 14
WIDTH: 8
HEIGHT: 3

Ⓟ LENGTH: 30
WIDTH: 20
HEIGHT: $\frac{1}{2}$

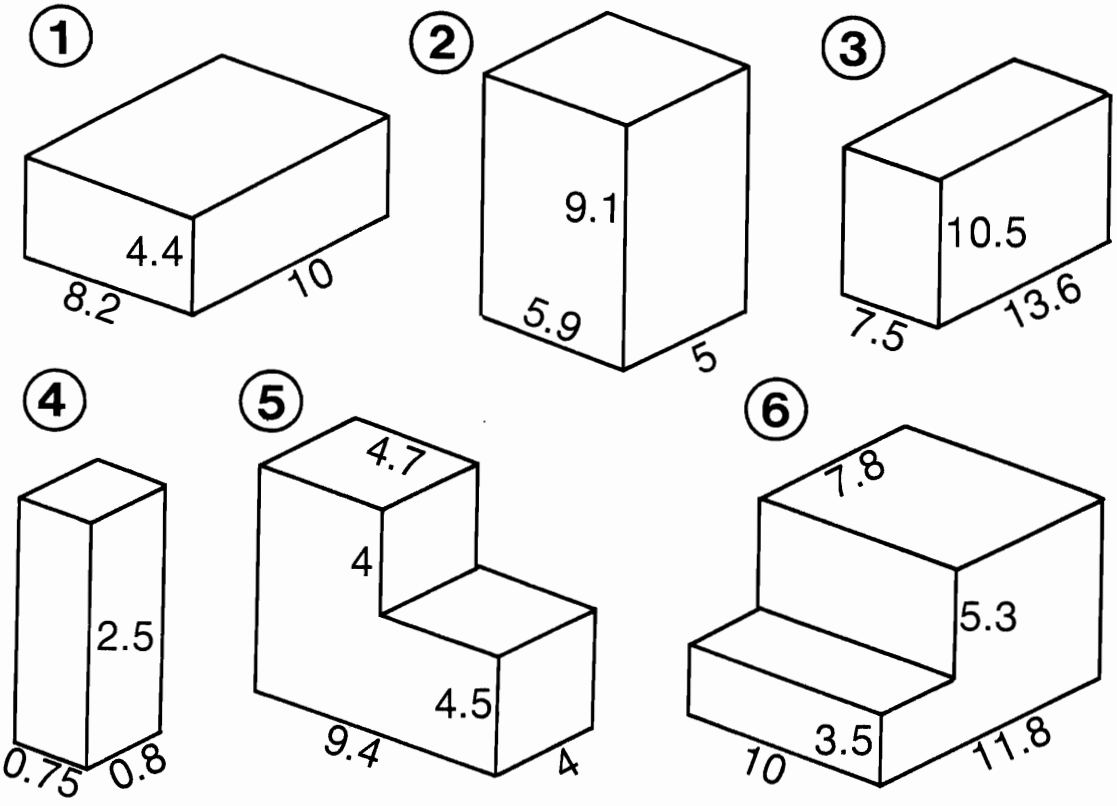
Ⓢ LENGTH: 17
WIDTH: $\frac{1}{2}$
HEIGHT: 40

CODED ANSWER																	
	480	48	720	630	60	45	2700	72	64	336	60	36	336	2640	336	24	75
	300	336	630	56	340	64	75	340	2640	64	27	340					

How does an ESP expert send his mail?

Do any exercise below. Find your answer in the answer column and notice the letter next to it. Write this letter in each box that contains the number of that exercise.

In the first six exercises, find the volume of the figure. All dimensions are in centimeters.



Ⓧ	3933 m^3
Ⓡ	510 m^3
Ⓔ	1071 cm^3
Ⓢ	1.54 m^3
Ⓟ	826.4 cm^3
Ⓑ	3450 kg
Ⓗ	360.8 cm^3
Ⓢ	3360 kg
Ⓜ	420 m^3
Ⓐ	244.4 cm^3
Ⓘ	5832 mm^3
Ⓞ	6432 mm^3
Ⓒ	251.5 cm^3
Ⓝ	268.45 cm^3
Ⓡ	1.25 cm^3
Ⓣ	1.4 m^3
Ⓚ	353.8 cm^3
Ⓖ	3743 m^3
Ⓦ	1.5 cm^3

⑦ What is the volume of a cube whose side measures 18 mm?

⑧ How many cubic meters of earth are needed to fill a hole in the shape of a rectangular solid with dimensions of 23 meters, 38 meters, and 4.5 meters?

⑨ A swimming pool is 20 meters long and 12 meters wide. What volume of water does the pool hold if the average depth of water is 1.75 meters?

A concrete patio is 5 meters long, 3.5 meters wide, and 8 centimeters thick.

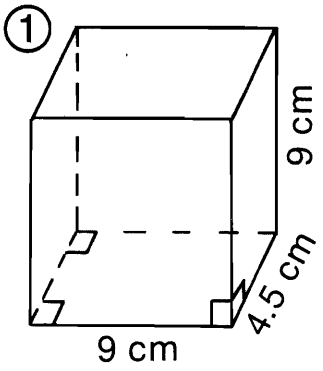
⑩ How many cubic meters of concrete were needed to build the patio?

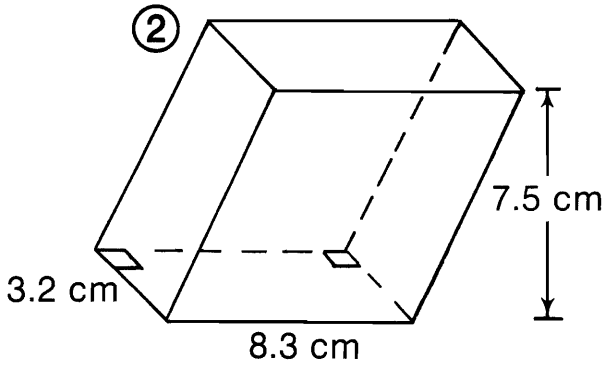
⑪ Concrete has a mass of about 2400 kilograms per cubic meter. About how many kilograms of concrete were needed to build the patio?

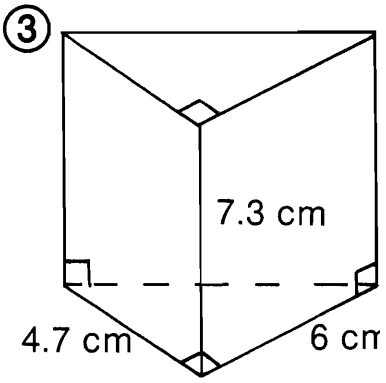
4	7	10	1	5	11	7	8	10	1	11	3	2	11	3	11	10	5	9	6

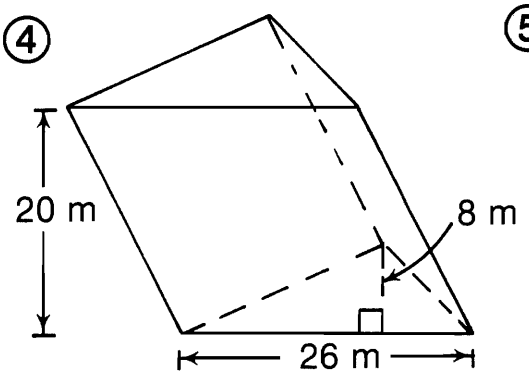
What Do You Call It When A Bull Eats A Bomb?

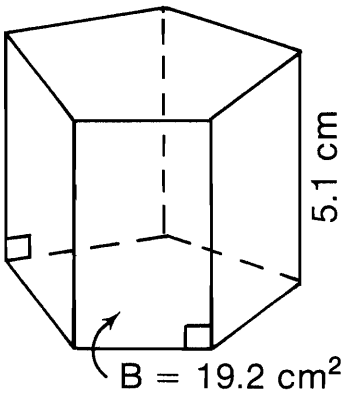
Figure out the VOLUME of each prism and find your answers in the rectangle below. Cross out each box containing a correct answer. When you finish, there will be 5 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page.

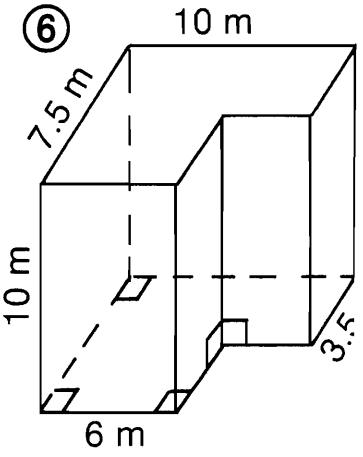
① 

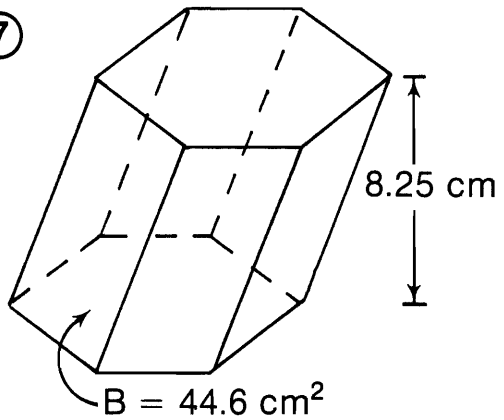
② 

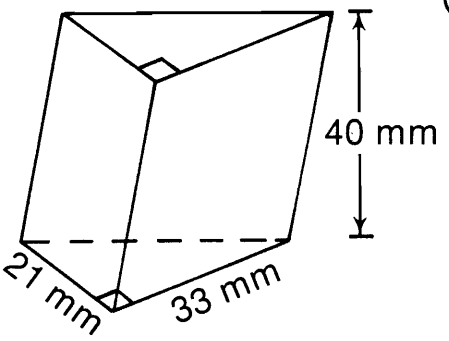
③ 

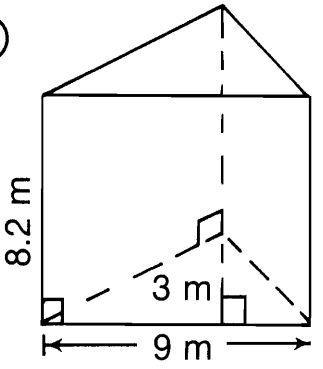
④ 

⑤ 

⑥ 

⑦ 

⑧ 

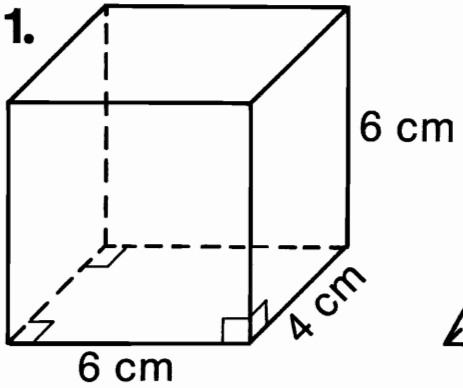
⑨ 

CO 102.93 cm^3	WS 2080 m^3	GR 110.7 m^3	AB 117.7 m^3	IG 97.92 cm^3	BO 199.2 cm^3	OM 9150 mm^3
BL 590 m^3	IN 369.5 cm^3	OW 364.5 cm^3	AB 1050 m^3	HO 13,860 mm^3	LE 91.82 cm^3	UP 367.95 cm^3

What Should You Call A Man With A Clamp?

TO ANSWER THIS QUESTION: Find the VOLUME of each prism or pyramid and circle your answers in the answer list. When you finish, arrange the letters in order from the letter of the smallest correct answer to the letter of the largest correct answer. Write the letters in this order in the boxes at the bottom of the page.

1.



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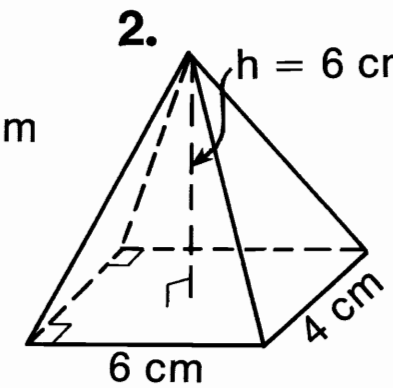
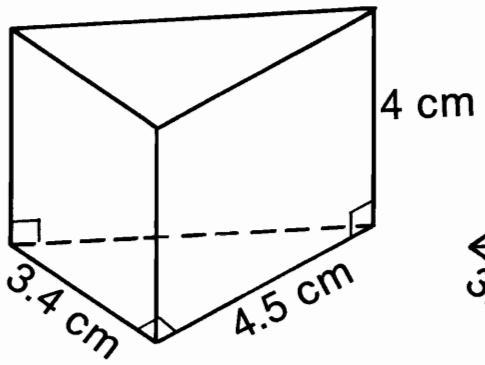
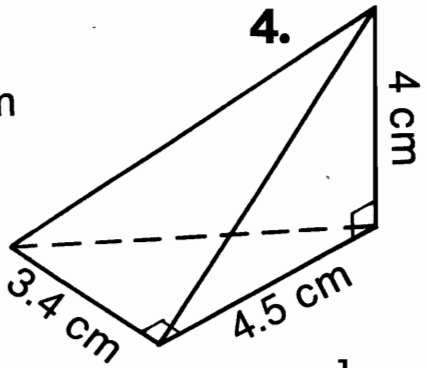


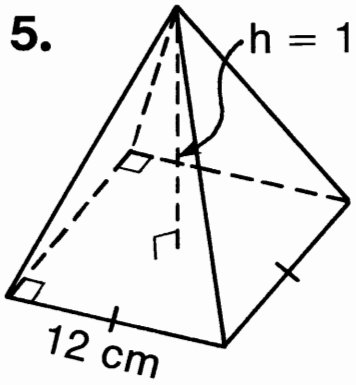
3.



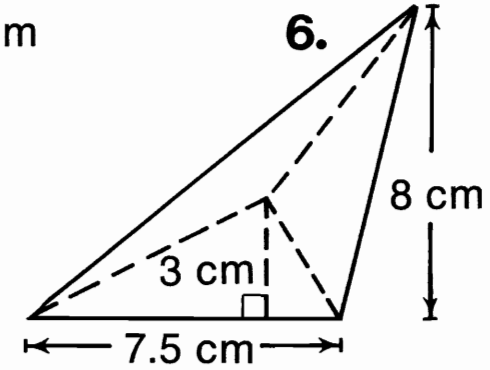
4.



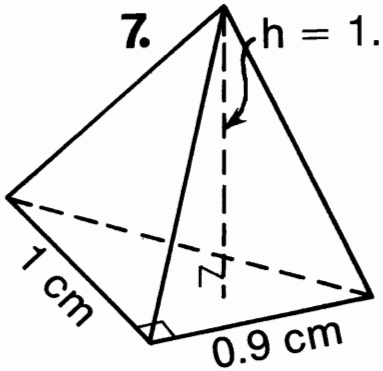
5.



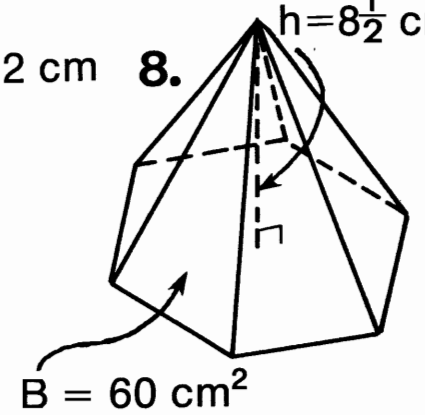
6.



7.



8.

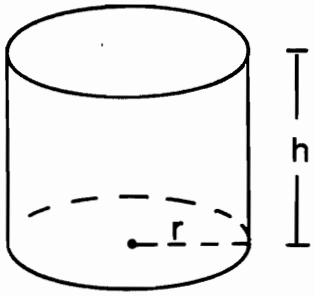


Ⓡ 810 cm^3	Ⓝ 3.38 cm^3	Ⓔ 48 cm^3	Ⓥ 10.2 cm^3	Ⓜ 0.15 cm^3
Ⓢ 30.6 cm^3	Ⓐ 0.18 cm^3	Ⓣ 700 cm^3	Ⓔ 124 cm^3	Ⓤ 170 cm^3
Ⓖ 144 cm^3	Ⓨ 720 cm^3	Ⓗ 160 cm^3	Ⓘ 30 cm^3	Ⓣ 38 cm^3

LETTER OF SMALLEST CORRECT ANSWER → | | | | | | | | | ← LETTER OF LARGEST CORRECT ANSWER

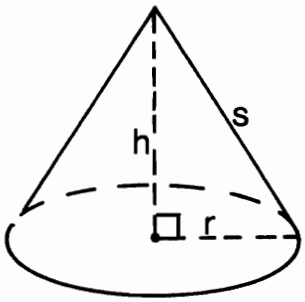
Solid Fun

Given under each figure are the formulas for its volume (***V***) and surface area (***S***). Use the appropriate formula to do any exercise below (use $\pi \doteq 3.14$). Circle the letter of the correct answer. Write this letter in each box at the bottom of the page that contains the number of that exercise.



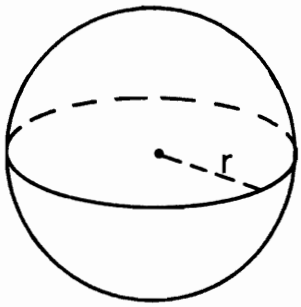
$V = \pi r^2 h$

$S = 2\pi r(r+h)$



$V = \frac{1}{3}\pi r^2 h$

$S = \pi r(r+s)$



$V = \frac{4}{3}\pi r^3$

$S = 4\pi r^2$

① Find the volume of a cylinder if $r = 4$ cm, $h = 10$ cm.
(R) 502.4 cm^3 (S) 516.4 cm^3

② Find the surface area of a cylinder if $r = 4$ cm, $h = 10$ cm.
(I) 351.68 cm^2 (A) 349.58 cm^2

③ Find the volume of a cone if $r = 6$ cm, $h = 8$ cm.
(T) 310.54 cm^3 (E) 301.44 cm^3

④ Find the surface area of a cone if $r = 6$ cm, $h = 8$ cm, $s = 10$ cm.
(S) 301.44 cm^2 (D) 290.44 cm^2

⑤ Find the volume of a sphere if $r = 6$ mm.
(H) 904.32 mm^3 (L) 912.42 mm^3

⑥ Find the surface area of a sphere if $r = 6$ mm.
(P) 412.26 mm^2 (F) 452.16 mm^2

⑦ Find the volume of a cylinder if $r = 1.5$ m, $h = 4$ m.
(T) 29.16 m^3 (N) 28.26 m^3

⑧ Find the surface area of a cylinder if $r = 1.5$ m, $h = 4$ m.
(G) 50.21 m^2 (B) 51.81 m^2

⑨ Find the volume of a cone if $r = 0.5$ dm, $h = 1.2$ dm.
(P) 0.415 dm^3 (M) 0.314 dm^3

⑩ Find the surface area of a cone if $r = 0.5$ dm, $h = 1.2$ dm, $s = 1.3$ dm.
(K) 2.826 dm^2 (D) 2.906 dm^2

⑪ Find the volume of a sphere that has a diameter of 40 km.
(W) $30{,}463\frac{1}{3}$ km^3 (C) $33{,}493\frac{1}{3}$ km^3

⑫ Find the surface area of a sphere that has a diameter of 40 km.
(O) 5024 km^2 (A) 5048 km^2

11	5	2	11	10	3	7	4	11	12	9	3	6	1	12	9	8	1	12	10	3	7	5	12	9	3	4

Double Cross

1. What do you get when you cross A PORCUPINE WITH A GOAT?

_____

80 225 -8 23 12 30 23 2 30 -7 5

2. What do you get when you cross A SHARK WITH THE LOCH NESS MONSTER?

_____

40 8 12 9 -120 80 3

3. What do you get when you cross A MATHEMATICIAN WITH A RUBBER BAND?

_____

225 15 80 2 2 7 80 15 225 3 -6 6 225

4. What do you get when you cross A BLACKBIRD WITH A MAD DOG?

_____

80 6 80 10 -6 15 -90 80 15 -7 80 12

TO DECODE THE ANSWERS TO THESE FOUR QUESTIONS:

Write the integer named by any expression below. Find this integer in the code. Each time it appears, write the letter of that expression above it.

KEEP WORKING AND YOU WILL DISCOVER WHAT YOU GET FROM EACH DOUBLE CROSS!

Ⓡ $\sqrt{36} =$

Ⓞ $\sqrt{64} =$

Ⓔ $-\sqrt{36} =$

Ⓣ $-\sqrt{64} =$

Ⓒ $\sqrt{144} =$

Ⓘ $-\sqrt{49} =$

Ⓨ $\sqrt{81} - \sqrt{4} =$

Ⓗ $\sqrt{100} - \sqrt{1} =$

Ⓦ $\sqrt{25 - 16} =$

Ⓓ $\sqrt{169 - 144} =$

Ⓥ $\sqrt{6^2 + 8^2} =$

Ⓚ $\sqrt{900} =$

Ⓛ $\sqrt{1600} =$

Ⓜ $-\sqrt{8100} =$

Ⓙ $-\sqrt{14{,}400} =$

Ⓟ $\sqrt{2} \cdot \sqrt{2} =$

Ⓤ $\sqrt{23} \cdot \sqrt{23} =$

Ⓝ $\sqrt{15} \cdot \sqrt{15} =$

Ⓐ $(\sqrt{80})^2 =$

Ⓢ $(\sqrt{225})^2 =$

What Is Special About the Testing Program at the Acme College of Cosmetics?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS:
For each exercise, figure out which consecutive integers the square root lies between. Write the letter of the exercise on the number line between these two integers.

Why Did Mergatroid Stand Next To The Bank Vault?

TO ANSWER THIS QUESTION:

Write the letter of each equation in the box above its solution.

(E) $n = \sqrt{17}$	(A) $\sqrt{n} = 20.248$
(T) $n = \sqrt{170}$	(E) $\sqrt{n} = 22.361$
(E) $n = \sqrt{32}$	(O) $n = 10\sqrt{21}$
(O) $n = \sqrt{320}$	(H) $n = 10\sqrt{450}$
(S) $n = \sqrt{7}$	(D) $n = 0.1\sqrt{31}$
(E) $n = \sqrt{70}$	(N) $n = 0.1\sqrt{80}$
(A) $\sqrt{49} = n$	(D) $n = 5\sqrt{3}$
(T) $\sqrt{490} = n$	(B) $n = \sqrt{2^2+3^2}$
(E) $\sqrt{n} = 1.414$	(N) $n = \sqrt{5^2+1^2}$
(H) $\sqrt{n} = 6.164$	(F) $n = \sqrt{9^2-6^2}$
(E) $\sqrt{n} = 5.099$	(S) $n = \sqrt{7^2-4^2}$
(I) $\sqrt{n} = 4.000$	(W) $n = \sqrt{10^2+10^2}$
(T) $\sqrt{n} = 12.247$	(S) $n = \sqrt{13^2-12^2}$

Number n	Square n^2	Square Root $\sqrt{n}$	Square Root of 10 Times n $\sqrt{10 \times n}$	Number n	Square n^2	Square Root $\sqrt{n}$	Square Root of 10 Times n $\sqrt{10 \times n}$
1	1	1.000	3.162	26	676	5.099	16.125
2	4	1.414	4.472	27	729	5.196	16.432
3	9	1.732	5.477	28	784	5.292	16.733
4	16	2.000	6.325	29	841	5.385	17.029
5	25	2.236	7.071	30	900	5.477	17.321
6	36	2.449	7.746				
7	49	2.646	8.367	31	961	5.568	17.607
8	64	2.828	8.944	32	1024	5.657	17.889
9	81	3.000	9.487	33	1089	5.745	18.166
10	100	3.162	10.000	34	1156	5.831	18.439
				35	1225	5.916	18.708
11	121	3.317	10.488	36	1296	6.000	18.974
12	144	3.464	10.954	37	1369	6.083	19.235
13	169	3.606	11.402	38	1444	6.164	19.494
14	196	3.742	11.832	39	1521	6.245	19.748
15	225	3.873	12.247	40	1600	6.325	20.000
16	256	4.000	12.649				
17	289	4.123	13.038	41	1681	6.403	20.248
18	324	4.243	13.416	42	1764	6.481	20.494
19	361	4.359	13.784	43	1849	6.557	20.736
20	400	4.472	14.142	44	1936	6.633	20.976
				45	2025	6.708	21.213
21	441	4.583	14.491	46	2116	6.782	21.448
22	484	4.690	14.832	47	2209	6.856	21.679
23	529	4.796	15.166	48	2304	6.928	21.909
24	576	4.899	15.492	49	2401	7.000	22.136
25	625	5.000	15.811	50	2500	7.071	22.361

2.646	212.13	4.123	14.142	410	5.099	13.038	26	8.66	22.136	45.83	3.606	8.367	17.889	0.8944	150	38	500	5.000	7.000	6.708	5.657	5.745	16	0.5568	2

Why Aren't Elephants Allowed On The Beach?

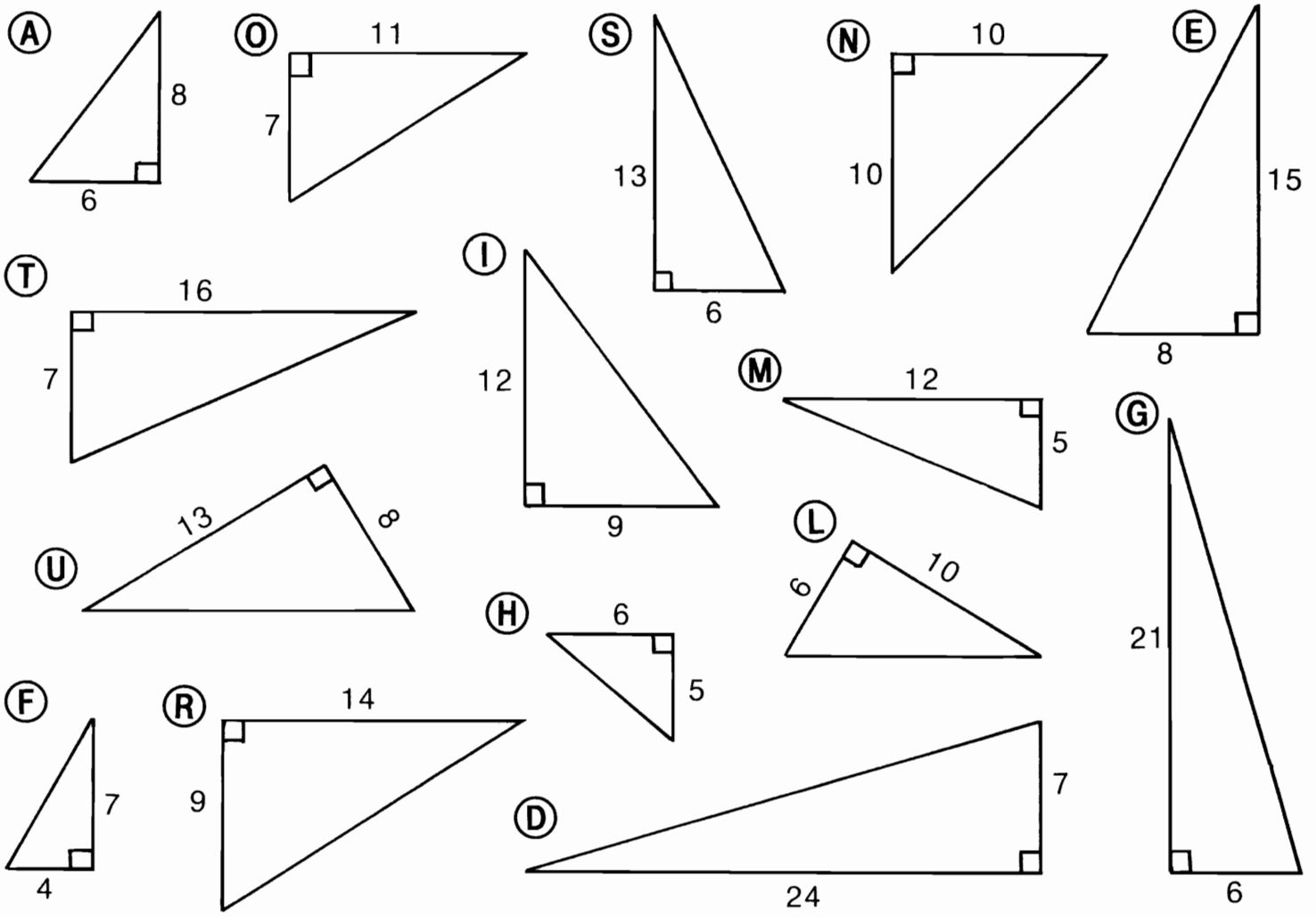
Circle the letter of the correct choice. Write this letter in each box at the bottom of the page that contains the number of the exercise.

①	If the square root of a number is an integer, the number is called a *perfect square*. One example of a perfect square is (V) 50 (S) 81
②	The square root of a perfect square is an (U) integer (B) irrational number
③	Which of the following lists includes only perfect squares? (I) 49, 144, 16, 1, 64 (L) 81, 49, 100, 2, 9
④	Since 2 is not a perfect square, $\sqrt{2}$ is not an integer. The square root of 2 is a number which, when squared, equals exactly (R) 4 (H) 2
⑤	Let's try to find $\sqrt{2}$. It must be between (A) 1 and 2 (M) 2 and 3
⑥	FACT: $(1.4)^2 = 1.96$ and $(1.5)^2 = 2.25$. Therefore, $\sqrt{2}$ is (E) between 1.4 and 1.5 (O) not between 1.4 and 1.5
⑦	FACT: $(1.41)^2 = 1.9881$ and $(1.42)^2 = 2.0164$. Therefore, $\sqrt{2}$ is (C) between 1.41 and 1.42 (W) not between 1.41 and 1.42
⑧	FACT: $(1.414)^2 = 1.999396$ and $(1.415)^2 = 2.002225$. Therefore, $\sqrt{2}$ is (T) exactly equal to 1.414 (Y) between 1.414 and 1.415
⑨	It can be proved that there is no terminating decimal that, when squared, equals exactly 2. So the decimal for $\sqrt{2}$ in a square root table, when squared, equals (F) exactly 2 (R) approximately 2
⑩	REMEMBER: Every *rational number* can be represented either by a terminating decimal or by a (K) repeating decimal (D) nonrepeating decimal
⑪	There is no terminating decimal that, when squared, equals 2. It can also be proved that there is no repeating decimal that, when squared, equals 2. Therefore, $\sqrt{2}$ is (N) a rational number (P) not a rational number
⑫	A decimal that never terminates, and never repeats, represents an *irrational number*. The decimal for $\sqrt{2}$ never terminates or repeats. Therefore, $\sqrt{2}$ is a(n) (M) rational number (N) irrational number
⑬	It can be proved that the square root of *every* whole number is an irrational number unless the number is (T) a perfect square (S) not a perfect square

13	4	6	8	7	5	12	13	10	6	6	11	13	4	6	3	9	13	9	2	12	10	1	2	11

Why Did The Cow Hate The Farmer?

Figure out the length of the hypotenuse of any right triangle below. Find your answer in the answer column and notice the number to the left of it. Each time this number appears in the code, write the letter of the triangle above it. Keep working and you will decode the answer to the title question.



ANSWERS

① $\sqrt{169} = 13$

② $\sqrt{625} = 25$

③ $\sqrt{305} \doteq 17.5$

④ $\sqrt{277} \doteq 16.6$

⑤ $\sqrt{100} = 10$

⑥ $\sqrt{233} \doteq 15.3$

⑦ $\sqrt{289} = 17$

⑧ $\sqrt{136} \doteq 11.7$

⑨ $\sqrt{65} \doteq 8.06$

⑩ $\sqrt{200} \doteq 14.1$

⑪ $\sqrt{170} \doteq 13.0$

⑫ $\sqrt{61} \doteq 7.81$

⑬ $\sqrt{477} \doteq 21.8$

⑭ $\sqrt{205} \doteq 14.3$

⑮ $\sqrt{225} = 15$

3-12-7-9-5-4-1-7-4-12-5-2-10-11-4-7-13-5-4-2-9-11-4-3-12-7-9-7-7-8-15-10-13-11-9-6-2-2-7-4-14

Get The Message

DIRECTIONS:

Determine whether or not the given numbers are possible measures for the sides of a right triangle. Circle the appropriate letter next to each set of measures.

When you finish, print the circled letters in the row of boxes at the bottom of the page. FIRST print those from the column marked "Right Triangle," THEN print those from the column marked "Not a Right Triangle."

A MESSAGE WILL APPEAR!

	RIGHT TRIANGLE	NOT A RIGHT TRIANGLE
① $a = 3, b = 4, c = 5$	D	E
② $a = 4, b = 5, c = 6$	R	V
③ $a = 5, b = 12, c = 13$	O	A
④ $a = 6, b = 9, c = 11$	L	E
⑤ $a = 7, b = 24, c = 25$	G	R
⑥ $a = 8, b = 10, c = 13$	F	A
⑦ $a = 6, b = 11, c = \sqrt{157}$	S	R
⑧ $a = 9, b = \sqrt{115}, c = 14$	O	L
⑨ $a = \sqrt{24}, b = 7, c = 9$	N	R
⑩ $a = 12, b = 20, c = 24$	R	U
⑪ $a = 9, b = 40, c = 41$	F	N
⑫ $a = 1.5, b = 2, c = 2.5$	T	B
⑬ $a = 2.2, b = 3, c = 3.8$	E	F
⑭ $a = 10, b = 16, c = \sqrt{356}$	E	I
⑮ $a = 4, b = \sqrt{150}, c = 13$	N	F
⑯ $a = \sqrt{139}, b = 12, c = 17$	R	L
⑰ $a = 30, b = 40, c = 50$	N	E
⑱ $a = 10, b = 24, c = 26$	H	A
⑲ $a = \sqrt{7}, b = \sqrt{8}, c = \sqrt{14}$	E	I
⑳ $a = 0.8, b = 1.5, c = 1.7$	A	N
㉑ $a = 4.5, b = 4.5, c = 7$	D	F
㉒ $a = 1, b = 2, c = 3$	L	E

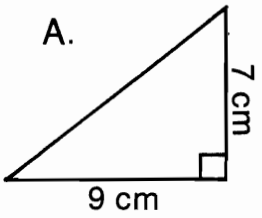
FIRST PRINT THE CIRCLED LETTERS FROM THE "RIGHT TRIANGLE" COLUMN, THEN FROM THE OTHER COLUMN.

What Do Two Bullets Have When They Get Married?

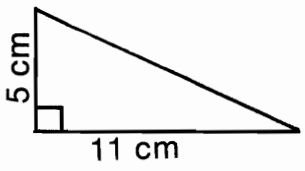
Work each problem and find your answers at the bottom of the page. Shade out the letter above each correct answer. When you finish, the answer to the title question will remain.

① Find the length of the hypotenuse of each right triangle:

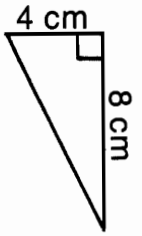
A.



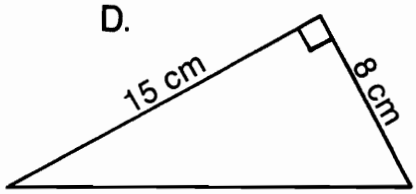
B.



C.



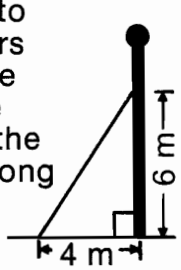
D.



② A rectangle is 3 meters wide and 10 meters long. How long is the diagonal of the rectangle?

③ A rectangle is 13 centimeters wide and 18 centimeters long. How long is its diagonal?

④ A guy wire is attached to an upright pole 6 meters above the ground. If the wire is anchored to the ground 4 meters from the base of the pole, how long is the wire?

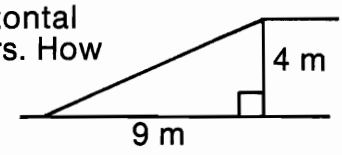


⑤ A television screen measures 30 cm wide and 22 cm high. What is the diagonal measure of the screen?

⑥ A ship leaves port and sails 12 kilometers west and then 19 kilometers north. How far is the ship from port?

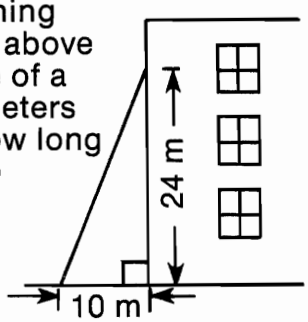
⑦ Each side of a checkerboard measures 40 cm. What is the length of its diagonal?

⑧ An inclined ramp rises 4 meters over a horizontal distance of 9 meters. How long is the ramp?



⑨ A box is 120 cm long and 25 cm wide. What is the length of the longest ski pole that could be packed to lie flat in the box?

⑩ The window of a burning building is 24 meters above the ground. The base of a ladder is placed 10 meters from the building. How long must the ladder be to reach the window?



T	H	E	F	B	I	H	A	S	B	E	D	B	U	G	S
$\sqrt{15025}$ cm $\doteq$ 122.6 cm	$\sqrt{493}$ cm $\doteq$ 22.2 cm	$\sqrt{80}$ cm $\doteq$ 8.94 cm	$\sqrt{676}$ m = 26 m	$\sqrt{52}$ m $\doteq$ 7.21 m	$\sqrt{130}$ cm $\doteq$ 11.4 cm	$\sqrt{289}$ cm = 17 cm	$\sqrt{514}$ km $\doteq$ 22.7 km	$\sqrt{97}$ m $\doteq$ 9.85 m	$\sqrt{15145}$ cm $\doteq$ 123.1 cm	$\sqrt{505}$ km $\doteq$ 22.5 km	$\sqrt{3200}$ cm $\doteq$ 56.6 cm	$\sqrt{664}$ m $\doteq$ 25.8 m	$\sqrt{146}$ cm $\doteq$ 12.1 cm	$\sqrt{109}$ m $\doteq$ 10.4 m	$\sqrt{1384}$ cm $\doteq$ 37.2 cm

Greek Decoder

TO DECODE THE MESSAGE AT THE BOTTOM OF THE PAGE:

Figure out the length of the missing side of any right triangle below. Find your answer in the answer column and notice the GREEK LETTER next to it. Each time this GREEK LETTER appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE SECRET MESSAGE.

Ⓢ a = 7, b = _____, c = 12

Ⓞ a = 5, b = _____, c = 14

Ⓗ a = 8, b = _____, c = $\sqrt{164}$

Ⓘ a = 4, b = 11, c = _____

Ⓔ a = 12, b = 5, c = _____

Ⓛ a = _____, b = 7, c = 10

Ⓕ a = _____, b = $\sqrt{48}$, c = 13

Ⓚ a = _____, b = 12, c = 15

Ⓤ a = 10, b = _____, c = 16

Ⓦ a = 1, b = _____, c = 2

Ⓜ a = 1, b = 1, c = _____

Ⓣ a = 0.8, b = 0.6, c = _____

Ⓝ a = _____, b = 1.5, c = 2.5

Ⓨ a = _____, b = 11, c = 17

Ⓐ a = _____, b = 24, c = 25

Ⓟ a = $\sqrt{75}$, b = _____, c = 15

Ⓡ a = $\sqrt{87}$, b = $\sqrt{57}$, c = _____

Ⓖ a = _____, b = 3, c = 5

ANSWERS	
δ	$\sqrt{156} \doteq 12.5$
α	$\sqrt{3} \doteq 1.73$
ζ	$\sqrt{144} = 12$
θ	$\sqrt{137} \doteq 11.7$
ϕ	$\sqrt{1} = 1$
π	$\sqrt{171} \doteq 13.1$
σ	$\sqrt{49} = 7$
ν	$\sqrt{51} \doteq 7.14$
ς	$\sqrt{16} = 4$
η	$\sqrt{95} \doteq 9.74$
ϵ	$\sqrt{168} \doteq 13.0$
λ	$\sqrt{81} = 9$
τ	$\sqrt{169} = 13$
ξ	$\sqrt{150} \doteq 12.2$
κ	$\sqrt{100} = 10$
μ	$\sqrt{121} = 11$
β	$\sqrt{2} \doteq 1.41$
ρ	$\sqrt{4} = 2$

SECRET MESSAGE

ξ ϵ ϕ κ σ ς π ζ σ η α σ η σ μ σ β π δ η ς ζ τ τ λ

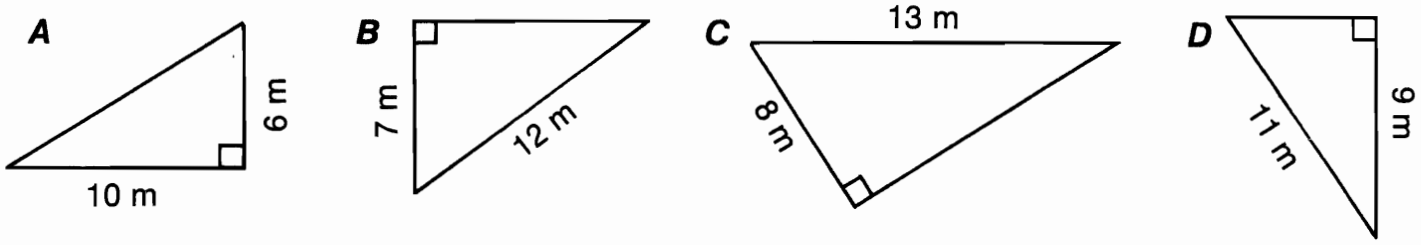
α κ π λ ρ τ α σ ν ν ϕ κ τ ζ θ ς κ ϕ σ ρ ς ν τ η !

What Did Lancelot Say To The Beautiful Ellen?

TO ANSWER THIS QUESTION:

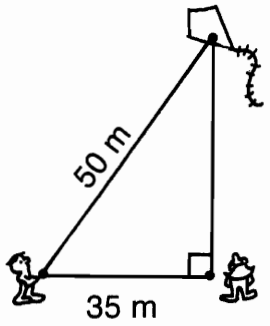
Cross out the box containing the answer to each problem. When you finish, write the letters from the boxes that are not crossed out in the boxes at the bottom of the page.

① For each right triangle, find the length of the side that is not given:



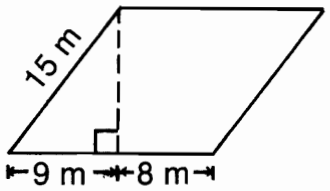
② The bases on a baseball diamond are 90 feet apart. How far is it from home plate to second base?

③ Orgo has let out 50 meters of kite string when he observes that his kite is directly above Zorna. If Orgo is 35 meters from Zorna, how high is the kite?



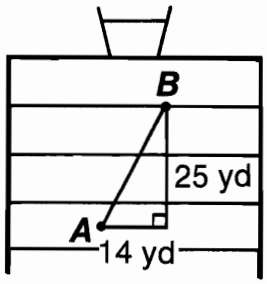
④ A What is the height of this parallelogram?

B What is the area of the parallelogram?

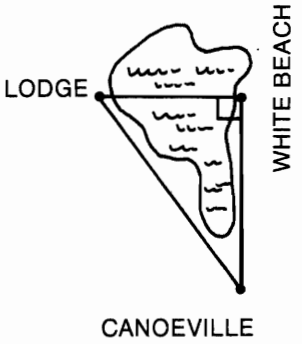


⑤ An 18-foot ladder is leaned against a wall. If the base of the ladder is 8 feet from the wall, how high up on the wall will the ladder reach?

⑥ A quarterback at point A throws the football to a receiver who catches it at point B. How long was the pass?



⑦ From Canoeville it is 2.4 kilometers to White Beach and 3.0 kilometers to the Lodge. How far is it from White Beach across the lake to the Lodge?



ST	IC	KW	QU	IT	UR	AT	GR
$\sqrt{821}$ yd	$\sqrt{3.16}$ km	$\sqrt{144}$ m	$\sqrt{136}$ m	$\sqrt{3.24}$ km	$\sqrt{842}$ yd	$\sqrt{16200'}$	$\sqrt{95}$ m
$\doteq$ 28.7 yd	$\doteq$ 1.78 km	= 12 m	$\doteq$ 11.7 m	$\doteq$ 1.8 km	$\doteq$ 29.0 yd	$\doteq$ 127′	$\doteq$ 9.75 m
AB	EA	TC	UT	ER	EA	LN	GT
	$\sqrt{105}$ m	$\sqrt{260'}$	$\sqrt{275'}$		$\sqrt{1275}$ m	$\sqrt{1325}$ m	$\sqrt{40}$
234 m²	$\doteq$ 10.2 m	$\doteq$ 16.1′	$\doteq$ 16.6′	204 m²	$\doteq$ 35.7 m	$\doteq$ 36.4 m	$\doteq$ 6.32 m

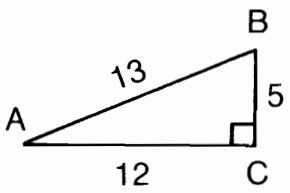
Why Did the Saltine Lock Itself in the Bank Vault?

TO ANSWER THIS QUESTION, FOLLOW THESE INSTRUCTIONS:

For each exercise, select the correct ratio from the four choices given. Write the letter of the correct choice in the box that contains the number of the exercise.

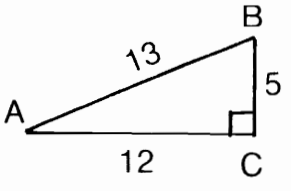
① sin A
② cos A
③ tan A

Ⓣ $\frac{12}{13}$ Ⓐ $\frac{5}{13}$
Ⓛ $\frac{13}{5}$ Ⓔ $\frac{5}{12}$



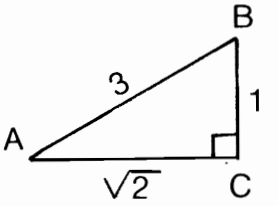
④ sin B
⑤ cos B
⑥ tan B

Ⓜ $\frac{13}{5}$ Ⓐ $\frac{5}{13}$
Ⓒ $\frac{12}{13}$ Ⓓ $\frac{12}{5}$



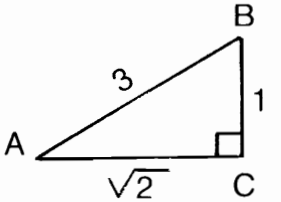
⑦ sin A
⑧ cos A
⑨ tan A

Ⓐ $\frac{1}{3}$ Ⓞ $\frac{1}{\sqrt{2}}$
Ⓗ $\frac{3}{1}$ Ⓔ $\frac{\sqrt{2}}{3}$



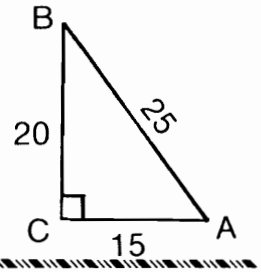
⑩ sin B
⑪ cos B
⑫ tan B

Ⓣ $\frac{\sqrt{2}}{1}$ Ⓢ $\frac{1}{\sqrt{2}}$
Ⓔ $\frac{1}{3}$ Ⓘ $\frac{\sqrt{2}}{3}$



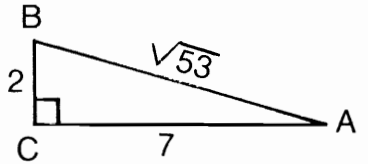
⑬ sin A
⑭ cos A
⑮ tan A

Ⓐ $\frac{4}{3}$ Ⓔ $\frac{3}{5}$
Ⓤ $\frac{5}{3}$ Ⓑ $\frac{4}{5}$



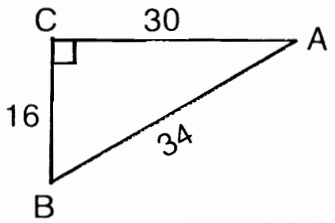
⑯ sin B
⑰ cos B
⑱ tan B

Ⓦ $\frac{7}{\sqrt{53}}$ Ⓡ $\frac{2}{7}$
Ⓒ $\frac{2}{\sqrt{53}}$ Ⓣ $\frac{7}{2}$



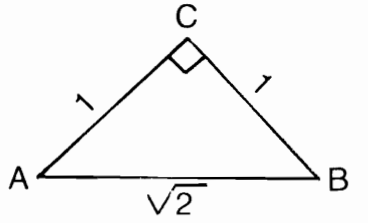
⑲ sin A
⑳ cos A
㉑ tan A

Ⓚ $\frac{8}{15}$ Ⓗ $\frac{17}{8}$
Ⓢ $\frac{8}{17}$ Ⓝ $\frac{15}{17}$



㉒ sin A
㉓ cos A
㉔ tan A

Ⓡ $\frac{1}{\sqrt{2}}$ Ⓡ $\frac{1}{\sqrt{2}}$
Ⓛ $\frac{\sqrt{2}}{1}$ Ⓕ 1



10	2	16	5	20	18	14	6	12	9	13	3	7	19	1	24	11	17	22	15	4	21	8	23

What Did The Leopard Say After Lunch?

TO ANSWER THIS QUESTION:

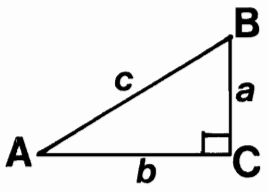
Use the table of trigonometric ratios to do each exercise. Find each answer at the bottom of the page and write the corresponding letter above it.

Find the following:

Ⓛ sin 35° Ⓣ tan 10° Ⓔ cos 65°

Ⓐ cos 70° Ⓘ sin 85° Ⓣ tan 50°

Use the figure at the right for the remaining problems.



Ⓐ If m∠A = 40°, then $\frac{a}{c}$ =

Ⓗ If $\frac{a}{c}$ = 0.966, then m∠A =

Ⓣ If m∠A = 55°, then $\frac{a}{c}$ =

Ⓔ If $\frac{a}{c}$ = 0.707, then m∠A =

Ⓣ If m∠A = 80°, then $\frac{b}{c}$ =

Ⓨ If $\frac{b}{c}$ = 0.500, then m∠A =

Ⓞ If m∠A = 25°, then $\frac{a}{b}$ =

Ⓣ If $\frac{a}{b}$ = 1.428, then m∠A =

Ⓗ If m∠B = 30°, then $\frac{a}{c}$ =

Ⓛ If $\frac{a}{c}$ = 0.996, then m∠B =

Ⓡ If m∠B = 75°, then $\frac{b}{a}$ =

Ⓢ If $\frac{b}{a}$ = 0.839, then m∠B =

Ⓗ If m∠B = 15°, then $\frac{b}{c}$ =

Ⓟ If $\frac{b}{c}$ = 0.906, then m∠B =

Angle	Sin	Cos	Tan
0°	0.000	1.000	0.000
5°	0.087	0.996	0.087
10°	0.174	0.985	0.176
15°	0.259	0.966	0.268
20°	0.342	0.940	0.364
25°	0.423	0.906	0.466
30°	0.500	0.866	0.577
35°	0.574	0.819	0.700
40°	0.643	0.766	0.839
45°	0.707	0.707	1.000
50°	0.766	0.643	1.192
55°	0.819	0.574	1.428
60°	0.866	0.500	1.732
65°	0.906	0.423	2.145
70°	0.940	0.342	2.747
75°	0.966	0.259	3.732
80°	0.985	0.174	5.671
85°	0.996	0.087	11.430
90°	1.000	0.000	------

1.192	0.866	0.342	0.174	3.732	45°	0.643	5°	0.574	60°	0.259	0.996	0.819	55°	75°	0.423	40°	65°	0.466	0.176

Did You Hear About. . .

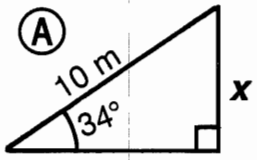
A	B	C	D	E	F	G
H	I	J	K	L	M	?

DIRECTIONS:

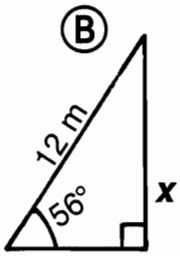
In any triangle below, find the length **x**. Round it to the nearest 0.1 meter. Find your answer in the answer column and notice the word next to it. Write this word in the box that has the same letter as that triangle.

KEEP WORKING AND YOU WILL HEAR ABOUT A NOVEL NAME!

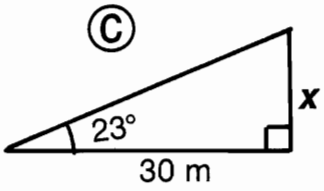
Ⓐ



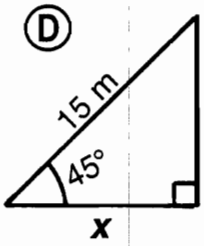
Ⓑ



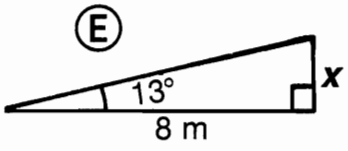
Ⓒ



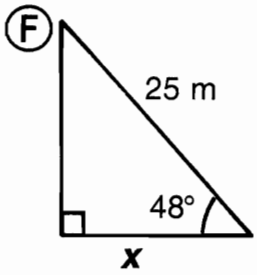
Ⓓ



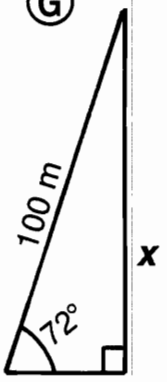
Ⓔ



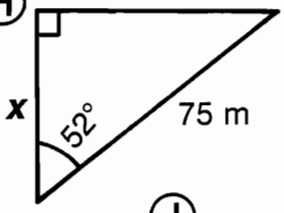
Ⓕ



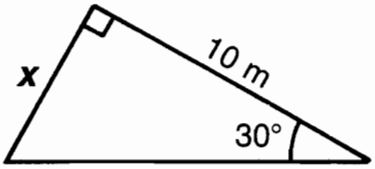
Ⓖ



Ⓗ



Ⓘ



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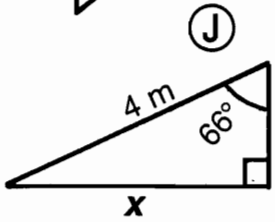

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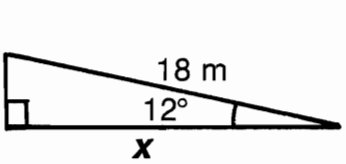
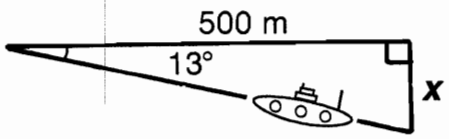
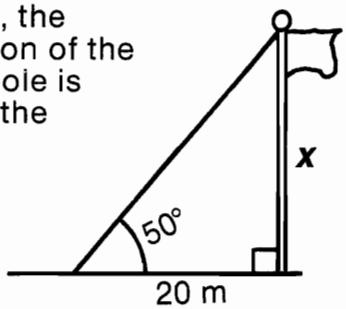


16.8 m—ROBINS
3.7 m—BECAUSE
16.7 m—ROOSTER
23.8 m—SO
46.2 m—NAME
22.7 m—SUN
44.9 m—BEST
5.6 m—THE
87.3 m—WAS
3.2 m—BANKS
10.6 m—GAVE
98.5 m—WRECKED
5.8 m—ROBINSON
9.9 m—FARMER
115.5 m—CREW
17.6 m—HE
12.7 m—WHO
15.4 m—PET
95.1 m—THE
1.8 m—HIS

Ⓛ A submarine dives at an angle of 13°. How far is it beneath the surface at a point 500 meters along the surface from where it submerged?



Ⓜ At a point 20 meters from a flagpole, the angle of elevation of the top of the flagpole is 50°. How tall is the flagpole?



Books Never Written

My Life in the Jungle by _____

56° 23° 72° 66° 6° 45° 77° 29° 29°

Over the Cliff by _____

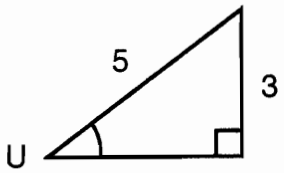
60° 37° 36° 21° 15° 37° 34° 62° 53°

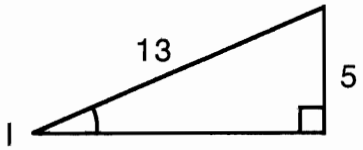
Catching Butterflies by _____

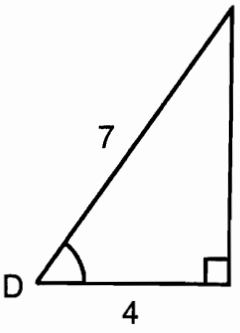
6° 45° 45° 29° 53° 53° 29° 6° 45° 55° 6° 56° 6° 34°

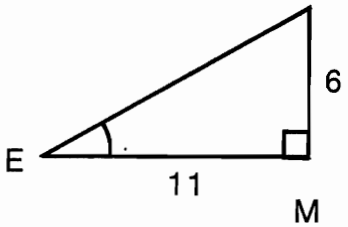
ABOVE ARE THE TITLES OF THREE "BOOKS NEVER WRITTEN." TO DECODE THE NAMES OF THEIR AUTHORS, FOLLOW THESE DIRECTIONS:

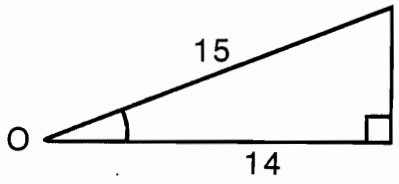
In any triangle below, find the measure of the lettered angle to the nearest degree. Each time this measure appears in the code, write the letter above it. Keep working and you will decode the names of all three authors.

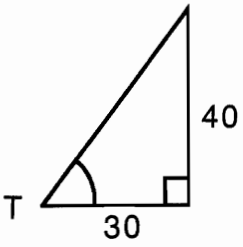


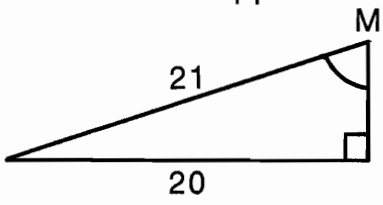


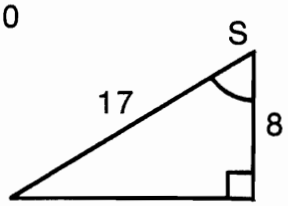


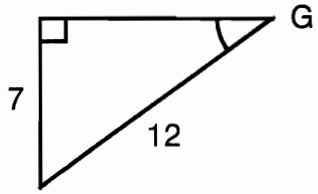


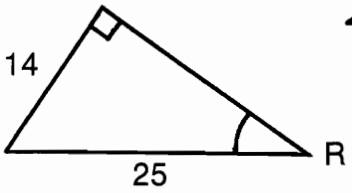


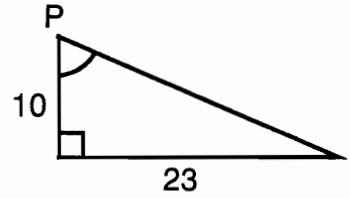


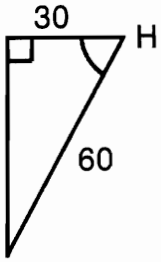


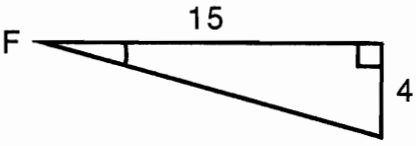




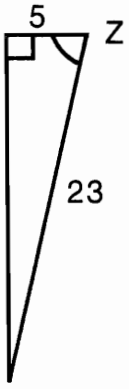


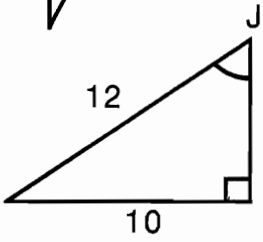


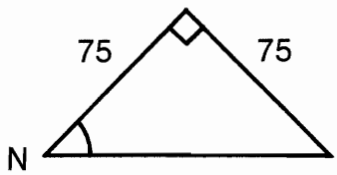


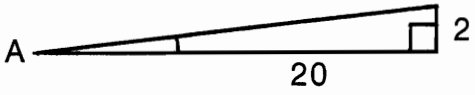


A driveway is built on an incline so that it rises 2 meters over a distance of 20 meters. What is the degree measure of the slope of the driveway? (See figure below.)









What Dance Should You Do When Summer Is Over?

Solve each problem and find your answers at the bottom of the page. (Round each mean to the nearest 0.1 unit.) Shade out the letter above each correct answer. When you finish, the answer to the title question will remain. Now, get mean!

① Nero, Hero, and Zero each bowled three games.
A. What is Nero's mean score?
B. What is Hero's mean score?
C. What is Zero's mean score?

Name	Game 1	Game 2	Game 3
Nero	157	125	146
Hero	133	160	167
Zero	144	151	122

② The scores on a mathematics test for a group of students were 85, 92, 67, 81, 90, 76, 94, 85, 56, and 79.
A. What is the range of the scores?
B. What is the mean score?

③ The diameter of each of the 9 planets and the escape velocity from each planet are given in the table. (The escape velocity is the speed necessary to escape the gravitational pull of the planet.)
A. What is the range of the diameters?

B. What is the mean diameter?

C. What is the range of the escape velocities?
D. What is the mean escape velocity?

Planet	Diameter (km)	Escape Velocity (km/sec)
Mercury	5,000	4.2
Venus	12,200	10.3
Earth	12,757	11.3
Mars	6,750	5.0
Jupiter	142,900	60.5
Saturn	120,900	35.2
Uranus	46,500	21.7
Neptune	45,000	24.0
Pluto	6,500	4.9

④ What is the mean number of letters in the words of this sentence?

⑤ The height and weight of the starting players on the Big Buckets basketball team are given in the table.
A. What is the range of the heights?
B. What is the mean height?
C. What is the range of the weights?

D. What is the mean weight?

Position	Height (cm)	Weight (kg)
Center	206	91.8
Forward	193	85.3
Forward	198	84.9
Guard	172	78.0
Guard	190	81.5

P	I	R	A	T	E	S	R	A	N	T	H	U	G	B	O	A	T	S
34 cm	153.3	84.3 kg	80.5	83.5 kg	13.8 kg	4.0	142.7	193.1 cm	44,280.1 km	44,278.6 km	56.3 km/sec	139.0	18.5 km/sec	38	4.2	19.7 km/sec	191.8 cm	137,900 km

What Happened After Orgo Bought Snow Tires?

Cross out each box containing the correct answer to an exercise. When you finish, write the letters from the boxes that are not crossed out in the boxes at the bottom of the page.

① Find the median for each set of numbers.

A. {26, 34, 45, 61, 69}

B. {1.8, 1.9, 2.3, 2.5, 2.9, 3.4, 4.2, 4.8}

C. {3, 7, 7, 7, 12, 15, 16, 18, 18, 18, 23, 31}

D. {5.4, 2.5, 3.6, 9.7, 6.1, 5.8, 1.3, 8.8, 2.5, 7.4}

E.

Price of Record Album "X" at various stores		
$4.69	$4.25	$5.98
5.50	5.98	6.50
4.49	4.75	5.25
4.95	4.39	5.29

② Five people earn the salaries given in the table.

A. What is the mean salary?

B. What is the median salary?

President	$420,000
Lawyer	35,000
Accountant	20,000
Secretary	14,000
Custodian	11,000

③ Find the mode of each set of numbers.

A.

Test Scores		
62	77	89
67	80	89
69	83	92
69	85	93
75	85	95
77	89	95
77	89	98

B.

Student Heights (m)			
1.47	1.55	1.65	1.72
1.48	1.58	1.66	1.72
1.48	1.58	1.66	1.75
1.53	1.60	1.66	1.78
1.53	1.64	1.69	1.81
1.54	1.65	1.70	1.88

C.

Outcomes for 30 Tosses of Two Dice				
9	10	5	7	7
2	3	5	6	4
7	8	5	4	6
6	7	9	11	9
6	8	12	9	7
4	11	10	8	3

④ The rainfall for a city is given in the table. Find the following:

A. The mean rainfall per month

B. The median rainfall per month

C. The mode of the rainfall measurements

Month	Rainfall (cm)	Month	Rainfall (cm)
January	8.6	July	2.4
February	9.5	August	2.4
March	12.1	September	6.2
April	14.7	October	12.3
May	9.3	November	11.9
June	5.0	December	10.0

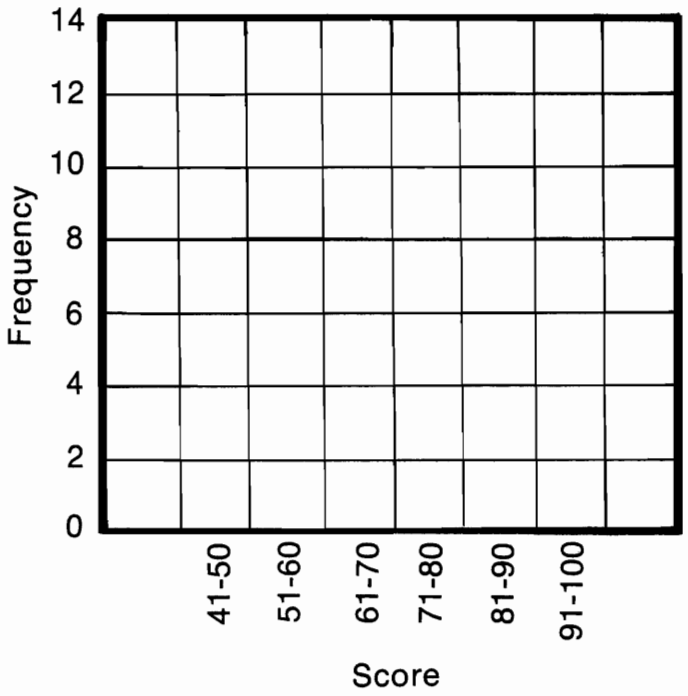
HE	PU	TH	AT	SL	EY	SO	ME	ID
1.66 m	5.6	1.65 m	$5.10	15.5	69	2.4 cm	9.1 cm	$100,000
BA	LL	FE	LT	IR	SN	SN	OW	ED
$20,000	45	7	$5.20	89	8.7 cm	2.7	9.4 cm	$90,000

What Happens When Joggers Get Mad?

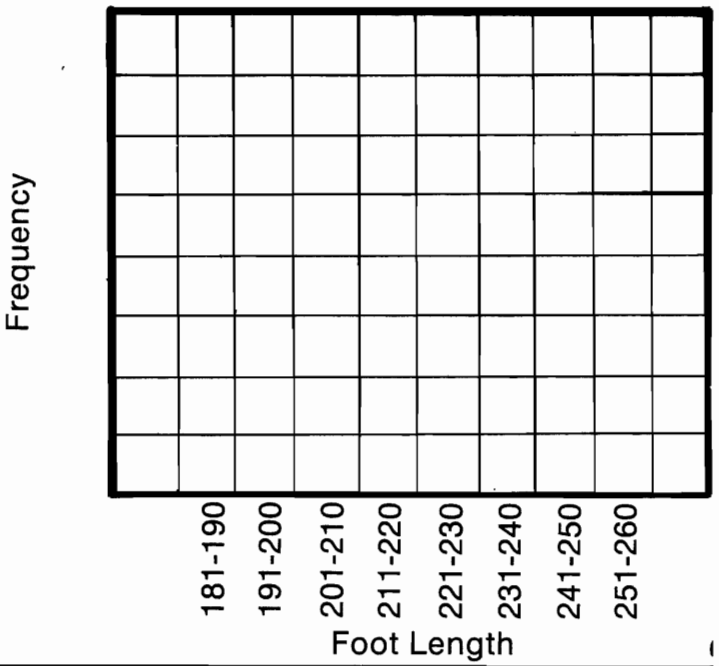
Complete each table. Write the letter of each table value in the box above the corresponding value at the bottom of the page. Make a histogram for each set of data.

Test Scores							
75	51	49	94	61	75	83	55
86	84	97	68	85	63	88	82
92	73	72	82	43	54	66	76
79	63	77	71	67	73	78	71
84	98	77	73	67	89	94	88

Score	Tally	Frequency	Percent
41-50		(P)	(I)
51-60		(A)	(Y)
61-70		(I)	(E)
71-80		(E)	(A)
81-90		(T)	(H)
91-100		(A)	(V)



Student Foot Lengths (mm)		
Length	Frequency	Percent
181-190	12	(L)
191-200	32	(T)
201-210	28	(Y)
211-220	36	(C)
221-230	40	(H)
231-240	26	(S)
241-250	17	(H)
251-260	9	(F)



10	25%	13	14%	20%	5	12.5%	17.5%	3	2	8.5%	7.5%	13%	7	18%	32.5%	6%	4.5%	5%	16%

What is a HIbVE?

CIRCLE the letter of the best answer for each exercise. Write the letter in each box that contains the number of the exercise.

① What was the closing price for TNT stock on Monday?
(F) $37.00 (N) $36.50

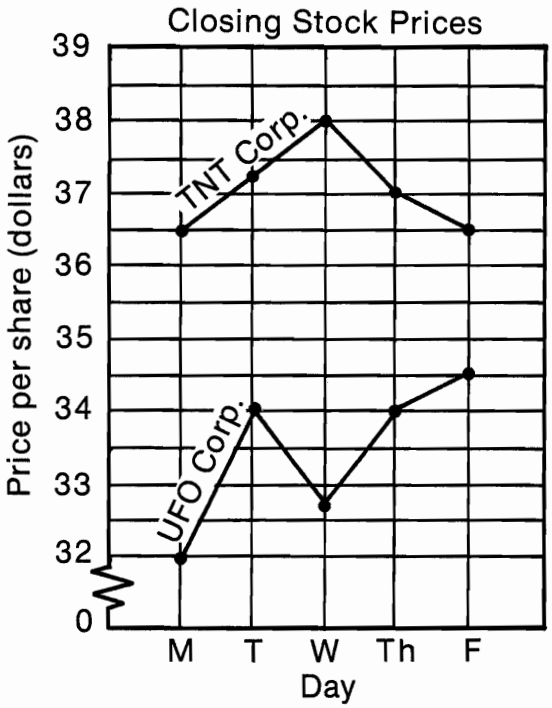
② What was the closing price for UFO stock on Wednesday?
(G) $32.75 (S) $32.25

③ On what day was the closing price for TNT stock $37.25 per share?
(A) Tuesday (T) Thursday

④ What was the range of the closing prices for UFO stock during the week?
(R) $2.00 (V) $2.50

⑤ What was the mean of the closing prices for UFO stock during the week?
(T) $33.25 (L) $33.45

⑥ What was the median of the closing prices for TNT stock during the week?
(D) $37.25 (S) $37.00



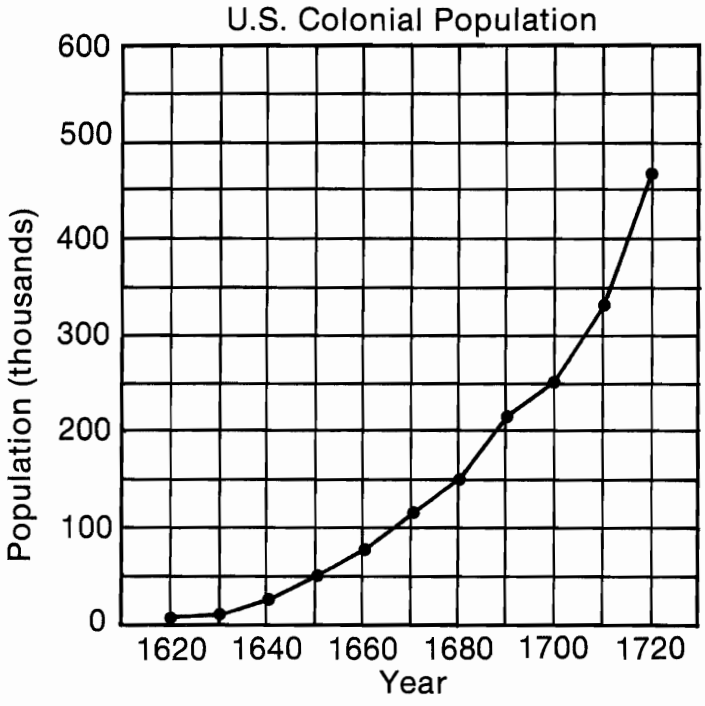
⑦ Give an estimate of the colonial population in 1660.
(E) 75,000 (O) 50,000

⑧ In what year was the colonial population about 210,000?
(P) 1680 (H) 1690

⑨ Give an estimate of the increase in population from 1620 to 1720.
(T) 480,000 (M) 460,000

⑩ Based on the graph, what is a reasonable estimate for the colonial population in 1730?
(O) 500,000 (I) 600,000

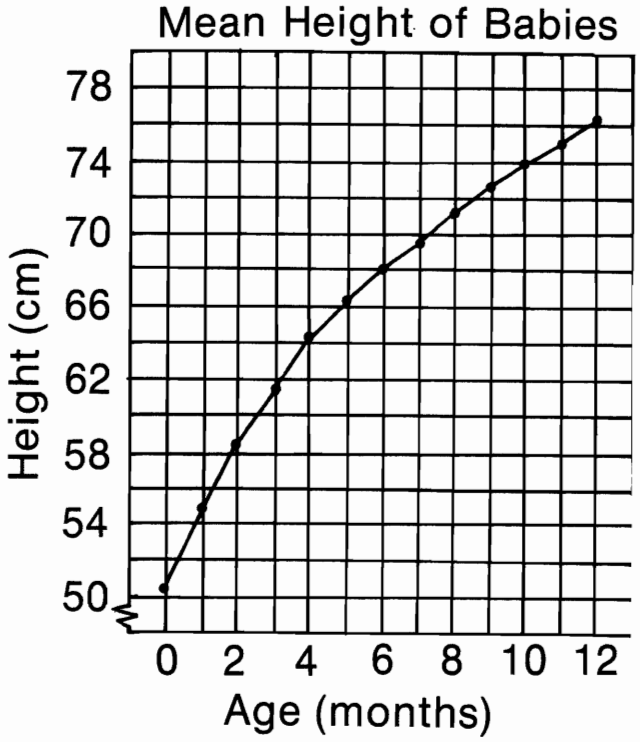
⑪ The population in 1650 was about what percent of the population in 1700?
(B) 20% (F) 25%



3	6	9	3	5	5	11	7	7	10	1	3	11	10	2	8	10	4	7

What is Green, has six legs, and a Trunk?

CIRCLE the letter of the best answer for each exercise. Write this letter in each box at the bottom of the page that contains the number of the exercise.



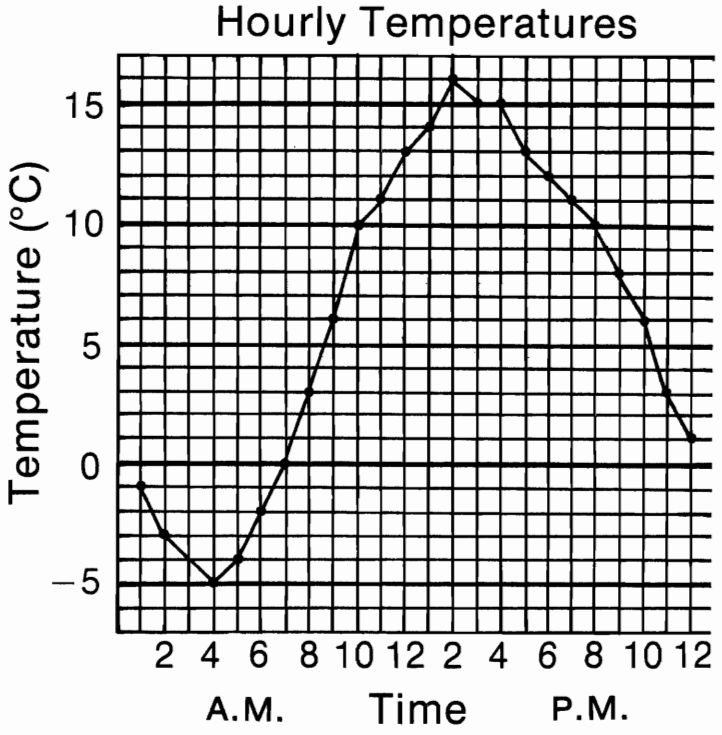
① What is the mean height of babies at age 6 months?
(P) 67 cm (O) 68 cm

② At what age is the mean height about 75 centimeters?
(I) 11 mo. (A) 12 mo.

③ On the average, about how many centimeters do babies grow during the first year?
(C) 25 cm (L) 30 cm

④ The height of babies at birth is about what percent of their height at 12 months?
(S) 75% (E) 66%

⑤ Based on the graph, what is a reasonable estimate for the mean height of 13-month-old babies?
(H) 77 cm (N) 79 cm



⑥ What was the temperature at 7 P.M.?
(U) 11°C (T) 12°C

⑦ What was the temperature at 3 A.M.?
(A) −4°C (M) −2°C

⑧ When was the temperature 0°C?
(L) 1 A.M. (R) 7 A.M.

⑨ What is the range of the temperatures recorded during the day?
(Y) 19°C (K) 21°C

⑩ What is the mean of the temperatures recorded from noon through 7 P.M.?
(S) 13.9°C (T) 13.6°C

⑪ What is the median of the temperatures recorded from noon through midnight?
(S) 12°C (P) 13°C

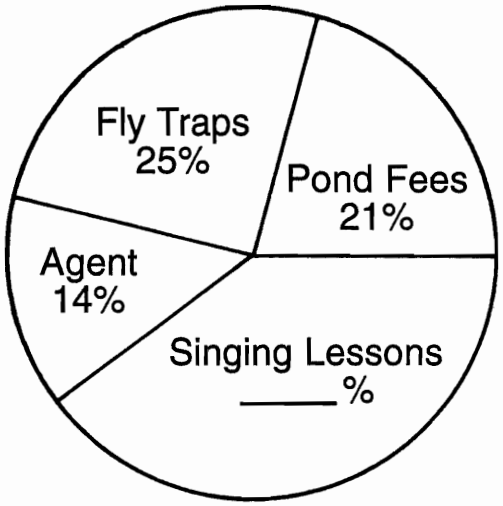
10	5	8	4	4	11	4	7	11	2	3	9	10	1	6	8	2	11	10	11

Why did Orgo put DYNAMITE under his PANCAKES?

Complete each table. (Round the measure of each central angle to the nearest degree.) Write the letter of each table value in the box above the corresponding value at the bottom of the page.

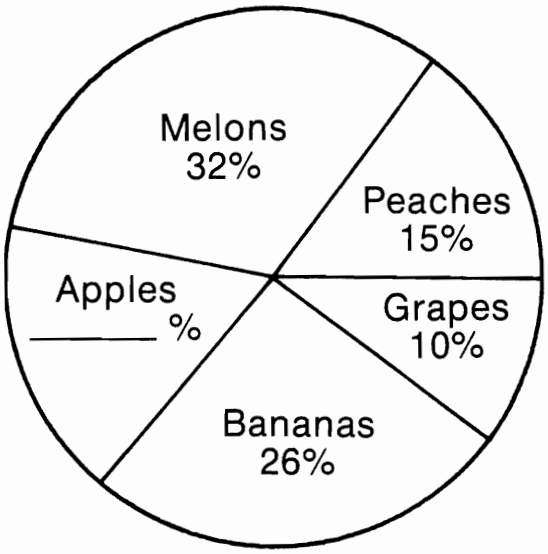
Kermit's Monthly Budget ($500 total)

Item	Percent of total	Amount (dollars)	Central angle
Fly Traps		(D)	(A)
Pond Fees		(O)	(E)
Agent		(T)	(I)
Singing Lessons	(C)	(E)	(S)
TOTAL	100%	$500	360°



Recipe for a Fruit Salad (40 oz. total)

Fruit	Percent of total	Amount (ounces)	Central angle
Peaches		(A)	(W)
Bananas		(O)	(H)
Melons		(T)	(K)
Grapes		(W)	(H)
Apples	(B)	(T)	(L)
TOTAL	(N)	40 oz	(S)



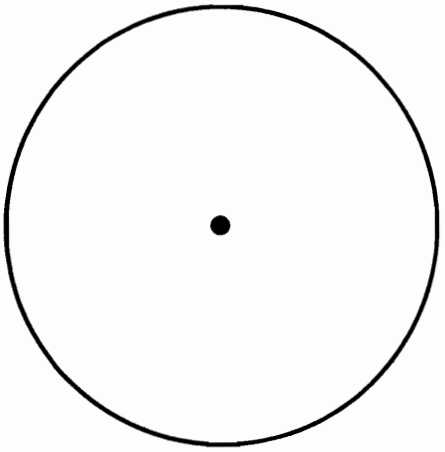
94°	$200	4 oz	6 oz	100%	12.8 oz	76°	$125	$70	10.4 oz	17%	61°	$105	54°	36°	50°	144°	360°	6.8 oz	90°	40%	115°

What Happened When 1000 Baseballs Fell From An Airplane?

Compute the measure of each central angle (rounded to the nearest degree). Find your answer in the answer column and notice the letter next to it. Write this letter in each box at the bottom of the page that contains the number of that exercise. Construct a circle graph for each set of data.

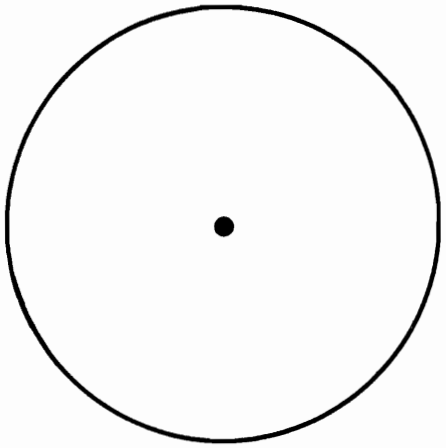
Use of Acreage on a Farm

Use	% of total	Central angle
Corn	30%	(1)
Wheat	21%	(2)
Barley	23%	(3)
Pasture	17%	(4)
Woodland	9%	(5)



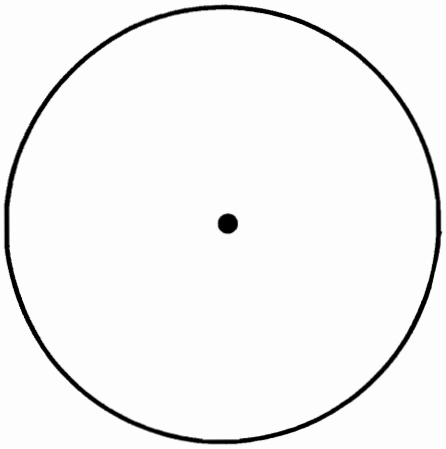
Favorite Type of Music
(results of a survey)

Type	% of total	Central angle
Folk	24%	(6)
Rock	41%	(7)
Jazz	6%	(8)
Country	18%	(9)
Classical	11%	(10)



Ziggy's Budget

Item	% of total	Central angle
Food	25%	(11)
Clothes	20%	(12)
Hobbies	10%	(13)
Dates	33%	(14)
Savings	5%	(15)
Other		(16)



ANSWERS

- Ⓐ 16°
- Ⓘ 18°
- Ⓨ 22°
- Ⓛ 25°
- Ⓜ 28°
- Ⓢ 32°
- Ⓓ 36°
- Ⓕ 40°
- Ⓑ 53°
- Ⓔ 61°
- Ⓣ 65°
- Ⓟ 72°
- Ⓒ 74°
- Ⓞ 76°
- Ⓚ 83°
- Ⓦ 86°
- Ⓗ 90°
- Ⓝ 108°
- Ⓡ 119°
- Ⓤ 128°
- Ⓖ 148°

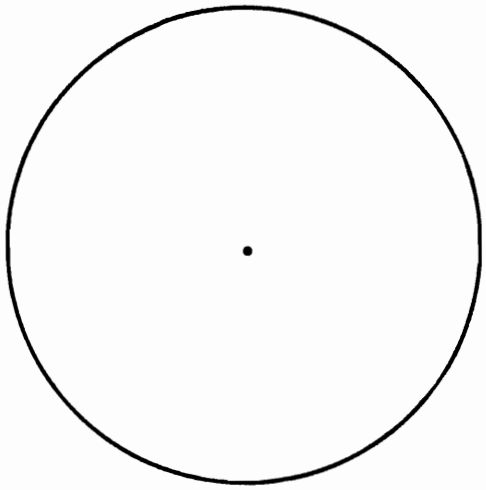
9	11	4	8	6	4	14	4	13	14	2	12	12	15	1	7	16	15	3	4	10	16	15	4	5

Why Does LIGHTNING Shock People?

Complete each table. (Round the measure of each central angle to the nearest degree.) Write the letter of each table value in the box below the corresponding value at the bottom of the page. Construct a circle graph for each set of data.

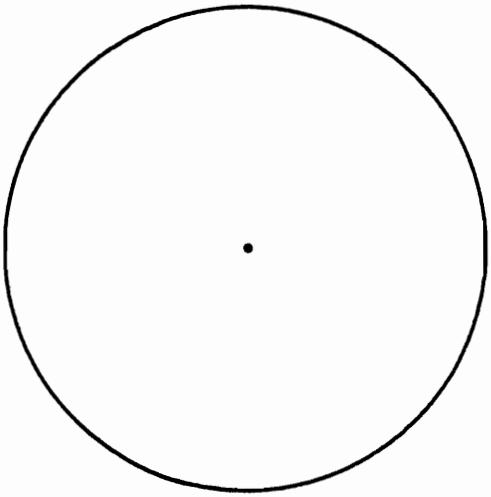
Activity	Number of hours	Fraction of total	Percent of total	Central angle
Sleep	9	(T)	(O)	(D)
Eating	2	(W)	(N)	(I)
School	6	(O)	(T)	(U)
Homework	3	(N)	(S)	(O)
Other	4	(E)	(T)	(I)
TOTAL	24	1	100%	360°

Zorna's Day



Age group	Number of people	Fraction of total	Percent of total	Central angle
0-19	960	(L)	(O)	(N)
20-39	1000	(T)	(W)	(T)
40-59	630	(O)	(K)	(F)
60-79	360	(E)	(C)	(H)
80 & over	50	(S)	(D)	(C)
TOTAL	3000	1	100%	360°

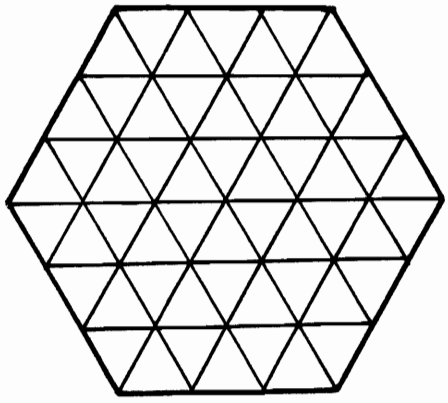
Population of Orgoville (by age groups)



60°	120°	135°	$\frac{21}{100}$	$\frac{3}{25}$	$12\frac{1}{2}\%$	115°	25%	21%	$\frac{1}{8}$	$37\frac{1}{2}\%$	$33\frac{1}{3}\%$	43°	$\frac{1}{4}$	$\frac{1}{12}$
$\frac{1}{3}$	45°	6°	32%	$8\frac{1}{3}\%$	$1\frac{2}{3}\%$	90°	12%	$\frac{3}{8}$	30°	$16\frac{2}{3}\%$	$\frac{1}{60}$	$\frac{1}{6}$	$\frac{8}{25}$	76°

Test Of Genius

① How many regular hexagons can you count in this figure?



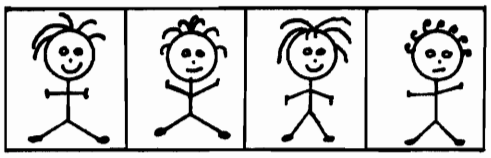
② Mr. Black, Mr. Brown, and Mr. Green were lunching together. One of them was wearing a black tie, one a brown tie, and one a green tie. Suddenly the man wearing the green tie noticed something.

"Do you realize," he said, "we are wearing ties that match our names, but not one of us is wearing a tie to match his own name."

"What a curious thing!" exclaimed Mr. Black.

What color tie was each man wearing?

③ Four stamps can be attached to each other in various ways. One way is shown here. In how many other ways might four stamps be attached?



④ As a prize, a contest winner is to draw one bill at a time from a box containing ten $5 bills, ten $10 bills, and ten $20 bills. The drawing ends when 3 bills of the same denomination are drawn.

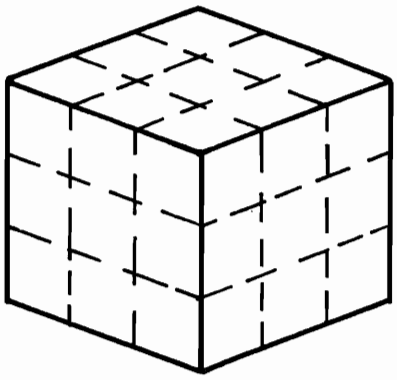
What is the largest sum of money that can be won under these conditions?

⑤ What is the next figure in this series?

⑥ What is the greatest amount of mone you can have (in pennies, nickels, dimes, quarters, and half dollars) anc still not be able to give change for a dollar?

⑦ The figure below represents a cube that measures 3 cm on each edge. Suppose the entire cube is painted re It is then cut up into 27 smaller cube that are each 1 cm on each edge.

How many of these 27 cubes have 3 r sides? How many have 2 red sides? How many have 1 red side? How mar have no red sides?



⑧ It takes $4\frac{1}{2}$ hours for a jet to fly from coast to coast. One jet leaves Los Angeles for New York at 4:40 P.M., while another jet leaves New York foi Los Angeles at 6:00 P.M. Which plane will be closer to New York when they pass each other?

SCORING KEY

7 or 8 — *Superstar Genius*
5 or 6 — *Star Genius*
3 or 4 — *Genius*
2 or less — *Genius of the Future*

CRYPTIC QUIZ

1. How Did Alfo Make A Quart Of Juice From Three Oranges?

ANSWER: _____

99-7-20-18-25-18-7-99-14-15-7-25-38-45-6-6-5-6

2. What Do You Get When The Post Office Burns Down?

ANSWER: _____

18-24-18-25-6-13-42-41-16-18-24-35-84-18-99-16

3. What Do Gorillas Sleep On In Fruit Orchards?

ANSWER: _____

18-72-27-99-24-13-7-25

TO DECODE THE ANSWERS TO THESE QUESTIONS:

Simplify any expression below and find your answer in the code. Each time the answer appears, write the letter of that expression above it. Keep working and you will decode the three answers.

Ⓟ $(16 - 7) \times 8 =$

Ⓛ $12 + (36 \div 9) =$

Ⓖ $28 \div (10 - 8) =$

Ⓤ $9\,(15 \div 3) =$

Ⓦ $[(48 + 2)\,2] \div 5 =$

Ⓘ $(8 + 3) \cdot (16 - 7) =$

Ⓗ $(20 \cdot 6) \div (6 + 2) =$

Ⓞ $[45 - (3 \cdot 2)] \div 3 =$

Ⓩ $2 + [48 \div (12 + 4)] =$

Ⓕ $3 \times 2\,[4 + (9 \div 3)] =$

Ⓒ $72 \div \left(\dfrac{29 + 7}{4 \times 3}\right) =$

Ⓠ $35 + \dfrac{50 + 25}{5 \cdot 5} =$

Ⓚ $80 - [3\,(8 + 7)] =$

Ⓔ $[5\,(20 - 2)] \div \dfrac{30}{2} =$

Ⓜ $3\,[4\,(9 - 2)] =$

Ⓡ $\dfrac{2\,[\,(7 \cdot 3) + 6]}{26 \div 13} =$

Ⓑ $5 + [\,4 \cdot 3\,(2 + 1)] =$

Ⓣ $\dfrac{7(8 - 1) + (42 \div 3)}{(10 - 7)3} =$

Ⓢ $50 \div [(4 \cdot 5) - (36 \div 2)] =$

Ⓐ $\left[\dfrac{3\,(12 - 7)}{2 + 3}\right] \times 6 =$

Why Did Everybody Hate The Diaper Thief?

Simplify any expression below and find your answer in the corresponding answer column. Write the letter of the exercise in the box that contains the number of the answer. Keep working and you will discover the answer to the title question.

(S) $5x + 2 + 3x$	(15) $4x + 11$	(I) $4y + 3x + 2y + 9x + 4$	(1) $7x + 11y + 8$
(F) $3 + 7x + 8$	(5) $7x + 11$	(E) $3 + 7x + 7y + 8x + 9$	(24) $12y + 11$
(E) $9 + 6x + 2x$	(13) $5x + 7$	(H) $5x + 8 + 3y + 2x + 8y$	(8) $12x + 6y + 4$
(I) $4x + 7 + 4$	(28) $8x + 9$	(T) $6y + 9 + y + 7x + 6$	(9) $9x + 12y + 1$
(O) $9x + 3 + 7x + 4$	(11) $3x + 10$	(X) $1 + 8x + 3y + x + 9y$	(12) $9x + 13y$
(T) $x + 3x + 6$	(17) $8x + 2$	(L) $x + 7y + 9 + 3y + 6y$	(16) $15x + 7y + 12$
(A) $4x + 7 + x$	(23) $16x + 7$	(P) $2y + 7 + y + 9y + 4$	(3) $x + 16y + 9$
(Y) $9 + x + 1 + 2x$	(29) $4x + 6$	(B) $5x + 6y + 3x + 7y + x$	(20) $7x + 7y + 15$

(I) $3t + 4v + 5t$	(2) $8t + 5v + 6$	(N) $3z + 6u + 8z + 9 + u$	(27) $8u + 5z + 15$
(A) $7t + 6 + 3v + 6v$	(21) $7t + 18v$	(T) $4 + 3z + 7z + 8 + 4z$	(6) $14z + 12$
(S) $6v + 5t + 8v + 2t$	(10) $4t + 8v$	(E) $5u + 3z + 9 + 9z + 9u$	(31) $7u + 16z$
(H) $3t + 9v + 4t + 9v$	(26) $7t + 9v + 6$	(C) $z + 6 + 4z + 9 + 8u$	(4) $14u + 12z + 9$
(E) $t + 5v + 6 + 7t$	(18) $t + 2v + 15$	(B) $9 + 6u + 3z + 8u + z$	(25) $12u + 11z$
(O) $8 + 4v + 9t + v$	(32) $9t + 5v + 8$	(O) $2u + 4 + 3z + 6 + 9$	(22) $7u + 11z + 9$
(T) $3t + v + t + 7v$	(19) $8t + 4v$	(L) $5u + 7z + 6u + u + 4z$	(14) $14u + 4z + 9$
(W) $2v + 8 + t + 7$	(7) $7t + 14v$	(G) $2z + 8z + 3u + 6z + 4u$	(30) $2u + 3z + 19$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Why Does A Sheep Scratch Himself?

SIMPLIFY any expression below. Then EVALUATE for the given value(s) of the variable(s). Find the simplified expression in the answer column. Notice the letter next to it. Write this letter above the value of the expression which you will find at the bottom of the page. Keep working and you will discover the answer to the title question.

①	$3x + 7x + 2$ if $x = 6$	Ⓔ $10x + 13$
②	$4y + 5 + 2y$ if $y = 3$	Ⓑ $4x + 5y + 8$
③	$9 + x + 4x$ if $x = 8$	Ⓔ $6x + 8y + 12$
④	$8y + 3 + 4y$ if $y = 4$	Ⓒ $8x + 8y + 12$
⑤	$9x + 5 + x + 8$ if $x = 7$	Ⓔ $10x + 2$
⑥	$4y + 8y + 6 + 2y$ if $y = 2$	Ⓕ $7x + 11y + 1$
⑦	$4x + 2y + 7x + 3$ if $x = 3, y = 4$	Ⓒ $6x + 4y + 15$
⑧	$8 + 3x + x + 5y$ if $x = 8, y = 5$	Ⓔ $5x + 9$
⑨	$9x + 6y + 5x + 4y$ if $x = 7, y = 9$	Ⓗ $6x + 8y + 7$
⑩	$8 + 6x + 4 + 8y$ if $x = 1, y = 6$	Ⓐ $6y + 5$
⑪	$3x + 2y + 4 + 9y$ if $x = 8, y = 4$	Ⓢ $12y + 3$
⑫	$4x + 5y + 7x + 5 + 2y$ if $x = 2, y = 3$	Ⓔ $11x + 2y + 3$
⑬	$9 + 8x + 3y + 3 + 5y$ if $x = 7, y = 5$	Ⓗ $3x + 11y + 4$
⑭	$x + 6x + 2y + 1 + 9y$ if $x = 6, y = 9$	Ⓛ $7x + 15y$
⑮	$6x + 2y + 5y + 7 + y$ if $x = 8, y = 1$	Ⓤ $14x + 10y$
⑯	$8x + 8y + x + 6y + 4x$ if $x = 1, y = 2$	Ⓔ $11x + 7y + 5$
⑰	$3x + 8 + 4y + 7 + 3x$ if $x = 9, y = 6$	Ⓐ $14y + 6$
⑱	$5x + 5y + 9y + 2x + y$ if $x = 8, y = 3$	Ⓢ $13x + 14y$

65	49	108	34	188	51	48	63	66	72	23	41	142	101	62	44	93	83

CODE LINE

DIRECTIONS:

Evaluate any expression below for the given values of the variables. Each time your answer appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THE LINE.

Ⓜ	$5x + 4$ if $x = 3$
Ⓖ	$7a + 3$ if $a = -2$
Ⓟ	$-3y - 9$ if $y = -8$
Ⓐ	$4b + 9t$ if $b = 7, t = -2$
Ⓒ	$-8g + 3n$ if $g = -3, n = 4$
Ⓝ	$-6s - 5h$ if $s = 9, h = 5$
Ⓣ	$x + 7p$ if $x = -1, p = 8$
Ⓤ	$7q - 2d + 3$ if $q = -7, d = 1$
Ⓢ	$-c + 5m - 3$ if $c = -5, m = 2$
Ⓧ	$4x + 6y - 2z$ if $x = -9, y = 2, z = -3$
Ⓕ	$-9y + 5p + 3z$ if $y = 7, p = -4, z = 6$
Ⓗ	$7e - m - 4w$ if $e = 3, m = -8, w = 1$
Ⓔ	$6r + 5d + y$ if $r = -4, d = -3, y = 8$
Ⓑ	$9x - 3y - f$ If $x = 3, y = 1, f = -8$
Ⓘ	$-b - 4x + 7g$ if $b = 2, x = 4, g = 5$
Ⓡ	$-2v + 2h - 8s$ if $v = 9, h = 7, s = -6$

TITLE: RAPID MULTIPLICATION

44 −48 −79 −79 17 −79 −11 10 44 10 32 32 17 55 −65 10 44 19 17 12 10

25 10 44 −31 44 10 17 12 17 −79 −11 −31 −18 15 −31 44 17 −31 −79 36 −31

What Do Race Car Drivers Like To Do?

Simplify each expression and find your answers at the bottom of the page. Shade out the letter or number above each correct answer. When you finish, the answer to the title question will remain!

① $-4x + 9x$

② $6y - 8y$

③ $-7x + x$

④ $9y - y$

⑤ $-5x - 5x$

⑥ $3y - 7y$

⑦ $-x - 8x + 7$

⑧ $y - 2y - 3$

⑨ $5 + 5x - 4x$

⑩ $3y - 6 + 7y - 4y$

⑪ $-9x - 5 - 8 + x$

⑫ $6 - y + 5y - 6y$

⑬ $3x - 8y + 2x - 5 - 5y$

⑭ $-9x + 3 + 2x - 9y - 8$

⑮ $5 + 6x - 3y + x + 8y$

⑯ $-4x - 4 + x - 2y + 7x$

⑰ $-8x + 7y - x - 6y + 4x$

⑱ $x + 5 - 2x + 3y - y$

⑲ $9x - 3y + 7 - 4x + y - 3$

⑳ $-x - 3 + 5x + 6y + 8x - 9$

㉑ $4x - 4 - 8y + 8 - 5x + 1$

㉒ $3x - x + 6y - 4x - y$

㉓ $2x + 2y - x - y - 7 + 5y$

㉔ $6x - 8x - 4y - x + 5y - 2y$

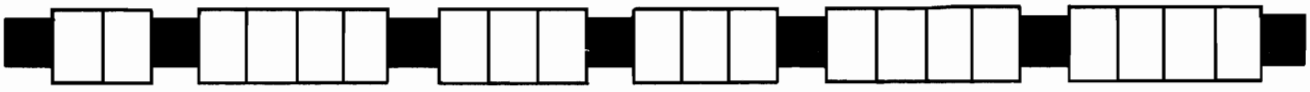
Ⓢ	Ⓩ	Ⓒ	Ⓡ	Ⓝ	Ⓧ	Ⓔ	Ⓛ	Ⓘ	Ⓒ	④	Ⓐ	⑧	Ⓛ	Ⓞ	Ⓜ	Ⓐ	Ⓢ	Ⓔ	Ⓡ	Ⓘ	Ⓩ	Ⓞ	⑧	Ⓦ	Ⓔ	Ⓓ	Ⓨ
$-x - 8y + 5$	$-9x + 7$	$-3x - y$	$-x + 2y + 5$	$5x - 13y - 5$	$8x - y$	$-6x$	$-y - 3$	$-5x + y$	$5x$	$-2y + 6$	$x + 6y - 7$	$x + 5$	$6x - y + 3$	$-8x - 13$	$8y$	$7x + 5y + 5$	$-2y$	$12x + 6y - 12$	$x + 3y - 2$	$-10x$	$4x - 2y - 4$	$6y - 6$	$-3x + 2y + 1$	$-2x + 5y$	$-4y$	$5x - 2y + 4$	$-7x - 9y - 5$

What Does SANTA Do When It Rains?

TO ANSWER THIS QUESTION:

Simplify each expression below. Circle the letter of each answer. Then rearrange the circled letters in each grid to make a word. Write the words in order in the boxes at the bottom of the page.

① $^-4x + 9x + 3$ ② $5x - (^-3x)$	Ⓑ $6x$ Ⓗ $8x$	Ⓔ $5x + 3$ Ⓐ $5x - 1$
③ $^-8n - (^-2n) - 7$ ④ $6n + (^-5n) + 3$ ⑤ $^-3n + n + 7 + 4n$ ⑥ $9 - 6n - (^-5n) - (^-8)$	Ⓢ $n + 3$ Ⓣ $^-n - 6$ Ⓤ $^-n + 17$	Ⓘ $n + 5$ Ⓔ $^-6n - 7$ Ⓢ $2n + 7$
⑦ $^-8t + (^-5) + (^-t) + 1$ ⑧ $^-2t + 7 - (^-t) + 9t$ ⑨ $13t + 5 + 9 - (^-t)$	Ⓝ $14t + 11$ Ⓛ $^-9t - 4$ Ⓞ $5t + 7$	Ⓛ $14t + 14$ Ⓢ $^-9t + 2$ Ⓐ $8t + 7$
⑩ $u + (^-10u) + (^-4) - (^-1)$ ⑪ $^-6 - 3u + 9 - (^-4u)$ ⑫ $^-u - 7 + 8u + (^-3u)$	Ⓔ $8u - 7$ Ⓢ $4u - 7$ Ⓗ $u + 3$	Ⓐ $u + 9$ Ⓘ $^-9u - 3$ Ⓣ $^-9u + 5$
⑬ $4k + 7 + 3k - 8 - 3k$ ⑭ $9 + (^-2k) + (^-4) - 6k + 1$ ⑮ $8k - k + 7 - (^-5k) - 8$ ⑯ $^-4 - 2k - (^-4) + (^-6k)$	Ⓐ $4k - 1$ Ⓔ $12k + 3$ Ⓝ $^-8k + 6$	Ⓡ ^-8k Ⓘ $12k - 1$ Ⓜ $^-8k + 2$
⑰ $^-5x - 5 + 3x + (^-1) - x$ ⑱ $x - (^-3) + 8 - 2x - 6$ ⑲ $4x - 5x + (^-3) + 9x - 7x$ ⑳ $^-x + 4x - (^-8x) - 9 + 2x + 1$	Ⓐ $13x - 8$ Ⓖ $x - 3$ Ⓔ $^-3x - 6$	Ⓢ $10x - 8$ Ⓞ $x - 5$ Ⓡ $^-x + 5$



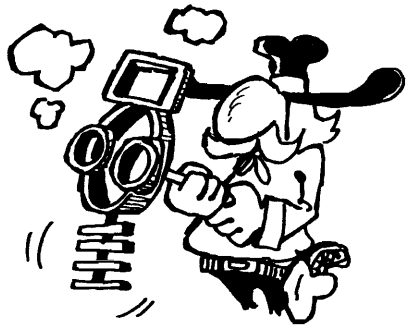
Who Won The Race Between The Boy Silkworm And The Girl Silkworm?

SIMPLIFY any expression below. Then EVALUATE the result for the given value(s) of the variables. Find the simplified expression in the answer column. Notice the letter next to it. Find the value of the expression at the bottom of the page and write this letter above it. Keep working and you will discover the answer to the title question.

①	$7x + 3 - 2x$ if $x = 8$	Ⓘ	$3x + 2y - 8$
②	$10 - 3y - 7$ if $y = 3$	Ⓔ	$^{-}9y - 2$
③	$^{-}3x + 8x - 4$ if $x = ^{-}2$	Ⓘ	$5x + 3$
④	$7 - (^{-}2y) + y - 9$ if $y = 6$	Ⓨ	$^{-}x - 3y$
⑤	$5x + (^{-}8x) + 3 - x$ if $x = ^{-}5$	Ⓝ	$^{-}x + 8y + 8$
⑥	$4y - 4 - (^{-}y) - 9y$ if $y = 4$	Ⓣ	$^{-}2x + 5$
⑦	$^{-}x + 8 + 7x - (^{-}1)$ if $x = ^{-}10$	Ⓔ	$^{-}4x + 3$
⑧	$^{-}2 + (^{-}6y) + 5y - 8y$ if $y = ^{-}4$	Ⓣ	$^{-}3y + 3$
⑨	$4x + 5 - 5x$ if $x = ^{-}12$	Ⓝ	$^{-}7x + y + 7$
⑩	$4x + 2y - x - 8$ if $x = 1, y = 5$	Ⓔ	$4x - y + 10$
⑪	$^{-}3x + 9 - (^{-}4y) + 5x$ if $x = 1, y = ^{-}5$	Ⓓ	$2x + 4y + 9$
⑫	$^{-}8 - 4x + y - 6x$ if $x = ^{-}3, y = 8$	Ⓤ	$6x + 9$
⑬	$2x + 5y - 3x + (^{-}8y)$ if $x = ^{-}9, y = 9$	Ⓔ	$3y - 2$
⑭	$7x + 1 - y - 3x - (^{-}9)$ if $x = 7, y = ^{-}6$	Ⓓ	$5x - 4$
⑮	$5x + (^{-}y) + 8 - 6x + 9y$ if $x = 4, y = ^{-}2$	Ⓟ	$^{-}10x + y - 8$
⑯	$7 - x + 4y - 6x - 3y$ if $x = ^{-}1, y = 8$	Ⓗ	$^{-}x + 5$
⑰	$^{-}x - (^{-}y) + (^{-}x) - y + 5$ if $x = ^{-}3, y = ^{-}6$	Ⓐ	$^{-}4y - 4$

$^{-}6$	17	16	$^{-}18$	23	22	$^{-}14$	34	$^{-}9$	$^{-}51$	30	43	$^{-}12$	$^{-}20$	11	5	44

How Many Cattle Are There On The Lazy Circle Double-O Bar Four Square Ranch?



Simplify any expression below and find your answer in the corresponding answer column. Write the letter of the exercise in the box that contains the number of the answer. Keep working and you will discover the answer to the title question.

Ⓣ $7(2m + 6) + 8m$	㉕ $36m + 54$
Ⓐ $3(1 + 4m) + 5m$	⑭ $42m + 23$
Ⓔ $6m + 7(7m + 9)$	㉓ $17m + 3$
Ⓗ $4 + 6(3m + 2)$	⑦ $18m + 16$
Ⓓ $9 + 9(5 + 4m)$	⑱ $22m + 42$
Ⓘ $2 + (6m + 3)7$	⑪ $42m + 27$
Ⓤ $(4m + 3)9 + 6m$	② $55m + 63$

Ⓗ $3 + 5(5t + 1) + 8t$	⑥ $16t + 51$
Ⓔ $6t + 3(2 + 9t) + 7$	⑫ $9t + 43$
Ⓣ $4t + 9 + (2t + 7)6$	⑧ $33t + 13$
Ⓝ $8t + (7 + 3t)4 + 2t$	㉑ $9t + 14$
Ⓕ $7(t + 9) + 5 + t$	⑲ $33t + 8$
Ⓑ $9 + 5(t + 1) + 4t$	① $8t + 68$
Ⓡ $t + 3 + 8(5 + t)$	㉗ $22t + 28$

Ⓕ $3(x + 6) + 8x$	⑰ $13x + 14$
Ⓖ $5(x + 5) + 9$	⑤ $11x + 18$
Ⓓ $7(2 + x) + 6x$	⑮ $16x + 22$
Ⓔ $x + 5(5x + 1)$	④ $5x + 49$
Ⓥ $4 + (8x + 9)2$	㉘ $5x + 34$
Ⓘ $x + (4 + 3x)7$	⑳ $26x + 5$
Ⓞ $5(8 + x) + 9$	㉖ $22x + 28$

Ⓔ $5(9k + 2) + 8(3 + 4k)$	③ $59k + 64$
Ⓜ $(3k + 4)6 + 7(k + 6)$	㉔ $21k + 69$
Ⓝ $9(7 + k) + (6k + 3)2$	⑩ $32k + 48$
Ⓡ $(9k + 1)6 + (4 + 2k)9$	㉒ $72k + 42$
Ⓦ $7(7 + 8k) + 3(k + 5)$	⑬ $72k + 16$
Ⓥ $4(2 + 4k) + (7k + 1)8$	⑯ $77k + 34$
Ⓢ $4(2k + 6) + 8(3 + 3k)$	⑨ $25k + 66$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Did You Hear About...

A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P
Q	R	S	T	U	V	W	X ?

DIRECTIONS: Simplify any expression below. Find your answer in one of the answer columns and notice the word next to it. Write the word in the box above that has the same letter as that exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT SOMETHING ALL WET!

Ⓐ $5x - 7(2 - 4x)$

Ⓑ $8 - 3(6 - 6x)$

Ⓒ $9a - 4(2a + 5)$

Ⓓ $-3 - 8(-5a - 1)$

Ⓔ $-7n + 4(-6 + 3n)$

Ⓕ $-8(2n - 4) + 5$

Ⓖ $2(x + 6) - 9x$

Ⓗ $-5(-7 - 3x) - 7$

Ⓘ $4(-2a + 6) + a$

Ⓙ $4a - 9(3 - a)$

Ⓚ $-8 - 8(6n + 1)$

Ⓛ $-5(-7 + n) - 7n$

Ⓜ $4x - 7(3 - 3x) - 9$

Ⓝ $-8 + 6(-x - 3) + 4x$

Ⓞ $-2a + 7 - 3(-9 - 4a)$

Ⓟ $-1 + 5a - 9(-2 + 5a)$

Ⓠ $9(3n - 9) - 7 - 2n$

Ⓡ $-4(5 + n) + n + 6$

Ⓢ $-6x - 2(-5x + 9) - 3x$

Ⓣ $5 - 8(1 - x) - 9x$

Ⓤ $-a + 7 + 5(-4 + 7a)$

Ⓥ $-6(-6a - 3) - 2 + 8a$

Ⓦ $4n - 5n + 3(n + 4)$

Ⓧ $7 + 9(-2n + 9) + 1$

$-7x + 12$	ASKING
$25x - 30$	FOOTBALL
$x - 18$	COULD
$33x - 14$	THE
$44a + 16$	AS
$15x + 28$	HIS
$13a - 27$	TO
$25n - 88$	SO
$44a - 13$	FUMBLE
$40a + 37$	BALL
$5n - 24$	WHO
$-48n - 16$	FLOOD
$40a + 5$	PLAYER
$-48n - 88$	UNDER

$a - 24$	HIKE
$a - 20$	FOOTBALL
$-7a + 24$	COACH
$2n + 12$	A
$-40a + 17$	WATER
$-12n + 35$	THE
$-3n - 14$	HE
$18x - 10$	ROOKIE
$10a + 34$	WITH
$-x - 3$	GO
$-16n + 37$	KEPT
$34a - 13$	IN
$-18n + 89$	SUB
$-2x - 26$	FIELD

DAFFYNITION DECODER

TO DECODE THESE THREE DAFFYNITIONS, FOLLOW THESE DIRECTIONS:

Simplify any expression below. Then evaluate the expression for the given value of the variable. Each time your answer appears in the code, write the letter of that exercise above it.

KEEP WORKING AND YOU WILL DECODE THESE THREE DEFT-NITIONS.

LAZY BUTCHER: _____

$^{-}49$ 121 12 6 14 $^{-}114$ 12 $^{-}12$ 121 $^{-}79$

RUBBER RAFT: _____

48 14 12 41 $^{-}20$ $^{-}28$ $^{-}114$ 41

CORN SALESMAN: _____

10 6 12 14 $^{-}61$ $^{-}20$ $^{-}79$ $^{-}114$ $^{-}61$ 121 $^{-}79$

Ⓣ $6(3x - 5) - 9x$ if $x = 4$

Ⓤ $4 - 8(^{-}2 - 6t)$ if $t = ^{-}1$

Ⓨ $^{-}3s + 2(^{-}5s + 1)$ if $s = ^{-}3$

Ⓡ $^{-}7(x + 6) + 12$ if $x = 7$

Ⓕ $4(8 + 5u) + 2u$ if $u = ^{-}2$

Ⓢ $^{-}5 - 3(4 - r)$ if $r = 9$

Ⓔ $7 - 6(^{-}8 + 2n) + n$ if $n = ^{-}6$

Ⓟ $8x - 9x + 2(^{-}3x - 4)$ if $x = ^{-}8$

Ⓚ $^{-}4(4 + 7y) + 5 + 3y$ if $y = 2$

Ⓑ $5(^{-}m - 3) + 4m - 10$ if $m = ^{-}5$

Ⓜ $^{-}1 + 9(4d - 2) - 6d$ if $d = ^{-}1$

Ⓐ $6 - 2y - 6(^{-}3y + 7)$ if $y = 3$

Ⓞ $^{-}8(9 + 2k) + 8k + k$ if $k = 6$

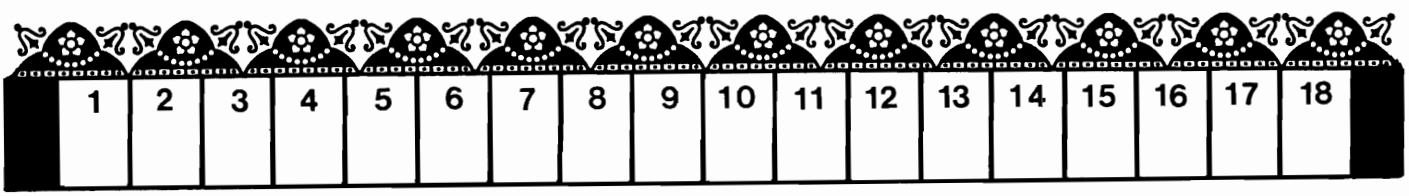
Ⓛ $^{-}w - 5 + 5(^{-}5w + 9)$ if $w = 1$

What Happened To The Owl Who Swallowed A Watch?

TO ANSWER THIS QUESTION:

Simplify each expression below. Draw a staight line connecting each expression with its simplified form. Each line will cross a number and a letter. The number tells you where to put the letter in the row of boxes at the bottom of the page.

$-5x - (7x + 2)$	$-6x + 3$
$4 - (9x - 3)$	$-x - 5$
$-8x - (-2x + 4)$	$-2x - 2$
$-(5 + 6x) + 8$	$6x - 3$
$-4(-9 + x) + 5x$	$-12x - 2$
$6x - (3x - 7) + 1$	$8x + 6$
$-9 + (2 - x) + 8x$	$4x - 12$
$(2x - 6) - (-9x - 1)$	$-9x + 7$
$-(5x + 8) + 3 + 4x$	$x + 36$
$7x - (-6 - 2x) - x$	$7x - 7$
$-9 + x + 3(-8 + 5x)$	$-8x - 1$
$-(6x - 6) + (4x - 8)$	$-6x - 4$
$(3x + 1) - (-3x - 7) - 9x$	$16x - 33$
$-5 + (4 - 2x) - 8x + 5$	$-10x + 4$
$-(-8x - 4) + x - 7 - 3x$	$3x + 8$
$(4 - 6x) - (-4x + 5) - 6x$	$-4x + 5$
$9x + 9 + 2x - 7(3 + x)$	$11x - 5$
$-1 - (-3x + 2) - 7x + 8$	$-3x + 8$



Why Did the Carpet Installer Quit His Job?

Simplify any expression below. Find your answer in the answer column and notice the letter next to it. Write the letter in each box at the bottom of the page that contains the number of that exercise.

KEEP WORKING AND YOU WILL DISCOVER THE ANSWER TO THE TITLE QUESTION!

① $6x^2 - 2x + 5x - 3$

② $5 - 7x^2 + 3x + 4x^2$

③ $9x^2 + 2x + 5 - 5x^2 + 8x - 6$

④ $-4x - 4 + 6x^2 + x - 9x^2 - 8$

⑤ $-5x^2 + 6 + x^2 - 1 + 5x^2$

⑥ $-3 + 8x^2 - x + 8 + 7x^2 + 2x$

⑦ $4x - 3x^2 + 9x + 4x^2 - 6x$

⑧ $-2x^2 - 9 - 3x - 2x^2 + 8x + 7$

⑨ $3x^3 + 7x^2 - 9x - x^3 + 3x^2 + 6x$

⑩ $-9x^3 - x^2 + 5x - 4 - 2x^3 + 8x^2 - 6x + 6$

⑪ $3 - 4x - 7x^2 + 4x^3 - 2 - 8x - 7x^2 - x^3$

⑫ $-4x^3 + 3x^2 - 5x - 7x^3 - 3x^2 + 2x - 9$

⑬ $6x - 7 + 8x^3 - 4x - 6x^3 - 1 - 8x + 5$

⑭ $-7x^2 - 4x - 7 + x^2 - 5x^2 + x^3 + 8x - 2x^3$

⑮ $6x^2 + 2x^4 - 9x^3 - 6x^2 + 2 - 5x^4 + x^3 - x$

⑯ $-3 - 3x^4 + 2x^2 - 1 + 7x^4 + x^3 - 6x^2 - 2x^4$

⑰ $-5x^4 - x^2 + 8x^3 + 4x + 2x^4 - x^3 + x^2$

Ⓜ $-3x^4 - 8x^3 - x + 2$

Ⓐ $x^2 + 5$

Ⓙ $2x^3 - 6x - 3$

Ⓤ $2x^3 + 10x^2 - 3x$

Ⓖ $6x^2 + 4x - 2$

Ⓛ $6x^2 + 3x - 3$

Ⓕ $-3x^4 - 8x^3 - 5x$

Ⓚ $-4x^2 + 5x - 2$

Ⓗ $3x^3 - 14x^2 - 12x +$

Ⓣ $-3x^4 + 7x^3 + 4x$

Ⓨ $-3x^2 - 3x - 12$

Ⓘ $-3x^2 + 3x + 5$

Ⓒ $2x^4 + x^3 - 4x^2 - 4$

Ⓟ $-x^3 - 11x^2 + 2x - 6$

Ⓓ $-x^3 - 11x^2 + 4x - 7$

Ⓢ $15x^2 + x + 5$

Ⓝ $-11x^3 - 3x - 9$

Ⓡ $-11x^3 + 7x^2 - x + 2$

Ⓔ $4x^2 + 10x - 1$

Ⓞ $x^2 + 7x$

11	3	13	9	6	17	16	7	9	1	14	12	17
17	5	16	8	2	17	5	12	4	15	7	10	3

Why Is A Lame Elephant Like Adding 19 And 4?

Find the simplest form for any expression below in the corresponding answer column. (Some of the expressions cannot be simplified.) The letter of the exercise goes in the box that contains the number of the answer. Keep working and you will get the answer to the title question.

(T) $x^2 \cdot x^4$	(8) $2x^7$	(W) $(4n^3t^2)(3n^2t^4)$	(28) $8n^5t^3$
(E) $x^3 \cdot x^7$	(2) $x^2 + x^5$	(D) $(^-2n^2t^5)(4nt)$	(9) $12n^5t^6$
(S) $x^2 \cdot x$	(11) x^6	(H) $(2n^4t^2)(nt^2)$	(21) $^-8n^2t^4$
(O) $2x^4 \cdot x^3$	(20) $6x^3$	(E) $(^-n^3t)(^-8n^2t^2)$	(10) $^-12n^7t^4$
(A) $3x^2 \cdot 2x$	(25) x^3	(N) $(4n^6t)(^-3nt^3)$	(5) $2nt^3$
(N) $x^2 \cdot y^3$	(17) x^2y^3	(T) $(t^2)(2nt)$	(18) $^-8n^3t^6$
(E) $x^2 + x^5$	(15) x^{10}	(R) $(^-n^2t)(8t^3)$	(12) $2n^5t^4$
(U) $(3v^2)(4v^5)$	(26) $^-10v^5$	(E) $a^4 \cdot a^6$	(19) $6a^2b^4$
(O) $(^-2v^3)(5v^2)$	(16) $18v^2$	(N) $a^4 \cdot b^6$	(27) a^4b^6
(S) $(9v^4)(^-2v)$	(24) $2v^2 + 7v$	(D) $a^4 + a^6$	(23) $^-6a^3b^3$
(A) $(^-6v)(^-3v)$	(6) $^-18v^5$	(I) $(^-3ab^2)(2a^2b)$	(14) a^{10}
(R) $(2v^2)(7v)$	(4) $12v^7$	(P) $(3b)(^-2ab^3)$	(7) $a^4 + a^6$
(E) $2v^2 + 7v$	(1) $14v^2k$	(R) $(^-6a^2)(^-b)$	(3) $^-6ab^4$
(H) $(2v^2)(7k)$	(22) $14v^3$	(C) $(2a^2b)(3b^3)$	(13) $6a^2b$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

FIND A MATCH

Solve any equation in the top block and find the solution in the bottom block. Transfer the word from the top box to the corresponding bottom box. Keep working and you will get another joke.

①	$(u^2)^3$ AND	②	$(k^3)^4$ A	③	$(u^5)^3$ HER	④	$(^-k^2)^2$ BROTHER	⑤	$(2u^2)^2$ HE	⑥	$(^-6k^4)^2$ THE
⑦	$(^-3u^3)^3$ IS	⑧	$(7k)^2$ AND	⑨	$(^-4u^2)^3$ HER	⑩	$(^-k^2)^3$ A	⑪	$(2u^4)^5$ IF	⑫	$(^-2k)^5$ CANNOT
⑬	$(4u^3k)^2$ TOO	⑭	$(9u^2k^2)^2$ THAT	⑮	$(^-2u^2k^4)^3$ REASON	⑯	$(^-8u^5k^3)^2$ BE	⑰	$(5uk^6)^3$ FALLS	⑱	$(u^2k^3)^6$ TRIPS
⑲	$(^-3uk)^5$ HER	⑳	$(^-u^{10}k)^2$ CANNOT	㉑	$(^-2uk^4)^4$ HELP	㉒	$(10u^2k)^3$ BROTHER	㉓	$(^-2uk)^7$ LADY	㉔	$(^-uk)^9$ ASSIST

$32u^{20}$	k^{12}	$^-128u^7k^7$	$u^{12}k^{18}$	u^6	$125u^3k^{18}$
$36k^8$	$^-8u^6k^{12}$	u^{15}	$1000u^6k^3$	$^-32k^5$	$16u^4k^{16}$
$^-64u^6$	$^-27u^9$	$81u^4k^4$	$4u^4$	$u^{20}k^2$	$64u^{10}k^6$
$^-k^6$	k^4	$49k^2$	$^-u^9k^9$	$^-243u^5k^5$	$16u^6k^2$

Double Cross

1. What Do You Get When You Cross Two Bowling Pins With a Lollipop?

ANSWER: _____

$^{-}69$ $^{-}13$ 133 97 $^{-}20$ $^{-}29$ 158 10 $^{-}99$ $^{-}39$ $^{-}13$ 133 158

2. What Do You Get When You Cross A Centipede With A Parrot?

ANSWER: _____

$^{-}69$ $^{-}66$ $^{-}69$ $^{-}13$ $^{-}20$ 133 $^{-}29$ 158 $^{-}69$ $^{-}13$ $^{-}20$ 133 $^{-}29$

3. What Do You Get When You Cross A Gangster With A Garbage Man?

ANSWER: _____

16 $^{-}19$ 21 $^{-}69$ $^{-}10$ 133 $^{-}18$ $^{-}29$ 18 21 $^{-}19$ 133 160 $^{-}29$

Simplify any expression below (if it can be simplified). Then evaluate the expression for the given value of the variable. Each time your answer appears in the code, write the letter of that exercise above it. Keep working and you will discover the result of each double cross!

Remember: FIRST simplify, THEN evaluate.

Ⓒ $4y^2 - 3$ if $y = 5$

Ⓝ $^{-}2u^2 + 8$ if $u = 3$

Ⓔ $^{-}7m^2 - 1$ if $m = ^{-}2$

Ⓓ $3x^2 + 4x - 2$ if $x = 2$

Ⓢ $^{-}5x^2 + 7x + 9$ if $x = ^{-}4$

Ⓐ $^{-}2r^2 - 5r - 6$ if $r = ^{-}7$

Ⓨ $x^2 - 8x + 1$ if $x = 9$

Ⓩ $^{-}9n^2 + 2n - 7$ if $n = ^{-}1$

Ⓣ $6t^2 - t + 3$ if $t = ^{-}5$

Ⓜ $2x^2 - 3x + 8x - 8$ if $x = 8$

Ⓖ $9 - p^2 + 5p + 4p^2$ if $p = ^{-}3$

Ⓟ $^{-}3m^2 - 8 + 4m + 1$ if $m = 4$

Ⓞ $^{-}5v + 5v^2 - v - 2 + 7v^2$ if $v = ^{-}1$

Ⓡ $1 - y^2 - 4y^2 - 3y + 6$ if $y = 2$

Ⓦ $8x^2 - 2 - 9x^2$ if $x = ^{-}8$

Ⓚ $^{-}2h^2 - 5h + h^2 + 4 + 3h$ if $h = ^{-}6$

Ⓘ $^{-}8 + 3x - 3x^2 + 6 + 5x^2$ if $x = ^{-}9$

Ⓛ $4y - 2y^2 + 1 - 4y - 12$ if $y = 1$

What Did The Skunk Say When The Wind Changed?

TO ANSWER THIS IMPORTANT QUESTION:

Evaluate any expression below for the given values of the variables (see table). Find your answer at the bottom of the page. Write the letter of that exercise in ANY ONE of the boxes directly under the answer.

When you finish all the exercises, rearrange the letters in each group to make a word. Write the words in order in the BOTTOM row of boxes.

VALUES OF THE VARIABLES

$x=2$	$a=-3$
$y=-1$	$b=-8$
$z=4$	$c=6$

(S) $\frac{xa}{c} =$

(O) $\frac{2a^2}{x} =$

(I) $\frac{(2a)^2}{x} =$

(C) $\frac{(2a)^2}{2a^2} =$

(T) $\frac{c^2y^2}{z} =$

(E) $\frac{-5x^2}{y+c} =$

(O) $\frac{b-a}{a-b} =$

(O) $\frac{3y^2}{z+a} =$

(A) $\frac{-8y^2}{b+z} =$

(L) $\frac{x^2+c^2}{b} =$

(K) $\frac{y^2-a^2}{y+a} =$

(E) $\frac{-x^2}{z} =$

(T) $\frac{-4a^2}{c+b} =$

(N) $\frac{a^2-c^2}{3a} =$

(A) $\frac{z^2+b^2}{2b} =$

(L) $\frac{z^2}{2b} + \frac{b^2}{2b} =$

(C) $\frac{(z+b)^2}{2b} =$

(W) $\frac{3a^2+7a}{x} =$

(M) $\frac{(x-c)^2}{x-c} =$

(B) $\frac{y^2b}{yx^2} =$

(M) $\frac{c-a}{a-c} =$

18	-5	-1	2	9	-4	3

REARRANGE EACH GROUP OF LETTERS TO MAKE A WORD

What Did Ignatz Say About Her Brain Surgeon?

Do any exercise below. Find your answer in the answer column and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it. Keep working and you will answer the question.

$d = rt$ where d is the distance traveled by an object moving at speed r in time t. Find d if:

① $r = 40, t = 8$ ② $r = 55, t = 4$

$I = prt$ where I is the interest on an amount p, borrowed (or invested) at interest rate r for time t. Find I if:

③ $p = 1000, r = 0.06, t = 1$ ④ $p = 500, r = 0.14, t = 3$

$P = 2\ell + 2w$ where P is the perimeter of a rectangle with length ℓ and width w. Find P if:

⑤ $\ell = 7, w = 3$ ⑥ $\ell = 12, w = 3.5$

$d = \frac{1}{2} n (n - 3)$ where d is the number of diagonals of a polygon wih n sides. Find d if:

⑦ $n = 6$ ⑧ $n = 20$

$A = \frac{1}{2} a (b_1 + b_2)$ where A is the area of a trapezoid with altitude of length a, and bases of lengths b_1 and b_2. Find A if:

⑨ $a = 4, b_1 = 9, b_2 = 7$ ⑩ $a = 3, b_1 = 7.5, b_2 = 2.5$

$s = 16t^2$ where s is the distance (feet) a free-falling object travels in time t (seconds). Find s if:

⑪ $t = 3$ ⑫ $t = 20$

$w = 0.03\ e^3$ where w is the approximate weight (pounds) of an ice cube with edge of length e (inches). Find w if:

⑬ $e = 2$ ⑭ $e = 8$

$d = s + 0.05\ s^2$ where d is the approximate braking distance (feet) on dry pavement of a car traveling at speed s (miles per hour). Find d if:

⑮ $s = 30$ ⑯ $s = 60$

Ⓕ 31
Ⓞ 60
Ⓐ 6400
Ⓡ 32
Ⓢ 275
Ⓗ 320
Ⓟ 15.36
Ⓓ 144
Ⓜ 240
Ⓥ 9
Ⓖ 0.24
Ⓣ 84
Ⓔ 220
Ⓛ 170
Ⓨ 210
Ⓘ 75
Ⓝ 20
Ⓤ 0.38
Ⓒ 15
Ⓑ 6120

15-9-2-12-8-8-4-13-12-7-2-1-15-16-12-14-15-2-10-2-3-6-16-4-16-15-5-11

Get The Message

DIRECTIONS:

For each exercise, determine whether or not the number in braces is a solution of the given open sentence. Circle the letter in the appropriate column next to each exercise.

When you finish, print the circled letters in the row of boxes at the bottom of the page. FIRST print those from the column marked "Yes," THEN print those from the column marked "No."

A MESSAGE WILL APPEAR.

		Yes	No
① $2x + 7 = 17$	$\{5\}$	W	F
② $9 + 6s = 57$	$\{8\}$	H	A
③ $8m - 3 = 19$	$\{3\}$	E	R
④ $35 = 7t - 8$	$\{6\}$	A	W
⑤ $9u + 3 < 24$	$\{2\}$	I	E
⑥ $14 > 20 - 3y$	$\{4\}$	S	I
⑦ $17 + 8x \geqslant 75$	$\{7\}$	P	A
⑧ $65 = 4w + 29$	$\{9\}$	T	N
⑨ $50 - 3x = 16$	$\{12\}$	L	S
⑩ $63 \leqslant 3 + 6n$	$\{10\}$	L	H
⑪ $63 < 3 + 6n$	$\{10\}$	I	F
⑫ $5p - 15 \geqslant 60$	$\{15\}$	E	I
⑬ $8d + 1 = 5d + 10$	$\{3\}$	R	E
⑭ $4y - 7 = y + 17$	$\{8\}$	S	A
⑮ $9h = 20 + 6h$	$\{7\}$	F	R
⑯ $79 - 8m = 34 + m$	$\{5\}$	M	I
⑰ $2k + 34 > 70 - 7k$	$\{4\}$	E	A
⑱ $15e - 7 = 6 + 2e$	$\{1\}$	O	N
⑲ $3x + 39 \geqslant 5x - 1$	$\{20\}$	T	U
⑳ $3v + 39 > 5v - 1$	$\{20\}$	H	M
㉑ $57 - 3g = 93 - 7g$	$\{9\}$	H	I
㉒ $8 + 6x \leqslant 9x - 30$	$\{12\}$	I	E
㉓ $8x + 24 = 15x - 46$	$\{10\}$	E	S
㉔ $6m < 7m - 1$	$\{1\}$	L	D

How Do You Buy Something In Mexico?

For any sentence below, circle the member of the given replacement set that is the solution. Find your answer in the code key and notice the letter next to it. Print this letter in the box at the bottom of the page that contains the number of that exercise. Keep working and you will discover the answer to the title question.

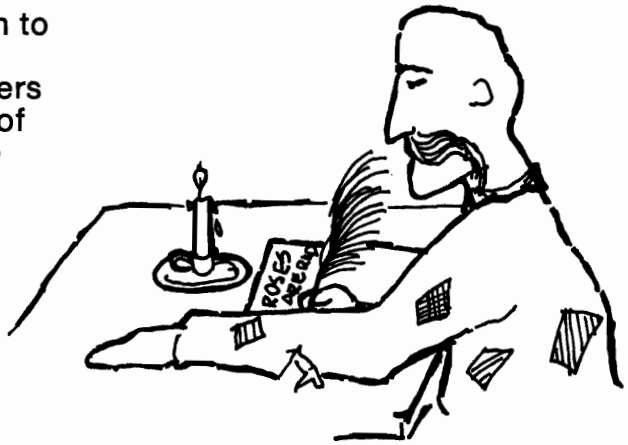
①	$3y + 9 = 15$	$\{4, 2, -2\}$
②	$7 + 4x = -1$	$\{3, -3, -2\}$
③	$26 - 8t = -30$	$\{5, 7, 8\}$
④	$11 = 6x - 13$	$\{4, -2, 1\}$
⑤	$-7n + 5 = 12$	$\{9, -3, -1\}$
⑥	$16 - 4x = 24$	$\{2, -2, 7\}$
⑦	$-75 = -25 + 5d$	$\{5, -10, 10\}$
⑧	$-8 = -2y - 18$	$\{4, -4, -5\}$
⑨	$9u - 16 = 20$	$\{4, 3, 2\}$
⑩	$-12 = 12r + 24$	$\{-1, -2, -3\}$
⑪	$52 + 21p = 10$	$\{-1, -2, 2\}$
⑫	$18 - 2x = 6x - 14$	$\{4, 3, 2\}$
⑬	$6y - 10 = y + 25$	$\{7, -3, -1\}$
⑭	$-2t + 7 = 5t - 56$	$\{1, 5, 9\}$
⑮	$8 + 15a = 11a$	$\{2, -2, 3\}$
⑯	$5 - y = -4y + 29$	$\{-8, 8, -4\}$
⑰	$2 - 7k = -k + 20$	$\{6, -6, -3\}$
⑱	$3n + 3 = 2n - 4$	$\{-7, 1, -5\}$
⑲	$-8x + 1 = 81 + 2x$	$\{-4, -8, 8\}$
⑳	$-12m = 5m + 68$	$\{5, -9, -4\}$
㉑	$9x - 27 = 12 - 4x$	$\{4, 3, -3\}$
㉒	$-5 + 7y = 43 - y$	$\{6, 1, 10\}$

13	2	12		22	1	20	11		19	4	16	7
5	10	18		3	15	9		6	21	17		14	8

CODE KEY	
-10	H
-9	K
-8	M
-7	D
-6	G
-5	T
-4	S
-3	N
-2	O
-1	A
1	R
2	E
3	W
4	U
5	L
6	P
7	Y
8	C
9	I
10	V

Why Are Poets Poor?

Cross out each box that contains the solution to one of the equations. When you finish, there will be 7 boxes not crossed out. Print the letters from these boxes in the boxes at the bottom of the page. You will have the answer to the title question!



① $\frac{x}{2} = 7$

② $\frac{k}{3} = -4$

③ $\frac{1}{2}y = 14$

④ $\frac{1}{4}m = -10$

⑤ $\frac{-1}{8}p = 3$

⑥ $\frac{-1}{5}q = -9$

⑦ $\frac{-v}{3} = 13$

⑧ $\frac{n}{7} = 8$

⑨ $21 = \frac{w}{2}$

⑩ $-18 = \frac{x}{4}$

⑪ $5 = \frac{1}{12}y$

⑫ $-25 = \frac{-1}{8}t$

⑬ $\frac{-k}{6} = 33$

⑭ $-1 = \frac{r}{50}$

⑮ $\frac{1}{9}y = 20$

⑯ $-3 = \frac{-1}{18}n$

⑰ $\frac{-1}{5}x = 11$

⑱ $12 = \frac{v}{12}$

⑲ $\frac{1}{3}m = -3$

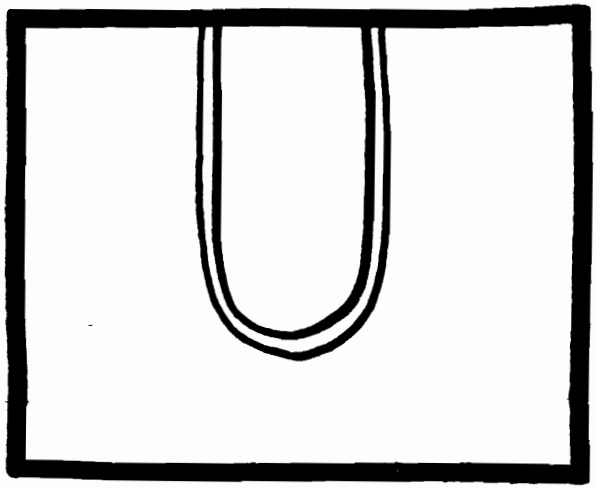
⑳ $-19 = \frac{-1}{2}d$

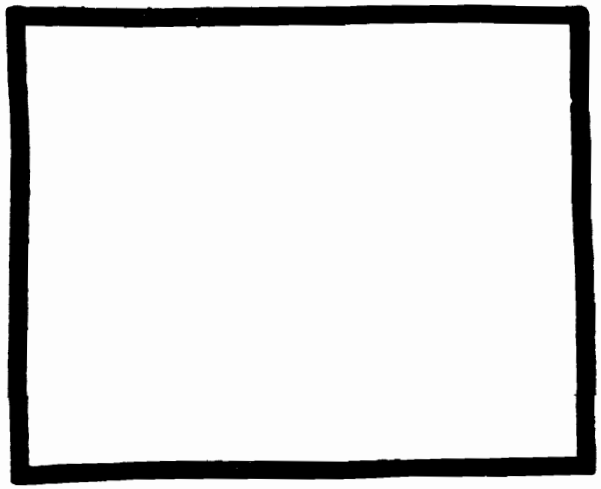
㉑ $\frac{x}{24} = 4$

TH	PO	VE	RS	ET	RH	ST	RY	TO	YM	ON	EY	ES	ED
−50	38	60	56	−9	91	45	−12	−72	−2	−24	180	144	90
OE	MA	KE	SN	AR	OU	IN	CH	TP	IT	CA	PL	AY	SH
82	−198	42	−4	−40	14	200	28	74	−39	54	96	69	−55

What Are The Titles Of These Pictures?

Solve any equation below and find the solution in the coded title above that column of exercises. Each time the solution appears, write the letter of the exercise above it. Keep working and you will decode each title.





$^{-}2$ $^{-}6$ $^{-}21$ $^{-}3$ 5 4 $^{-}11$ $^{-}3$

9 $^{-}8$ $^{-}3$ 14 $^{-}2$ 4 $^{-}21$

$^{-}2$ 7 $^{-}11$ $^{-}8$ $^{-}3$ 7 $^{-}11$ 7 $^{-}21$ $^{-}1$ $^{-}8$

Ⓞ $6x = 24$
Ⓐ $9k = 63$
Ⓓ $28 = 2n$
Ⓘ $^{-}5y = 30$
Ⓢ $^{-}8q = 64$
Ⓔ $^{-}21 = 7m$
Ⓜ $18v = {}^{-}18$
Ⓤ $^{-}3x = {}^{-}27$
Ⓟ $^{-}60 = {}^{-}12t$
Ⓡ $^{-}2p = 42$
Ⓛ $^{-}x = 11$
Ⓕ $^{-}30 = 15y$

$^{-}30$ $^{-}17$ $^{-}13$ $^{-}17$ 12 11 $^{-}30$ $^{-}7$

25 $^{-}15$ $^{-}4$ $^{-}4$ 11 $^{-}30$ 6 11 24

$^{-}15$ 6 24 $^{-}13$ $^{-}17$ 6 $^{-}30$ $^{-}13$ 25 2

Ⓘ $4r = 44$
Ⓜ $^{-}16v = {}^{-}32$
Ⓐ $5x = {}^{-}75$
Ⓞ $39 = {}^{-}3w$
Ⓔ $7t = {}^{-}49$
Ⓝ $^{-}x = {}^{-}24$
Ⓗ $72 = 6m$
Ⓡ $^{-}100 = {}^{-}4z$
Ⓦ $^{-}10k = 170$
Ⓑ $8n = {}^{-}32$
Ⓣ $30 = {}^{-}y$
Ⓢ $^{-}54 = {}^{-}9q$

CRYPTIC QUIZ

1. What Did the Sardine Say When a Submarine Went By?

_____

$^{-}56$ 36 36 $^{-}33$ $^{-}35$ $^{-}12$ $^{-}12$ 7 $^{-}35$ $^{-}12$ $^{-}96$ $^{-}35$ 130 36 31 39 9 36 39 $^{-}56$ 9

2. What Happened to the Grocer Who Stacked All the Liquid Detergents on a High Shelf?

_____

7 9 $^{-}6$ $^{-}35$ 5 25 $^{-}24$ $^{-}15$ 39 $^{-}8$ 130 28 31 36 100 25 36 $^{-}69$

TO DECODE THE ANSWERS TO THESE QUESTIONS:
Solve any equation below and find the solution in the code. Each time it appears, write the letter of the exercise above it. Keep working and you will decode the two answers.

Ⓘ $n + 12 = 4$

Ⓔ $4x = 36$

Ⓚ $\frac{v}{3} = {}^{-}11$

Ⓕ $w - 9 = 22$

Ⓦ $^{-}7t = 42$

Ⓡ $\frac{^{-}1}{5} y = {}^{-}20$

Ⓣ $^{-}32 = x + (^{-}20)$

Ⓤ $^{-}48 = 2q$

Ⓝ $13 = \frac{n}{10}$

Ⓨ $^{-}50 = 19 + p$

Ⓢ $^{-}15r = {}^{-}75$

Ⓛ $14 = \frac{^{-}u}{4}$

Ⓖ $x - (^{-}16) = 44$

Ⓗ $42 = 6d$

Ⓒ $\frac{1}{8} y = {}^{-}12$

Ⓜ $^{-}4 = 11 + m$

Ⓐ $^{-}x = 35$

Ⓟ $-3 = \frac{^{-}a}{13}$

Ⓞ $^{-}18 + z = 18$

Ⓙ $^{-}125 = {}^{-}5k$

Did You Hear About...

A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P
Q	R	S	T	U	V	W	X ?

DIRECTIONS: Solve any equation below. Find the solution in one of the answer columns and notice the word next to it. Write the word in the box above that has the same letter as that exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT A BRIGHT DISCOVERY!

3 — UNTIL	Ⓐ $7x = 91$	Ⓘ $\frac{-1}{3}x = -15$	Ⓠ $15x = -225$
-21 — TRYING	Ⓑ $15n = -30$	Ⓙ $\frac{3}{4}y = 6$	Ⓡ $\frac{-3}{2}u = -3$
-27 — SET	Ⓒ $3y = 42$	Ⓚ $\frac{-2}{3}v = 14$	Ⓢ $48 = 16x$
-7 — WHO	Ⓓ $-9t = 36$	Ⓛ $\frac{-9}{8}y = -27$	Ⓣ $-45 = \frac{9}{5}x$
18 — ON	Ⓔ $-12s = -120$	Ⓜ $-8k = 248$	Ⓤ $360 = -18n$
26 — SAT	Ⓕ $6m = -42$	Ⓝ $\frac{3}{10}m = 15$	Ⓥ $-3z = 72$
13 — THE	Ⓖ $\frac{1}{2}x = 13$	Ⓞ $-11t = -132$	Ⓦ $15 = \frac{5}{6}x$
12 — WHERE	Ⓗ $\frac{x}{5} = -2$	Ⓟ $\frac{-5}{3}x = 20$	Ⓧ $\frac{-12}{7}y = -36$
8 — NIGHT			
-25 — IT			
-31 — FIGURE			
45 — ALL			
5 — MOON			
-2 — CURIOUS			

10 — STUDENT
-20 — FINALLY
-12 — THE
24 — TO
14 — YOUNG
2 — GOES
-15 — SUN
50 — OUT
21 — HIM
-4 — SCIENCE
-10 — UP
-19 — HIT
-24 — DAWNED
22 — BRIGHT

Never Say Die!

YOU MAY HAVE HEARD THAT OLD MATH TEACHERS NEVER DIE; THEY JUST REDUCE TO LOWEST TERMS. TO FIND OUT WHAT HAPPENS TO SOME OTHER OLD FOLKS, FOLLOW THESE DIRECTIONS:

The missing words in each sentence are written in code. Solve any equation below and find the solution in the code. Each time it appears, write the letter of that exercise above it. Keep working and you will discover the words to complete each sentence.

Old

$\frac{-4}{9}$	$6\frac{2}{3}$	$7\frac{1}{5}$	$\frac{-1}{15}$	$\frac{-4}{9}$	$\frac{2}{5}$	$3\frac{1}{3}$

Never Die, They Just

$\frac{-1}{15}$	$-4\frac{1}{3}$	-4	$\frac{2}{5}$	$\frac{3}{5}$	$1\frac{3}{4}$	$\frac{2}{5}$	$7\frac{1}{5}$	-8	$\frac{6}{7}$	$7\frac{1}{5}$	-10

Old

$1\frac{5}{7}$	$1\frac{3}{4}$	$\frac{2}{5}$	$\frac{-4}{9}$	$7\frac{1}{5}$	-4	$\frac{3}{5}$	-4

Never Die, They Just

$\frac{-3}{4}$	$6\frac{2}{3}$	$7\frac{1}{5}$	$\frac{-1}{15}$	$\frac{3}{5}$	$-4\frac{1}{3}$	-8	$\frac{2}{5}$	$6\frac{2}{3}$	$1\frac{5}{7}$	$\frac{3}{5}$

Old

$1\frac{5}{6}$	$-5\frac{5}{7}$	-8	-20	$\frac{-1}{15}$	$6\frac{2}{3}$	-8	-4

Never Die, They Just

-4	$\frac{3}{5}$	$\frac{2}{5}$	$6\frac{2}{3}$	$\frac{-1}{15}$	$6\frac{2}{3}$	$10\frac{1}{2}$	$6\frac{2}{3}$	$-2\frac{1}{2}$

Ⓗ $9x - 5x = 7$

Ⓔ $\frac{5}{4}x = \frac{1}{2}$

Ⓑ $3x = \frac{11}{2}$

Ⓩ $\frac{-3}{5} = \frac{-7}{10}x$

Ⓞ $4x - 7x = 13$

Ⓤ $\frac{-7}{2}w = 20$

Ⓟ $150 = -9x - 6x$

Ⓒ $\frac{7}{12}k = 1$

Ⓨ $-2u + 8u = -15$

Ⓖ $\frac{3}{5}t = -12$

Ⓘ $\frac{5}{6}y = 4 + 2$

Ⓐ $-11 - 4 = \frac{-9}{4}t$

Ⓣ $-4y - y = -3$

Ⓜ $8 = -18y$

Ⓕ $\frac{8}{3}s = -9 + 7$

Ⓛ $-10z = \frac{2}{3}$

Ⓦ $\frac{2}{3}m = 7$

Ⓝ $-30 = 3n - 12n$

Ⓡ $\frac{1}{12}m = \frac{-2}{3}$

Ⓢ $8y - 9y = 4$

FIND A MATCH

Solve any equation in the top block and find the solution in the bottom block. Transfer the word from the top box to the corresponding bottom box. Keep working and you will get another corny joke.

① $4x - 6 = 22$ THEY	⑤ $^{-}4x + 6 = {}^{-}42$ BECAUSE	⑨ $1 - 9n = {}^{-}80$ AN	⑬ $^{-}5n + 9 = {}^{-}46$ COSTS
② $9x + 2 = 47$ IT	⑥ $^{-}11x + 4 = 26$ A	⑩ $^{-}5 - 15n = 10$ FARMERS	⑭ $^{-}27 + 4n = 33$ EAR
③ $2x + 1 = {}^{-}15$ SOMETHING	⑦ $8x - 18 = 6$ ARE	⑪ $12n + 2 = {}^{-}46$ CORN	⑮ $^{-}7n - 20 = {}^{-}48$ PIRATE
④ $^{-}6x - 11 = 49$ SOME	⑧ $7 + 3x = 25$ CALL	⑫ $^{-}4 - 2n = 60$ SELLING	⑯ $19 - 3n = 82$ BUCK

$x = {}^{-}10$	$n = {}^{-}1$	$x = 3$	$n = {}^{-}32$
$x = {}^{-}8$	$x = 7$	$x = 6$	$n = 4$
$n = {}^{-}4$	$x = 12$	$x = 5$	$n = 11$
$x = {}^{-}2$	$n = {}^{-}21$	$n = 9$	$n = 15$

Test of Knowledge

1. What Do A Decimal Number And A Thumbtack Have In Common?

ANSWER: -5 10 18 4 4 10 5 10 -8 7 3 -4 -7

2. What Did Mergatroid Get For Losing 20 Pounds?

ANSWER: -7 4 -5 -4 7 14 -5 -6 -6 9 -8 -11 3 8 -5

3. What Happened To The Man Who Fell Into The Bubble-Gum-Mixing Machine?

ANSWER: 4 3 5 14 7 5 5 18 4 -5 6 -5 -1 4 3 -2 7 12 -7

TO DECODE THE ANSWERS TO THESE THREE QUESTIONS:

Solve any equation below and find the solution in the code. Each time the solution appears, write the letter of that exercise above it. Keep working and you will discover the answer to each question.

Ⓢ $3y - 7 = 8$

Ⓜ $6x + 2 = -10$

Ⓣ $-4x + 6 = 34$

Ⓤ $15 = 2m - 9$

Ⓝ $29 = -8t - 3$

Ⓐ $7 - 5u = -43$

Ⓦ $14 + 4x = 38$

Ⓘ $-30 = -9x - 3$

Ⓚ $-57 = -12 + 3r$

Ⓛ $-7x + 1 = 43$

Ⓩ $-40 = 8 - 6s$

Ⓓ $-13x - 19 = -6$

Ⓨ $-12 = y - 21$

Ⓟ $5 - m = 13$

Ⓒ $2w + 17 = 53$

Ⓕ $10x + 11 = -19$

Ⓞ $-8 = 27 - 5x$

Ⓑ $-44 = -3k - 2$

Ⓔ $-4 - 8y = 36$

Ⓗ $37 + 12t = 85$

Ⓡ $-13 = 7y + 64$

Daffynition Decoder

1. Condense: _____

$^{-}50\ 45\ 21\ ^{-}63\ ^{-}8\ 44\ 32\ ^{-}40\ ^{-}63\ ^{-}40\ ^{-}72\ ^{-}50\ ^{-}28$

2. Program:

_____

$^{-}40\ ^{-}72\ ^{-}5\ ^{-}50\ 19\ 14\ 32\ 14\ ^{-}5\ ^{-}180\ 6\ 4\ ^{-}63\ 4\ ^{-}180\ 32\ ^{-}40\ 44\ 18\ 36\ 18\ ^{-}180\ 4\ ^{-}63$

Solve any equation below and find the solution in the code. Each time it appears, write the letter of the exercise above it. Keep working and you will decode the two de-fun-itions.

Ⓡ $\frac{x}{2} - 5 = 11$

Ⓞ $\frac{w}{7} + 4 = 6$

Ⓨ $\frac{1}{3}t - 9 = 3$

Ⓔ $7y - 2 = 26$

Ⓑ $8 - 4k = 40$

Ⓐ $\frac{^{-}1}{5}k + 1 = 11$

Ⓝ $7 + \frac{m}{8} = {}^{-}2$

Ⓤ $47 = 2d + 5$

Ⓗ $^{-}6u + 7 = {}^{-}29$

Ⓒ $12 - \frac{v}{4} = 1$

Ⓛ $^{-}6 - \frac{1}{2}n = 8$

Ⓕ $^{-}61 = 12p - 1$

Ⓣ $\frac{1}{10}y + 2 = {}^{-}16$

Ⓓ $18 - \frac{x}{15} = 15$

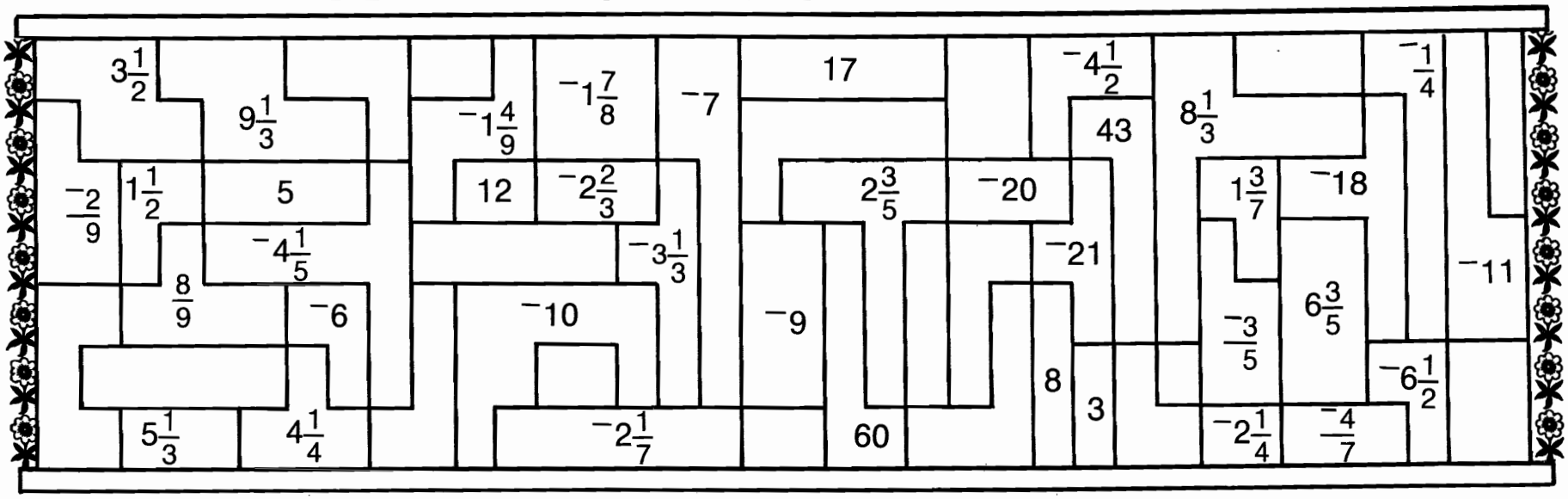
Ⓥ $3 + 5q = 98$

Ⓢ $-6 + \frac{1}{3}w = 0$

Ⓘ $10 - x = 50$

Ⓜ $\frac{^{-}v}{9} + 7 = 14$

FAMOUS OCEAN LINER



THE NAME OF A FAMOUS OCEAN LINER IS HIDDEN IN THE RECTANGLE ABOVE. TO FIND IT:

Solve each equation below and find the solutions in the rectangle. Shade in each area that contains a solution. When you finish, you will know the name of this famous ocean liner.

① $5x + 7 = 4$

② $8t - 3 = 9$

③ $\frac{m}{3} + 5 = -2$

④ $\frac{-3}{4}x + 4 = -2$

⑤ $-9 - 7x = -5$

⑥ $12 - \frac{3}{2}y = 4$

⑦ $\frac{4}{3}x + 2 = -1$

⑧ $-7 = 12n - 4$

⑨ $16 = -8 - 9y$

⑩ $\frac{u}{5} - 7 = -6$

⑪ $\frac{-w}{4} + 3 = 8$

⑫ $5 = -4y - 21$

⑬ $-9 = \frac{2}{3}x - 17$

⑭ $-12 = -7 - \frac{7}{2}s$

⑮ $-28 + 15y = 17$

⑯ $\frac{3}{5}x + 2 = 0$

⑰ $-6 = 14 - \frac{z}{3}$

⑱ $4 + \frac{1}{6}n = 3$

⑲ $-8x + 59 = 25$

⑳ $18 = -8 + 10x$

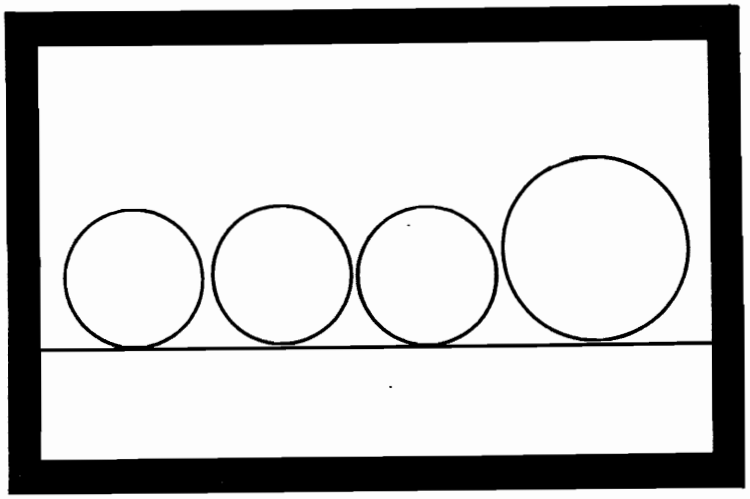
㉑ $\frac{-7}{3}r - 2 = 3$

㉒ $-14 - \frac{v}{9} = -12$

㉓ $15 = 18x - 1$

㉔ $\frac{2}{5}y - 7 = -11$

What Is The Title Of This Picture?



CODED TITLE:

18 $^{-}6$ 6 2 $^{-}5$ $^{-}7$ 2 $^{-}5$ $^{-}3$ 6 $^{-}5$

7 $^{-}1$ 4 $^{-}4$ $^{-}7$ 8 $^{-}5$ $^{-}3$ $^{-}7$

$^{-}13$ 6 2 1 $^{-}3$ $^{-}1$ 3 8 4 $^{-}13$ $^{-}7$ $^{-}2$

TO DECODE THE TITLE OF THIS PICTURE:

Solve any equation below and find the solution in the code above. Each time the solution appears, write the letter of that exercise above it. Keep working and you will discover the title.

Ⓘ $5(x + 4) = 40$

Ⓔ $^{-}2(3y - 7) = 56$

Ⓒ $6(1 - 4w) = {}^{-}18$

Ⓕ $4(2x + 5) - 8 = 36$

Ⓐ $2(5 - 3v) + 9v = 28$

Ⓢ $7 - 3(5t - 10) = 67$

Ⓝ $-9(6 + u) - 2u = {}^{-}10$

Ⓙ $13x + 7({}^{-}3x - 1) = {}^{-}63$

Ⓗ $15 - (4m - 5) = 32$

Ⓞ $^{-}2({}^{-}7k + 4) + 9 = {}^{-}13$

Ⓤ $^{-}5y - 5({}^{-}6 - 2y) = 0$

Ⓓ $3(1 + 4n) - 2(5n - 3) = 25$

Ⓡ $^{-}6(x - 2) + 4(3 - 6x) = {}^{-}36$

Ⓠ $5(4 + 2x) - (8x - 12) = 68$

Ⓣ $^{-}3({}^{-}4 - 6y) + 7({}^{-}y + 5) = {}^{-}8$

Ⓜ $8(2w - 6) + 4({}^{-}1 - 5w) = 0$

Why Did The Banana Go Out With The Prune?

TO ANSWER THIS QUESTION: Cross out each box that contains the solution of one of the equations. When you finish, write the letters in order from the boxes that are not crossed out in the boxes at the bottom of the page.

① $5(2x - 3) + 8 = 9$

② $4(9 + 3t) - 12 = -6$

③ $7y - 2(8y + 1) = 4$

④ $3 = 7(4 - 2u) - 6u$

⑤ $50 = 15 - 6(2x - 5)$

⑥ $3(-6x + 9) - 10x = 1$

⑦ $-9(8 - m) - 13 = 5$

⑧ $-8x + 6(3x + 5) = -25$

⑨ $12(4 + n) + 5(-2n - 9) = 18$

⑩ $-2 = -4(-7y + 1) + 5(8 + 2y)$

⑪ $18(-x - 2) - 4(-9 + 3x) = -14$

⑫ $3(6s + 12) - (10s - 6) = 0$

⑬ $-6(4x + 1) + 7x + 9(x - 3) = 4$

⑭ $10(-3 - 2t) + 10 - 2(6t - 13) = 0$

⑮ $-7 = -5y + 4(-y + 9) - 7(7 + 3y)$

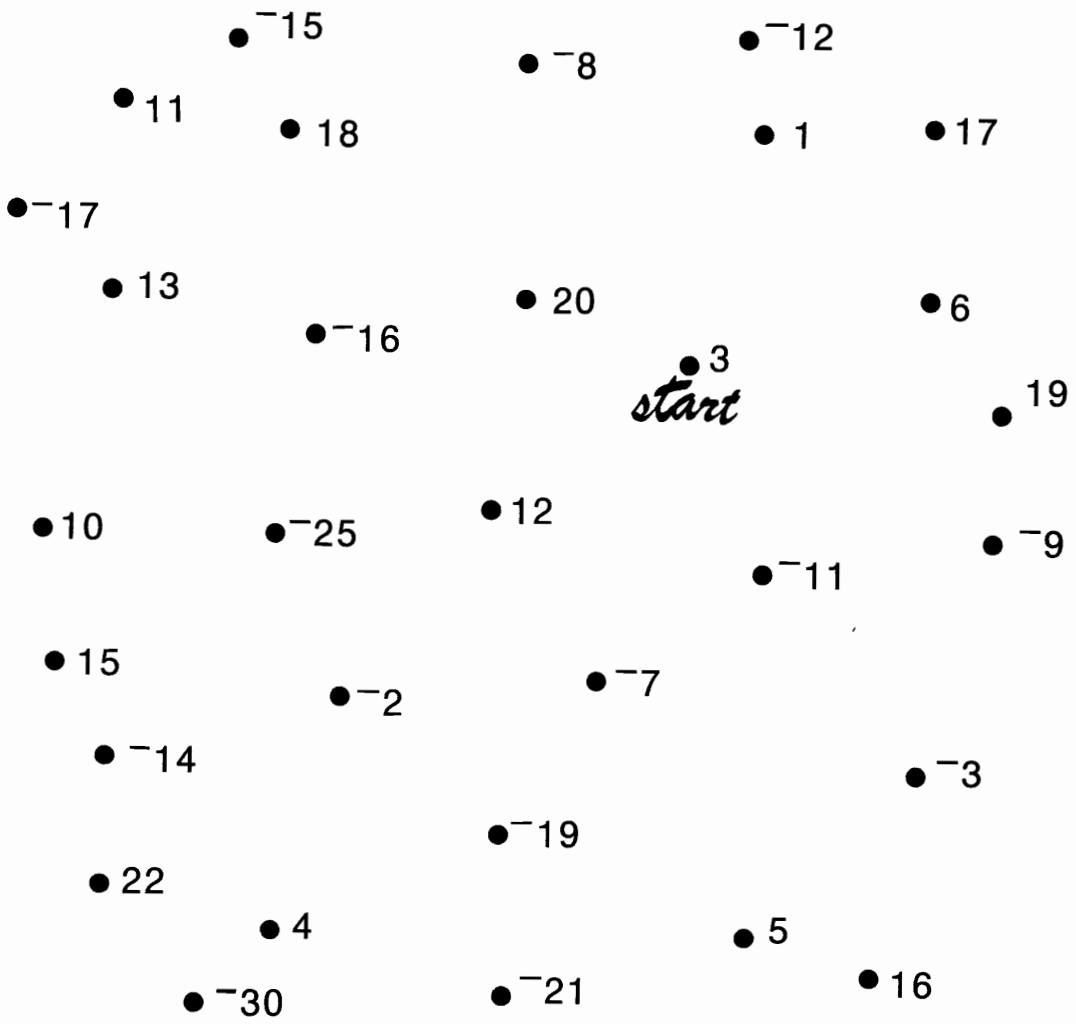
⑯ $-(15p - 1) + 24 + 2(5 + 5p) = 0$

LO	BE	HE	CA	US	HA	EH	DT	EH	RO	VE	UB	IT	LE
$-\frac{2}{3}$	$\frac{3}{16}$	$2\frac{3}{11}$	$-\frac{1}{5}$	$\frac{7}{15}$	$-1\frac{5}{7}$	$-2\frac{1}{2}$	$-\frac{1}{13}$	$-4\frac{5}{8}$	$6\frac{1}{8}$	$1\frac{3}{5}$	-15	$-\frac{5}{12}$	$4\frac{1}{3}$
GE	ET	TT	RY	IN	ST	GA	ME	AN	DA	RK	FA	TE	LL
$-\frac{8}{17}$	-1	$11\frac{1}{2}$	$1\frac{1}{4}$	-4	10	$\frac{1}{6}$	$7\frac{1}{2}$	$\frac{13}{14}$	$-3\frac{11}{16}$	7	$-5\frac{1}{4}$	$2\frac{3}{7}$	$-5\frac{1}{2}$

Super Star

Solve the equations at the right and find the solutions below. Connect the dots in the order of the numbered equations. You may go through the same dot more than once.

THIS PUZZLE WILL MAKE YOU A STAR!



① $5x + 6 = 2x + 15$ ___

② $7x - 4 = 20 + 3x$ ___

③ $2x + 15 = 43 - 5x$ ___

④ $3 + 4x = 9x + 13$ ___

⑤ $2x - 10 = 44 + 8x$ ___

⑥ $-7x - 2 = 24 - 9x$ ___

⑦ $27 - 11x = x - 33$ ___

⑧ $21x + 6 = 17x - 26$ ___

⑨ $11x = 8x - 6$ ___

⑩ $-x - 29 = 13 + 2x$ ___

⑪ $-18 + 5x = -12x - 1$ ___

⑫ $-9x - 21 = 35 - x$ ___

⑬ $7x - 2 = -2x - 29$ ___

⑭ $36 + 15x = 17x$ ___

⑮ $-15 - 4x = 6 - 3x$ ___

⑯ $12x - 9 = 8x - 37$ ___

⑰ $-5x + 40 = 6x - 70$ ___

⑱ $-x - 2 = 1 - 2x$ ___

What Is The Title Of This Picture?

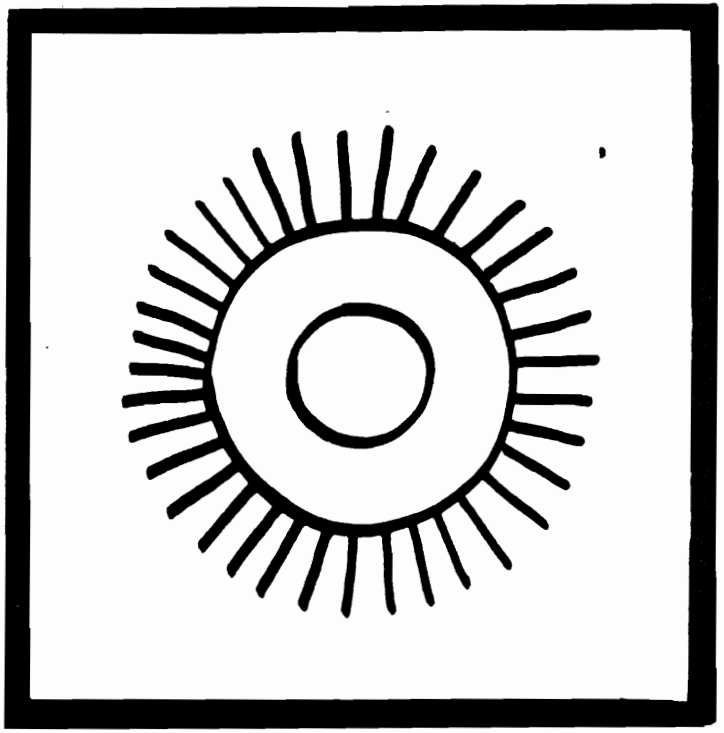
$^{-}9\ 10\ ^{-}25\ ^{-}9\ \ 8\ \ ^{-}3\ ^{-}4\ ^{-}25\ ^{-}9\ ^{-}1\ \ 7\ \ \ 1\ \ 10\ ^{-}14\ ^{-}1\ \ 6\ \ ^{-}1$

$8\ \ 7\ \ 6\ \ ^{-}1\ ^{-}25\ \ ^{-}4\ \ \ ^{-}12\ ^{-}1\ ^{-}4\ ^{-}9\ \ 2$

$8\ \ 5\ \ ^{-}12\ ^{-}25\ ^{-}1\ ^{-}3\ ^{-}3\ ^{-}4$

TO DECODE THE TITLE OF THIS PICTURE:

Solve any equation below and find the solution in the coded title. Each time it appears, write the letter of the exercise above it. Keep working and you will decode the title.



Ⓓ $4(2n - 5) = 3n + 10$

Ⓛ $2(4x + 7) = 2x - 4$

Ⓝ $8(k + 3) = 12k - 4$

Ⓗ $^{-}3(5 - 9v) = 25 + 7v$

Ⓐ $6x + 4 = 5(3x + 8)$

Ⓘ $5 - 11t = 7(5 - 2t)$

Ⓑ $^{-}2(18 - 3y) = 7y + 2y$

Ⓜ $2(4a - 12) + 3a = 6a + 1$

Ⓟ $9(2 + w) - 4w = 3w - 10$

Ⓤ $10u + 7 = 8(2u - 4) - 9$

Ⓣ $3(4d + 1) - 9d = 6(2 - d)$

Ⓡ $6(1 + 3m) = {}^{-}8({}^{-}2m + 5) - 4$

Ⓔ $^{-}14 + 3(x + 10) = 7(2x + 4) + x$

Ⓒ $6p - (5p + 5) = {}^{-}8 - 2(p + 12)$

What Did the Electrician Say After Fixing a Light Bulb at the Top of the Empire State Building?

Translate any phrase below into algebraic terms and find your answer in the corresponding answer column. Write the letter of the exercise in the box that contains the number of the answer. Keep working and you will discover the answer to the title question.

F	5 more than 2 times a number	**27**	$5x - 2$
H	7 less than 5 times a number	**11**	$7x + 2$
E	5 times a number, decreased by 2	**22**	$2 + 5x$
I	2 diminished by 7 times a number	**19**	$2x + 5$
S	2 increased by 5 times a number	**6**	$2x - 7$
T	twice a number, decreased by 7	**7**	$5x - 7$
G	2 more than 7 times a number	**14**	$2 - 7x$
W	2 times a number, increased by 8	**8**	$3(x + 8)$
I	2 times the sum of a number and 8	**28**	$3(2x + 8)$
A	3 more than 8 times a number	**10**	$2(x + 8)$
G	8 times the sum of a number and 3	**24**	$8x + 3$
E	3 times the sum of a number and 8	**3**	$2x + 8$
H	two-thirds of a number	**15**	$8(x + 3)$
R	3 times the sum of twice a number and 8	**20**	$\frac{2}{3x}$

A	9 less than a number	**16**	$9x + 4x$
I	4 times a number, plus 9	**4**	$x - 9$
T	9 diminished by 4 times a number	**2**	$9 - 4x$
O	one-fourth of a number	**5**	$9x - 4$
S	9 times a number, decreased by 4	**26**	$9x + 4$
E	4 more than 9 times a number	**21**	$4x + 9$
H	9 times a number, increased by 4 times the number	**18**	$\frac{x}{4}$
I	10 meters higher than height x	**23**	$x - 50$
L	10 mph slower than speed x	**1**	$x + 10$
C	50 meters deeper than depth x	**12**	$6x - 2$
H	50 mph faster than speed x	**25**	$2x + 6$
T	6 meters less than twice length x	**17**	$2x - 6$
R	6 years older than twice age x	**13**	$x - 10$
H	2 years younger than 6 times age x	**9**	$x + 50$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

Why Did Elmo Take A Bath After Walking Through Mudsucker Swamp?

TO ANSWER THIS QUESTION: Solve any problem below and find your answer at the bottom of the page. Write the letter of the problem above it. Keep working and you will get the answer.

(I) Nine more than a number is 33. Find the number. _____

(E) Four less than a number is 17. Find the number. _____

(A) A number decreased by 16 is $^{-}26$. Find the number. _____

(T) Eight times a number is $^{-}96$. Find the number. _____

(Y) One-fifth of a number is 14. Find the number. _____

(I) One-fourth of a number is $^{-}60$. Find the number. _____

(A) Juan weighs 53 kg. This is 5 kg more than Bill weighs. How much does Bill weigh? _____ kg

(T) A store is selling a TV for $389. This is $64 less than the regular price. What is the regular price? $_____

(S) Six copies of a book cost $90. How much does each copy of the book cost? $_____

(T) A set of eight plates costs $112. What is the cost of each plate? $_____

(W) An apple has 75 calories. This is $\frac{1}{8}$ of the number in a hot fudge sundae. How many calories are in the sundae? _____

(R) A salesman earned $420. This was $\frac{1}{10}$ of his sales dollars. How much did he sell (in dollars)? $_____

(K) The height of the shortest man in history was 68 cm. This is 204 cm less than the height of the tallest man. How tall was the tallest man? _____ cm

(D) The perimeter of a square is 320 cm. Find the length of each side. _____ cm

(R) A college has 600 openings in its freshman class. In past years, an average of $\frac{1}{3}$ of those accepted have come. About how many applicants should the college accept? _____

$^{-}240$	$^{-}12$	95	600	48	15	1600	$^{-}10$	284	80	24	4200	14	70	$^{-}90$	453	1800	21	272

What Do Smokey The Bear And Alexander The Great Have In Common?

Solve any problem below. Find your answer in the answer column and notice the letter next to it. Write this letter in each box that contains the number of that problem. Keep working and you will discover the answer to the title question.

① Seven more than 3 times a number is 31. Find the number. _____

② Three more than 8 times a number is -29. Find the number. _____

③ Five less than 6 times a number is 61. Find the number. _____

④ Six decreased by 9 times a number is -39. Find the number. _____

⑤ Two-thirds of a number is 36. Find the number. _____

⑥ Four times a number, increased by 10, is -2. Find the number. _____

⑦ Three-eighths of a number, decreased by 1, is 5. Find the number. _____

⑧ Seven diminished by $\frac{1}{4}$ of a number is 15. Find the number. _____

⑨ The Nile River is 6690 kilometers long. This is 394 kilometers longer than the Amazon River. How long is the Amazon River? _____ km

⑩ The fastest speed recorded for a cheetah is 70 mph. This is 11 mph less than 3 times the fastest running speed for a man. What is the fastest running speed for a man? _____ mph

⑪ The Empire State Building is 1250 feet tall. This is 140 feet more than twice the height of the Washington Monument. How tall is the Washington Monument? _____ ft

⑫ A medium apple has 72 calories. This is $\frac{3}{4}$ of the calories in a medium banana. How many calories does a medium banana have? _____ cal

⑬ The width of a singles tennis court is 27 feet. This is 1 foot more than $\frac{1}{3}$ of the length. What is the length of the court? _____ ft

⑭ A golf ball can travel 170 mph. This is $\frac{10}{7}$ times the fastest speed recorded for a hockey puck. What is the record speed for a hockey puck? _____ mph

Ⓖ	30
Ⓔ	11
Ⓥ	27
Ⓝ	96
Ⓡ	115
Ⓑ	-32
Ⓛ	8
Ⓤ	562
Ⓜ	119
Ⓞ	5
Ⓒ	6316
Ⓨ	-3
Ⓗ	555
Ⓘ	-4
Ⓢ	6296
Ⓣ	54
Ⓟ	84
Ⓕ	-2
Ⓐ	16
Ⓓ	78

5	11	3	6	8	4	5	11	11	7	10	3	5	11	3	9	7	14	3	14	2	13	13	1	3	12	7	14	3

Why Is A Yo-Yo Like Waking Up At 5 A.M.?

Solve each problem and find your answers at the bottom of the page. Shade out the letter above each correct answer. When you finish, the answer to the title question will remain!

1. The second of two numbers is 4 times the first. Their sum is 45. Find the numbers.
2. The greater of two numbers is 3 times the smaller. Their sum is 44. Find the numbers.
3. The second of two numbers is 7 more than the first. Their sum is 47. Find the numbers.
4. The greater of two numbers is 10 more than the smaller. Their sum is 38. Find the numbers.
5. The sum of two numbers is 31. The first is 5 less than the second. Find the numbers.
6. The second of two numbers is 1 more than twice the first. Their sum is 25. Find the numbers.
7. The greater of two numbers is 8 more than 5 times the smaller. Their sum is 68. Find the numbers.
8. The second of two numbers is 3 less than twice the first. Their sum is 42. Find the numbers.
9. Find two numbers whose sum is 33, if the second is 2 less than 4 times the first.
10. A basketball player shot 70 times. The number of missed shots was 6 more than the number of baskets. How many baskets did the player make?
11. The entertainment portion of a 60-minute TV program lasted 4 times as long as the advertising portion. How many minutes of advertising were there?

G	T	I	H	E	T	U	S	T	O	W	P	I	N	R	L	E	N	Y	O
14, 24	32	8, 25	20, 27	10, 58	14, 26	9, 36	15, 25	29	12	11	7, 26	10, 40	8, 17	15, 20	12, 56	11, 33	13, 18	9, 15	15, 27

When Should A Mountain Climber NOT Call For Help?

TO ANSWER THIS QUESTION: Cross out each box that contains the answer to a problem. When you finish, write the letters from the boxes that are not crossed out in the boxes at the bottom of the page.

① The second of 2 numbers is 7 times the first. Their sum is 32. Find the numbers.

② The second of 2 numbers is 5 more than twice the first. Their sum is 29. Find the numbers.

③ The sum of 2 numbers is 42. The first is 6 less than 3 times the second. Find the numbers.

④ The greater of 2 numbers is 9 more than the smaller. Their sum is 67. Find the numbers.

⑤ Find 2 numbers whose sum is 49, if the greater is 4 more than 8 times the smaller.

⑥ The first of 2 numbers is 7 less than 5 times the second. Their sum is 113. Find the numbers.

⑦ A 75-meter rope is cut so that one piece is 13 meters shorter than the other. Find the length of each piece.

⑧ Grandpa's age is 7 years less than 6 times Junior's age. The sum of their ages is 70. Find each of their ages.

⑨ The sum of 3 numbers is 45. The first number is 4 times the second, while the third is 9 more than the second. Find the numbers.

⑩ The sum of 3 numbers is 49. The second number is twice the first, and the third is 1 less than the second. Find the numbers.

⑪ The sum of 3 numbers is 79. The second number is 9 times the first, and the third is 3 more than the second. Find the numbers.

⑫ The sum of the angle measures of any triangle is 180°. Find each of the angle measures of a triangle if the second angle measures 10° more than twice the first, and the third angle measures 10° more than the second.

IFT	HIS	WHE	REA	NHE	LPI	ISO	SHA	SLO	NGI
31 m; 44 m	30; 12	20; 5; 14	93; 20	9; 61	11; 59	29; 38	5; 45; 48	4; 36; 39	29 m, 46 m
NGB	WFA	YHI	SFA	LLA	STE	EPA	TOG	ETH	ELP
20°; 75°; 85°	24; 6; 15	95; 18	5; 44	4; 28	7; 19	8; 21	10; 20; 19	9; 18; 17	30°; 70°; 80°

Books Never Written

Tragedy on the Cliff by ■

4 ⁻7 3 4 4 ⁻11 6 12 ⁻2 4 ⁻5

Mystery of the Creaking Door by ■

⁻5 ⁻15 10 ⁻9 1 8 ⁻7 ⁻11 ⁻4 4 10

P.S. by ■

⁻1 6 ⁻1 3 ⁻7 ⁻11 4 2 12 12 ⁻5 4

ABOVE ARE THE TITLES OF THREE "BOOKS NEVER WRITTEN." TO DECODE THE NAMES OF THEIR AUTHORS, FOLLOW THESE DIRECTIONS:

Solve any problem below and find your answer in the code. Each time it appears, write the letter of that problem above it. Keep working and you will decode the names of all three authors.

(L) Eight less than 7 times a number is the same as 4 more than 3 times the number. Find the number.

(V) Four more than 6 times a number is the same as 9 times the number increased by 10. Find the number.

(I) Four times a number is the same as 14 less than twice the number. Find the number.

(Y) One more than 8 times a number is the same as 12 times the number decreased by 3. Find the number.

(G) Twelve less than a number is the same as 5 times the number increased by 4. Find the number.

(D) Twenty decreased by 2 times a number is the same as 10 less than 3 times the number. Find the number.

(M) Two more than a number is the same as 16 decreased by 6 times the number. Find the number.

(R) Four times a number decreased by 25 is the same as 9 times the number. Find the number.

(T) Twice a number plus 6 times the number is ⁻72. Find the number.

(H) A number plus 5 more than 3 times the number is 37. Find the number.

(A) Eleven diminished by 5 times a number is the same as 4 times the number increased by 20. Find the number.

(S) Eight times a number is the same as 90 decreased by the number. Find the number.

(U) Nine more than 3 times a number is the same as 6 less than twice the number. Find the number.

(O) One increased by 7 times a number is the same as 5 times the number plus 25. Find the number.

(E) Twenty-eight decreased by 6 times a number is the same as the number. Find the number.

(N) Sixteen diminished by 8 times a number is the same as 5 diminished by 9 times the number. Find the number.

Did you hear about...

A	B	C	D	E	F
G	H	I	J	K	?

DIRECTIONS:

Solve any problem below. Find your answer in the answer column and notice the word next to it. Write this word in the box with the same letter as that problem.

KEEP WORKING AND YOU WILL HEAR ABOUT A GUY WITH HORSE SENSE.

Ⓐ Five times the sum of a number and 2 is 25. Find the number.

Ⓑ Three times the sum of a number and $^{-}7$ is 12. Find the number.

Ⓒ Twice the sum of a number and 3 is the same as 11 increased by the number. Find the number.

Ⓓ Seven times the sum of a number and 4 is the same as 8 decreased by 3 times the number. Find the number.

Ⓔ Nine less than 5 times a number is equal to twice the sum of the number and 6. Find the number.

Ⓕ Six times the sum of a number and $^{-}1$ is the same as 2 more than 8 times the number. Find the number.

Ⓖ The greater of two numbers is 5 more than the smaller. If the smaller is added to twice the greater, the result is 22. Find *both* of the numbers.

Ⓗ The smaller of two numbers is 3 less than the larger. Twice the larger plus 4 times the smaller is 36. Find the numbers.

Ⓘ The first of two numbers is 9 more than the second. Three times the first number is equal to 7 more than 5 times the second. Find the numbers.

Ⓙ The second of two numbers is 3 times the first. Eight times the sum of the first number and $^{-}2$ is equal to the second number decreased by 11. Find the numbers.

Ⓚ The second of two numbers is 6 less than the first. Twice the sum of the first number and 1 is the same as 9 times the second number. Find the numbers.

9; 3—HORSE

5—RODEO

7; 1—KICK

7—WHO

3; 6—TRICK

4; 9—DO

3—THE

10; 15—BULL

1; 3—A

$^{-}10$—ROPE

19; 10—FOR

$^{-}4$—WOULD

11—FAMOUS

21; 12—EVERY

$^{-}2$—RIDER

5; 8—ANYTHING

$^{-}1$—SADDLE

8; 2—BUCK

6—RODE

6; 18—HIS

Why Does Batman Brush His Teeth So Often?

Solve any problem below. Find your answer in the answer column and notice the letter next to it. Write this letter in each box that contains the number of that problem. Keep working and you will discover the answer to the title question.

① The length of a rectangle is 7 centimeters greater than the width. The perimeter is 54 centimeters. Find the length and width.

② The length of a rectangle is 3 times the width. The perimeter is 120 meters. Find the length and width.

③ The length of a rectangle is 5 centimeters more than twice the width. The perimeter is 82 centimeters. Find the length and width.

④ The perimeter of a rectangle is 400 meters. The length is 15 meters less than 4 times the width. Find the length and width.

⑤ The perimeter of a triangle is 26 centimeters. Side ***a*** of the triangle is 3 centimeters longer than side ***b***. Side ***c*** is 1 centimeter shorter than twice side ***b***. Find the length of each side.

⑥ The first side of a triangle is 8 meters longer than twice the second side. The third side is 3 times the second side. The perimeter is 128 meters. Find the lengths of the three sides.

⑦ Side ***a*** of a triangle is twice side ***b***. Side ***c*** is 2 meters shorter than side ***a***. The perimeter is 98 meters. Find the length of each side.

⑧ The perimeter of a triangle is 33 centimeters. The first side is 5 centimeters shorter than the second, and the third is twice the first. Find the lengths of the sides.

⑨ An ice hockey rink is a rectangle with a perimeter of 174 meters. The length is 9 meters more than twice the width. Find the length and width.

⑩ A triangular course for a sailing race is marked off by buoys. The first leg is 250 meters longer than the second, and the third leg is 100 meters shorter than the first. If the length of the course is 2500 meters, find the length of each leg.

Ⓚ	19 cm; 12 cm
Ⓞ	9 cm; 6 cm; 11 cm
Ⓡ	40 m; 20 m; 38 m
Ⓘ	59 m; 28 m
Ⓝ	17 cm; 10 cm
Ⓜ	44 m; 21 m; 66 m
Ⓗ	29 cm; 12 cm
Ⓑ	61 m; 26 m
Ⓟ	48 m; 20 m; 60 m
Ⓖ	8 cm; 10 cm; 16 cm
Ⓔ	157 m; 43 m
Ⓛ	27 cm; 11 cm
Ⓥ	7 cm ; 12 cm ; 14 cm
Ⓐ	45 m; 15 m
Ⓢ	900 m; 650 m; 950 m
Ⓣ	950 m; 700 m; 850 m

10	5	6	7	4	8	4	1	10	9	2	10	9	7	4	2	10	3

Why Did The Kangaroo See A Psychiatrist?

Find the graph of the solution set of any inequality below in the corresponding column of graphs. Notice the letter next to it.
Write this letter in each box that contains the number of that exercise.
Keep working and you will discover the answer to the title question.

① $x < 1$ — Ⓗ

② $x \leq 1$ — Ⓨ

③ $x > 1$ — Ⓢ

④ $x \geq 1$ — Ⓘ

⑤ $x \neq 1$ — Ⓓ

⑥ $x < -2$ — Ⓛ

⑦ $x > -2$ — Ⓡ

⑧ $x \leq -2$ — Ⓖ

⑨ $x \geq -2$ — Ⓐ

⑩ $x < -1$ — Ⓞ

⑪ $-1 < x$ — Ⓤ

⑫ $3 \geq x$ — Ⓜ

⑬ $x < 3$ — Ⓕ

⑭ $x \neq 0$ — Ⓔ

⑮ $0 \leq x$ — Ⓟ

⑯ $0 \geq x$ — Ⓦ

⑰ $0 < x$ — Ⓙ

⑱ $0 > x$ — Ⓝ

6	16	15	13	11	1	16	7	16	1	15	6	4	6	16	15	5	9	12	16	16	8	2	11	3	9	13	18	10	17	14	4

Why Did Farmer Jones Keep The Chickens Away From The Other Animals?

Solve any inequality below. CIRCLE the letter next to the correct answer. Write this letter in the box at the bottom of the page that contains the number of that exercise. Keep working and you will discomer the answer to the title question. Two of the numbers will not be used.

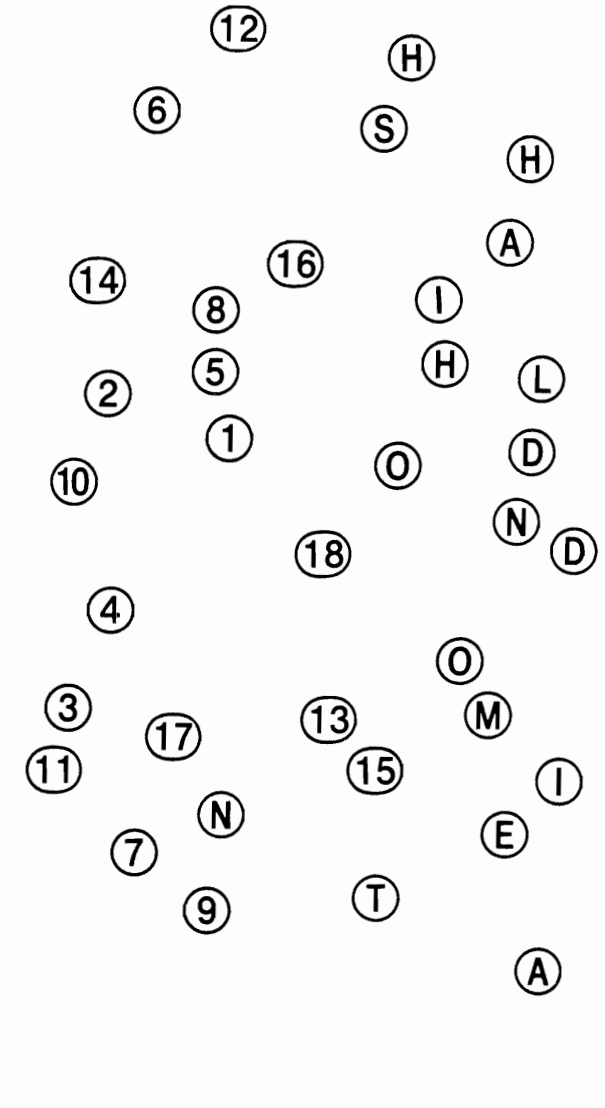
① $x + 5 > 9$ (N) $x > 4$ (R) $x < 4$	⑥ $^-6x < 12$ (S) $x > ^-2$ (D) $x < ^-2$	⑪ $^-5x > ^-20$ (T) $x > 4$ (F) $x < 4$	⑯ $-\frac{1}{2}n \geq ^-15$ (I) $n \geq 30$ (U) $n \leq 30$	㉑ $-\frac{2}{3}x > 8$ (D) $x > ^-12$ (G) $x < ^-12$
② $3x \leq 15$ (S) $x \geq 5$ (L) $x \leq 5$	⑦ $^-6x < ^-12$ (E) $x > 2$ (W) $x < 2$	⑫ $x - 10 < ^-1$ (F) $x > 9$ (N) $x < 9$	⑰ $x + 15 < 4$ (E) $x > ^-11$ (A) $x < ^-11$	㉒ $^-2x \leq ^-42$ (P) $x \geq 21$ (X) $x \leq 21$
③ $u - 1 \geq ^-4$ (O) $u \geq ^-3$ (L) $u \leq ^-3$	⑧ $z + 4 > ^-3$ (G) $z > ^-7$ (A) $z < ^-7$	⑬ $\frac{1}{2}n \geq 15$ (H) $n \geq 30$ (I) $n \leq 30$	⑱ $8x > ^-56$ (S) $x > ^-7$ (N) $x < ^-7$	㉓ $t + 13 \geq 30$ (E) $t \geq 17$ (P) $t \leq 17$
④ $6x < 12$ (V) $x > 2$ (U) $x < 2$	⑨ $m - 12 \leq 2$ (S) $m \geq 14$ (K) $m \leq 14$	⑭ $\frac{1}{2}n \geq ^-15$ (E) $n \geq ^-30$ (M) $n \leq ^-30$	⑲ $d - 7 \leq ^-16$ (T) $d \geq ^-9$ (A) $d \leq ^-9$	㉔ $4a \leq ^-20$ (F) $a \geq ^-5$ (L) $a \leq ^-5$
⑤ $6x < ^-12$ (B) $x > ^-2$ (C) $x < ^-2$	⑩ $^-5x > 20$ (D) $x > ^-4$ (W) $x < ^-4$	⑮ $-\frac{1}{2}n \geq 15$ (R) $n \geq ^-30$ (U) $n \leq ^-30$	⑳ $\frac{2}{3}x > 8$ (I) $x > 12$ (T) $x < 12$	㉕ $-\frac{1}{8}k > ^-1$ (P) $k > 8$ (C) $k < 8$

5	13	20	25	9	23	12	6		15	18	7		11	3	10	2		24	19	1	21	4	17	8	14

Why Did They Try To Build A House On Orgo's Head?

Solve any inequality below and draw a straight line connecting it to the inequality that describes the solution set. The line will cross a number and a letter. The number tells you where to put the letter in the boxes at the bottom of the page. Keep working and you will discover the answer to the title question.

① $3x + 8 > 2$	■ $x \geq -21$
② $7x - 1 < 20$	■ $x > 5$
③ $8 - 4x > -12$	■ $x > -2$
④ $-5x - 9 \geq -4$	■ $x > -4$
⑤ $63 + 12x < 15$	■ $x \leq 7$
⑥ $-8x + 25 \leq -31$	■ $x < 3$
⑦ $-10 + 2x \geq -52$	■ $x \leq -1$
⑧ $15 > 6x - 9$	■ $x < 14$
⑨ $48 < 20 - 14x$	■ $x \geq 7$
⑩ $-60 \geq 9x + 3$	■ $x \leq -7$
⑪ $18 - 10x < -22$	■ $x > -9$
⑫ $7 < 3x - 8$	■ $x < 5$
⑬ $-12x - 8 \leq 64$	■ $x < 4$
⑭ $-17 > -7x - 45$	■ $x > 4$
⑮ $3x - 42 < 0$	■ $x \geq -11$
⑯ $44 \geq -8x - 44$	■ $x \geq -6$
⑰ $4x + 12 > -24$	■ $x < -4$
⑱ $-17 \leq -6x + 25$	■ $x < -2$



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Did you hear about...

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O ?

DIRECTIONS:

Solve any inequality below. In the answer column, find the inequality that describes the solution set and notice the word next to it. Write this word in the box that has the same letter as that exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT A COLLEGE EYE DEAL.

Ⓐ $2(3x - 5) > 2x + 6$

Ⓑ $8(2 + x) \leq 3x - 9$

Ⓒ $^{-}3(4x - 6) < 7 - x$

Ⓓ $13x - 7(^{-}2 + x) \geq 4x - 10$

Ⓔ $5(^{-}3x - 1) + 7 \leq {}^{-}x + 30$

Ⓕ $12 + 5x > 2(8x - 6) - 7x$

Ⓖ $9x - 2x \geq 14 - 9(^{-}x - 4)$

Ⓗ $^{-}4(3 - 5x) - 11x < 3x + 6$

Ⓘ $10(x + 2) > {}^{-}2(6 - 9x)$

Ⓙ $7(2 + 2x) \geq 4(^{-}x - 10)$

Ⓚ $11 + 3(^{-}8 + 5x) < 16x - 5$

Ⓛ $^{-}6(7x - 1) < {}^{-}8x + 9(^{-}3x - 4)$

Ⓜ $^{-}9x + 2(4x + 12) \leq 4(1 - 3x) - 13$

Ⓝ $7(^{-}x + 4) + 16 \geq 5x - (10x - 6) - 6$

Ⓞ $12(2x + 3) - 3(8 + 7x) > 0$

$x < 6$—WHO

$x \leq {}^{-}3$—OVER

$x < 4$—HAVE

$x \geq 22$—STUDENTS

$x \leq {}^{-}5$—CROSS

$x \geq {}^{-}12$—COLLEGE

$x \leq {}^{-}2$—EYES

$x > 6$—CONTROL

$x > 4$—THE

$x < 1$—KNOW

$x < 3$—TO

$x \leq 22$—HIS

$x \geq {}^{-}2$—PROFESSOR

$x \leq {}^{-}25$—SEEMED

$x \geq {}^{-}3$—ABSOLUTELY

$x \geq {}^{-}25$—SUBJECT

$x > {}^{-}8$—NO

$x > 1$—EYED

$x < {}^{-}8$—HELP

$x > {}^{-}4$—PUPILS

$x < {}^{-}4$—TEACH

Watch Out!

A *FRIENDLY WARNING* is hidden below. To discover it, find the union or intersection for each pair of sets. Then arrange the elements of each solution set to form a word.

WATCH OUT!

① $\{A, F, I, L\} \cap \{P, I, F\}$ → _____

② $\{N, A\} \cup \{A\}$ → _____

③ $\{B, X, L, R, A\} \cap \{V, P, X, A, M\}$ → _____

④ $\boldsymbol{A} = \{R, S, P, O\}$
$\boldsymbol{B} = \{D, O, S, R\}$ $\boldsymbol{A} \cup \boldsymbol{B}$ → _____

⑤ $\boldsymbol{X} = \{O, B, N\}$
$\boldsymbol{Y} = \{L, N, C, S, O\}$ $\boldsymbol{X} \cap \boldsymbol{Y}$ → _____

⑥ $\{R, O, U, Y\} \cup \{U, R, O\}$ → _____

⑦ $\boldsymbol{A} = \{R, A, Y, K, W, C\}$
$\boldsymbol{B} = \{L, A, C, I, R\}$ $\boldsymbol{A} \cap \boldsymbol{B}$ → _____

⑧ $\{O, U, S, Y\} \cap \{T, U, Y, V, O\}$ → _____

⑨ $\boldsymbol{X} = \{M, T, G, H\}$
$\boldsymbol{Y} = \{G, I, M, T\}$ $\boldsymbol{X} \cup \boldsymbol{Y}$ → _____

⑩ $\{V, H, A, E\} \cup \{A, V\}$ → _____

⑪ $\boldsymbol{A} = \{Q, A, W, N, T\}$
$\boldsymbol{B} = \{B, N, A, J\}$ $\boldsymbol{A} \cap \boldsymbol{B}$ → _____

⑫ $\{L, A, X\} \cap \{X, R, B, A\}$ → _____

⑬ $\boldsymbol{X} = \{E\}$
$\boldsymbol{Y} = \{D, T, E, N\}$ $\boldsymbol{X} \cup \boldsymbol{Y}$ → _____

Why Was The Hit Record Nervous?

① $A = \{x \mid x > 2\}$
$B = \{x \mid x < -1\}$

② $X = \{x \mid x \geq 2\}$
$Y = \{x \mid x \leq -1\}$

③ $A = \{x \mid x \geq 0\}$
$B = \{x \mid x < -3\}$

④ $X = \{x \mid x > 0\}$
$Y = \{x \mid x \leq -3\}$

⑤ $A = \{x \mid x > -2\}$
$B = \{x \mid x > 2\}$

⑥ $X = \{x \mid x \geq 1\}$
$Y = \{x \mid x > 4\}$

⑦ $A = \{x \mid x < 4\}$
$B = \{x \mid x \leq -1\}$

⑧ $X = \{x \mid x \geq 3\}$
$Y = \{x \mid x \leq -2\}$

⑨ $A = \{x \mid x = -1\}$
$B = \{x \mid x > -1\}$

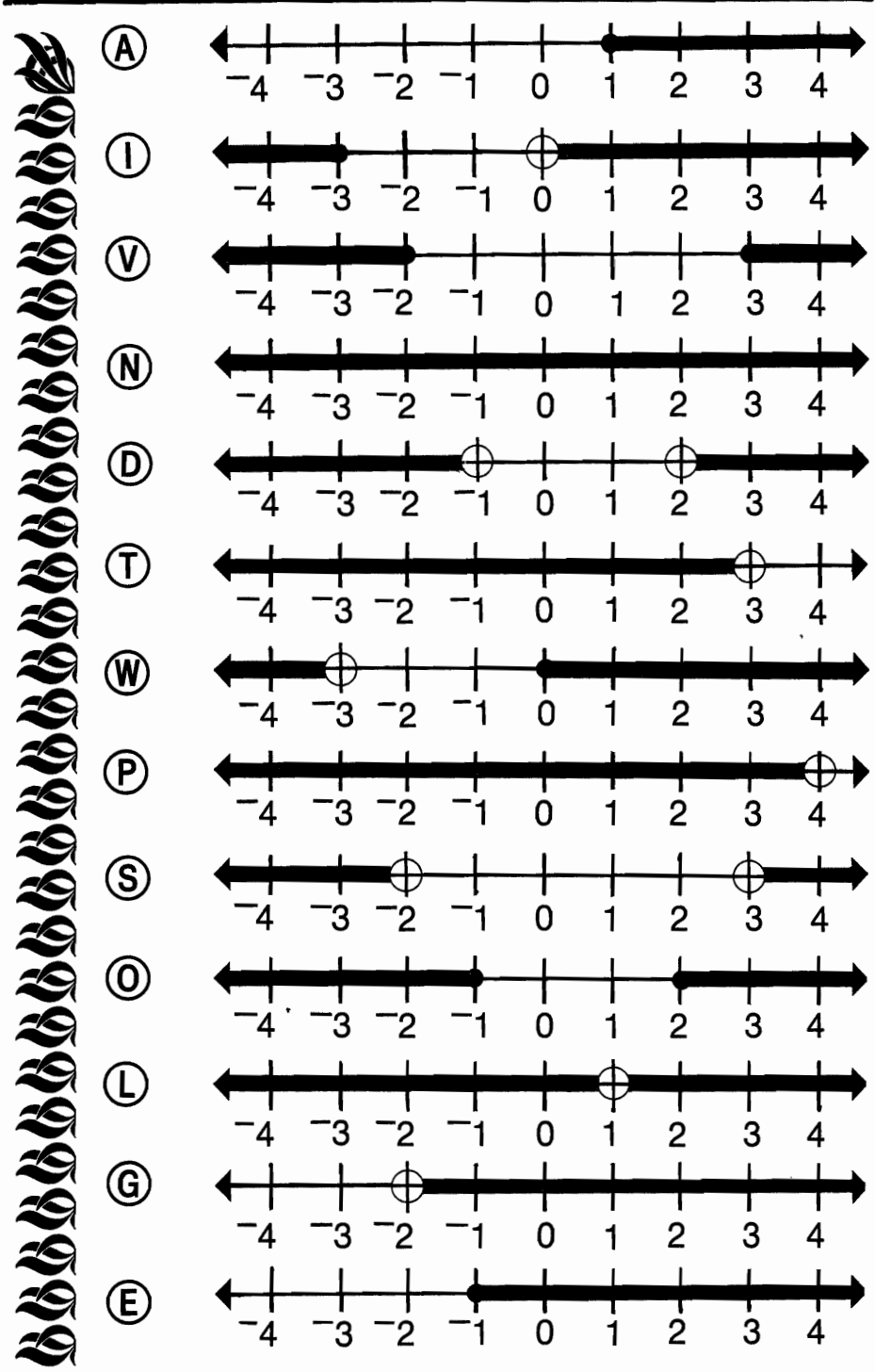
⑩ $X = \{x \mid x = 0\}$
$Y = \{x \mid x < 3\}$

⑪ $A = \{x \mid x < 1\}$
$B = \{x \mid x > 1\}$

⑫ $X = \{x \mid x \geq -4\}$
$Y = \{x \mid x < 0\}$

⑬ $A = \{x \mid x > 3\}$
$B = \{x \mid x < -2\}$

Find the UNION of the two given sets in the column of graphs below. Write the letter next to the graph in each box that contains the number of the exercise. Keep working and you will discover the answer to the title question.



4	10	3	6	13	11	4	8	4	12	5	2	12	13	7	4	12	13	6	12	1	12	9	9	1	11	9	13

What Did The Mother Worm Say To The Teenage Worm?

Find the INTERSECTION of the two given sets in the column of graphs below. Write the letter next to the graph in each box that contains the number of the exercise. Keep working and you will discover the answer to the title question.

① $R = \{x \mid x > -2\}$
$S = \{x \mid x < 3\}$

② $P = \{x \mid x \geq -2\}$
$Q = \{x \mid x \leq 3\}$

③ $R = \{x \mid x > 0\}$
$S = \{x \mid x \leq 4\}$

④ $P = \{x \mid x \geq -3\}$
$Q = \{x \mid x < -1\}$

⑤ $R = \{x \mid x > -1\}$
$S = \{x \mid x > 2\}$

⑥ $P = \{x \mid x > -4\}$
$Q = \{x \mid x \geq 0\}$

⑦ $R = \{x \mid x \leq -1\}$
$S = \{x \mid x \leq -2\}$

⑧ $P = \{x \mid x \geq -3\}$
$Q = \{x \mid x \leq 3\}$

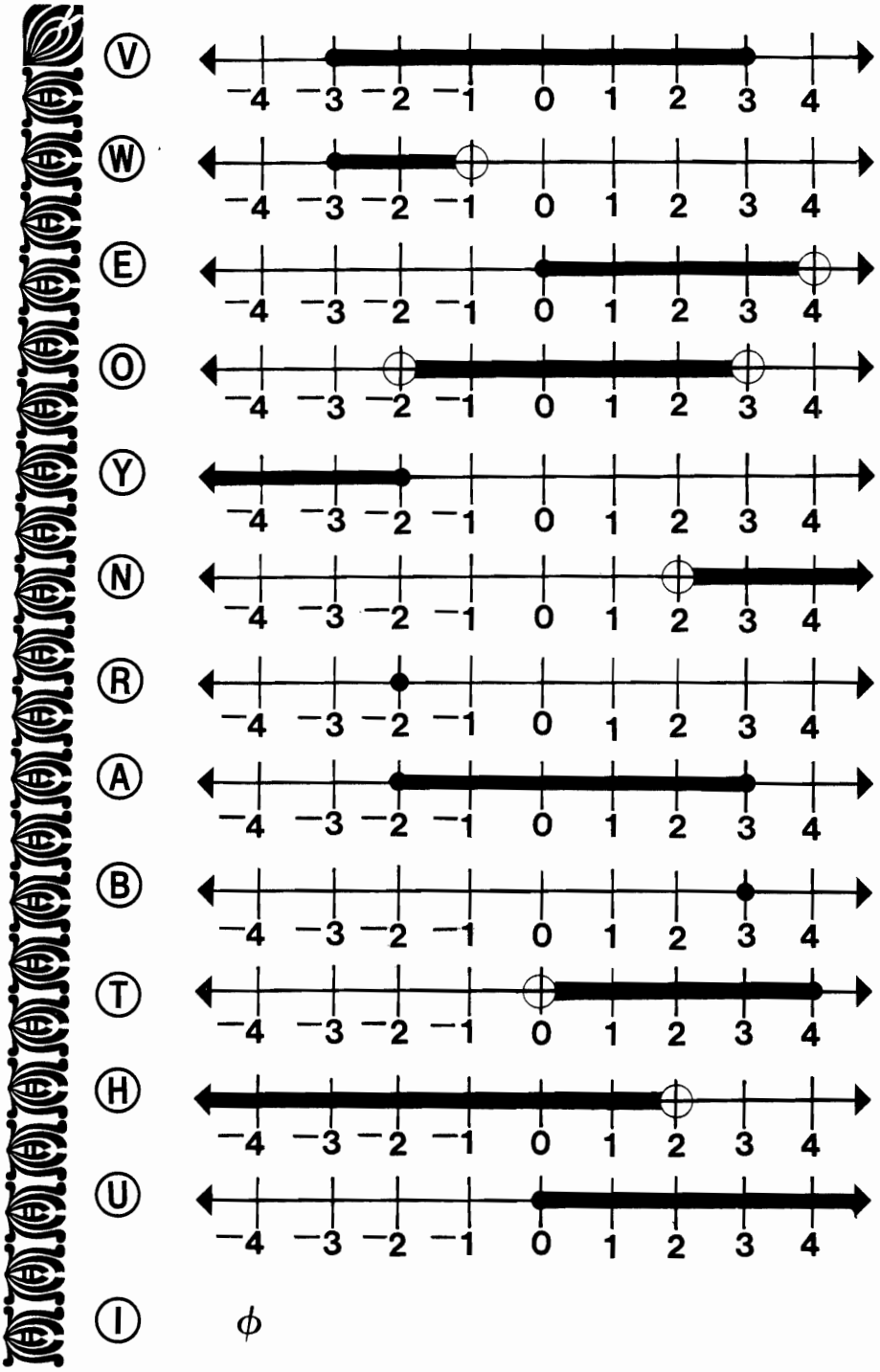
⑨ $R = \{x \mid x < 2\}$
$S = \{x \mid x < 4\}$

⑩ $P = \{x \mid x = 3\}$
$Q = \{x \mid x < 4\}$

⑪ $R = \{x \mid x \geq 0\}$
$S = \{x \mid x \leq -3\}$

⑫ $P = \{x \mid x \geq 0\}$
$Q = \{x \mid x < 4\}$

⑬ $R = \{x \mid x \geq -2\}$
$S = \{x \mid x = -2\}$



4	9	12	13	12	11	5	12	2	13	3	9	9	2	8	12	7	1	6	10	12	12	5

What is ABCDEFGHIJKLMNOPQRSTUVWXYZ, Slurp?

Match any compound inequality below with the graph of its solution set. Write the letter next to the graph in each box that contains the number of that exercise. Keep working and you will discover the answer to the title question.

① $\{x \mid x > 1 \text{ or } x \leq -2\}$

② $\{x \mid x \geq -3 \text{ and } x < 2\}$

③ $\{x \mid x \geq 3 \text{ or } x \leq 0\}$

④ $\{x \mid x > 1 \text{ and } x < 4\}$

⑤ $\{x \mid x \geq -1 \text{ or } x < -2\}$

⑥ $\{x \mid x \geq -2 \text{ and } x \leq 3\}$

⑦ $\{x \mid x > 0 \text{ or } x > 2\}$

⑧ $\{x \mid x > 0 \text{ and } x > 2\}$

⑨ $\{x \mid x \leq -1 \text{ or } x < 0\}$

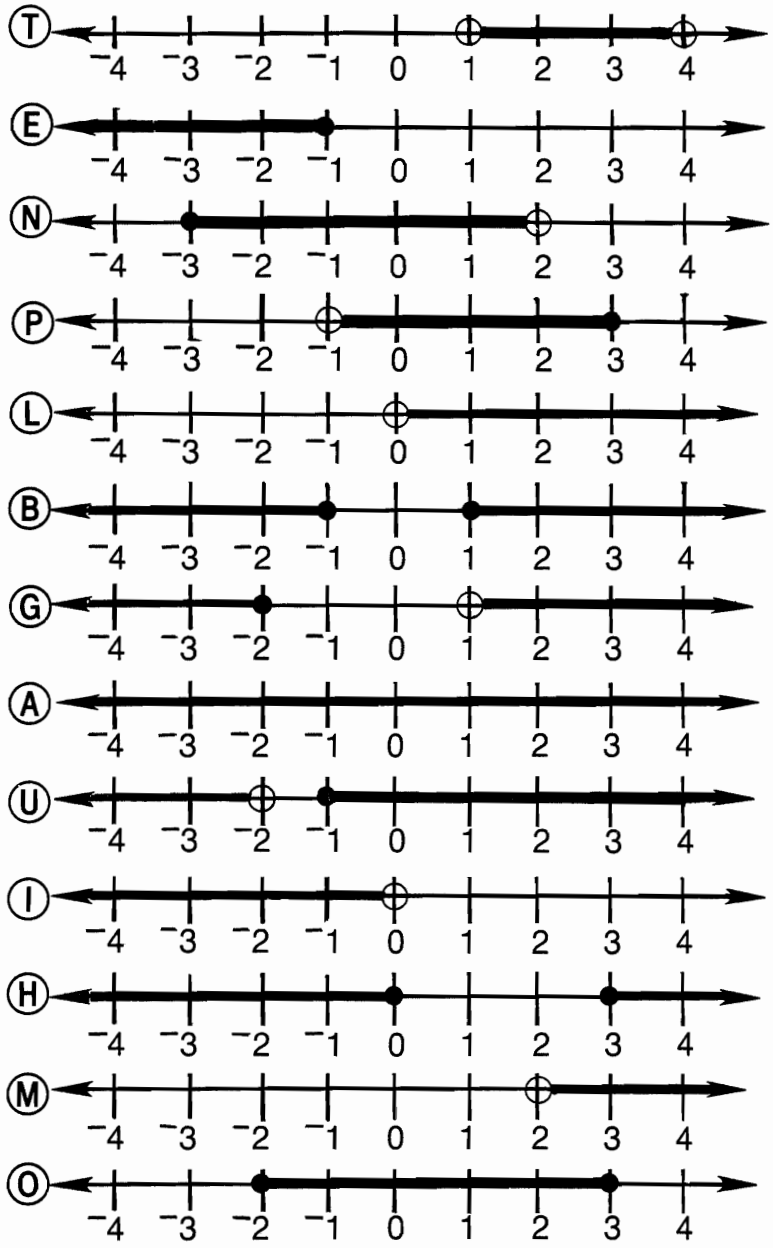
⑩ $\{x \mid x \leq -1 \text{ and } x < 0\}$

⑪ $\{x \mid x \geq 1 \text{ or } x \leq -1\}$

⑫ $\{x \mid x \geq 1 \text{ and } x \leq -1\}$

⑬ $\{x \mid x > -1 \text{ or } x \leq 3\}$

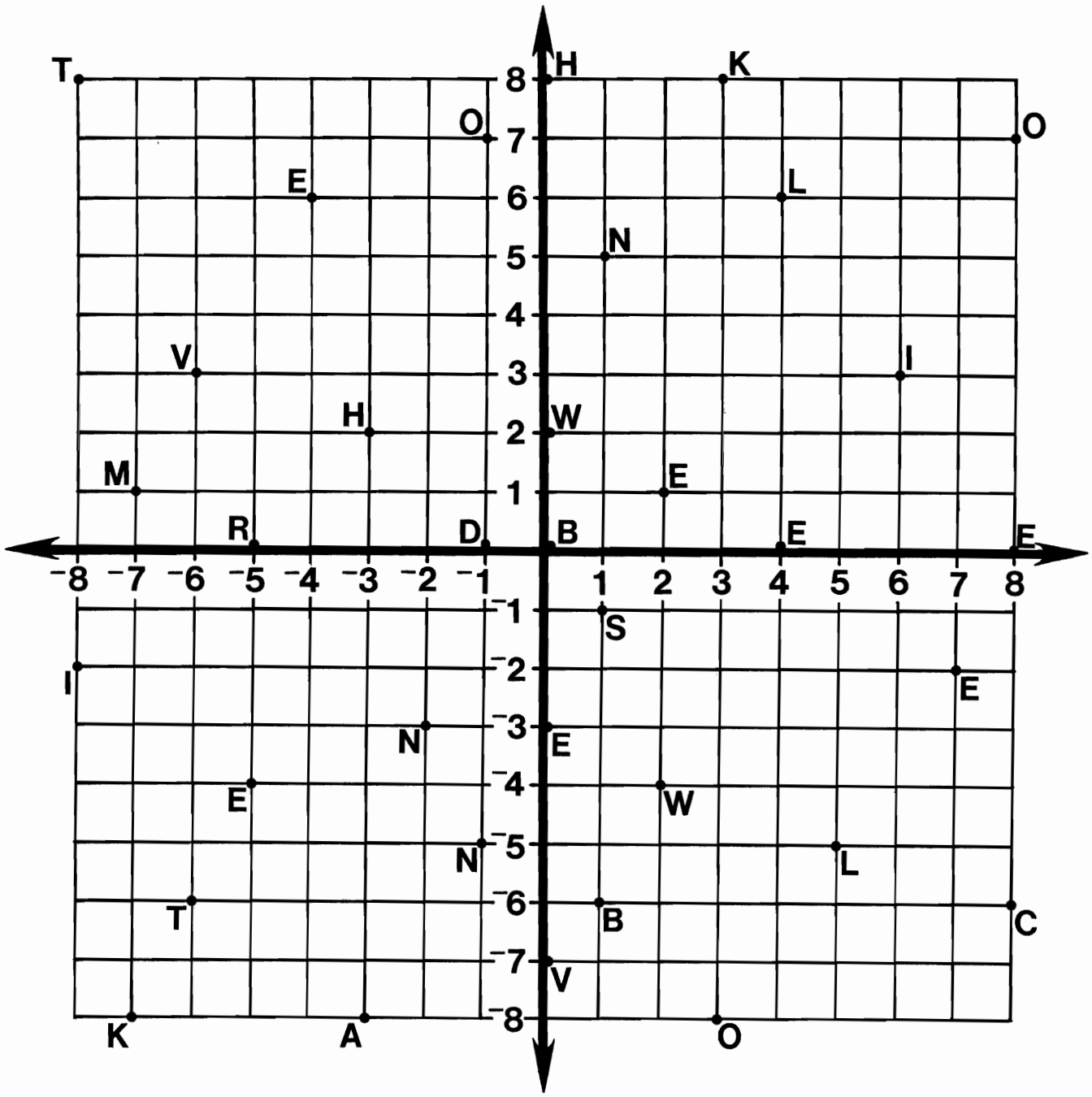
⑭ $\{x \mid x > -1 \text{ and } x \leq 3\}$



12	6	8	10	6	2	10	10	13	4	9	2	1	13	7	14	3	13	11	10	4	12	6	5	14	

What Did One Ear Say To The Other?

Each pair of numbers at the bottom of the page stands for a point on the coordinates below. Above each pair of numbers, write the letter that appears at that point.



(6,3)	(1,5)	($^-$4,6)	($^-$6,3)	(4,0)	($^-$5,0)	($^-$7,$^-$8)	($^-$1,$^-$5)	(7,$^-$2)	(2,$^-$4)	(0,2)	(0,$^-$3)
(0,0)	(8,7)	($^-$6,$^-$6)	($^-$3,2)	(5,$^-$5)	($^-$8,$^-$2)	(0,$^-$7)	($^-$5,$^-$4)	($^-$1,0)	(3,$^-$8)	($^-$2,$^-$3)	
($^-$8,8)	(0,8)	(8,0)	(1,$^-$1)	($^-$3,$^-$8)	($^-$7,1)	(2,1)	(1,$^-$6)	(4,6)	($^-$1,7)	(8,$^-$6)	(3,8)

GET THE POINT

Graph the points in each group and connect each point with the next point using straight line segments. Do NOT connect the last point in one group with the first point in the next group. For the next-to-last group, you are asked to shade in the area formed by the points in that group. Use pencil so you can erase if necessary. It's gra-fun!

(0, 6.5)
(6, 6.5)
(7, 5.5)
(6, 4)
(9.5, 9)
(13.5, 6)
(12.5, 2.5)
(9.5, 2.5)
(9.5, 9)

LIFT PENCIL

(⁻6, 6.5)
(⁻3, 8.5)
(0, 6.5)
(⁻1.5, 5.5)
(⁻2.5, 4)

LIFT PENCIL

(1.5, 3.5)
(2.5, 3)
(3, 2.5)

LIFT PENCIL

(⁻3, ⁻15.5)
(⁻7, ⁻15.5)
(⁻10, ⁻12.5)
(⁻13.5, ⁻5)
(⁻10.5, ⁻5)
(⁻9.5, ⁻2)
(⁻6, 1)
(⁻4.5, 1)

LIFT PENCIL

(0, 3.5)
(⁻1, 3)
(⁻1.5, 2.5)

LIFT PENCIL

(15, 2.5)
(12, 1)
(10.5, 2.5)
(8,0)

LIFT PENCIL

(12, 1)
(12, ⁻8)
(4.5, ⁻17)
(⁻1.5, ⁻17)
(2, ⁻20.5)
(⁻3, ⁻15.5)
(3, ⁻15.5)
(10.5, ⁻8)
(10.5, 0.5)
(9.5, 1.5)

LIFT PENCIL

(⁻4.5, 4)
(⁻6, 2.5)
(⁻6, 6.5)
(⁻2.5, 4)
(⁻4.5, 1)
(6, 1)

LIFT PENCIL

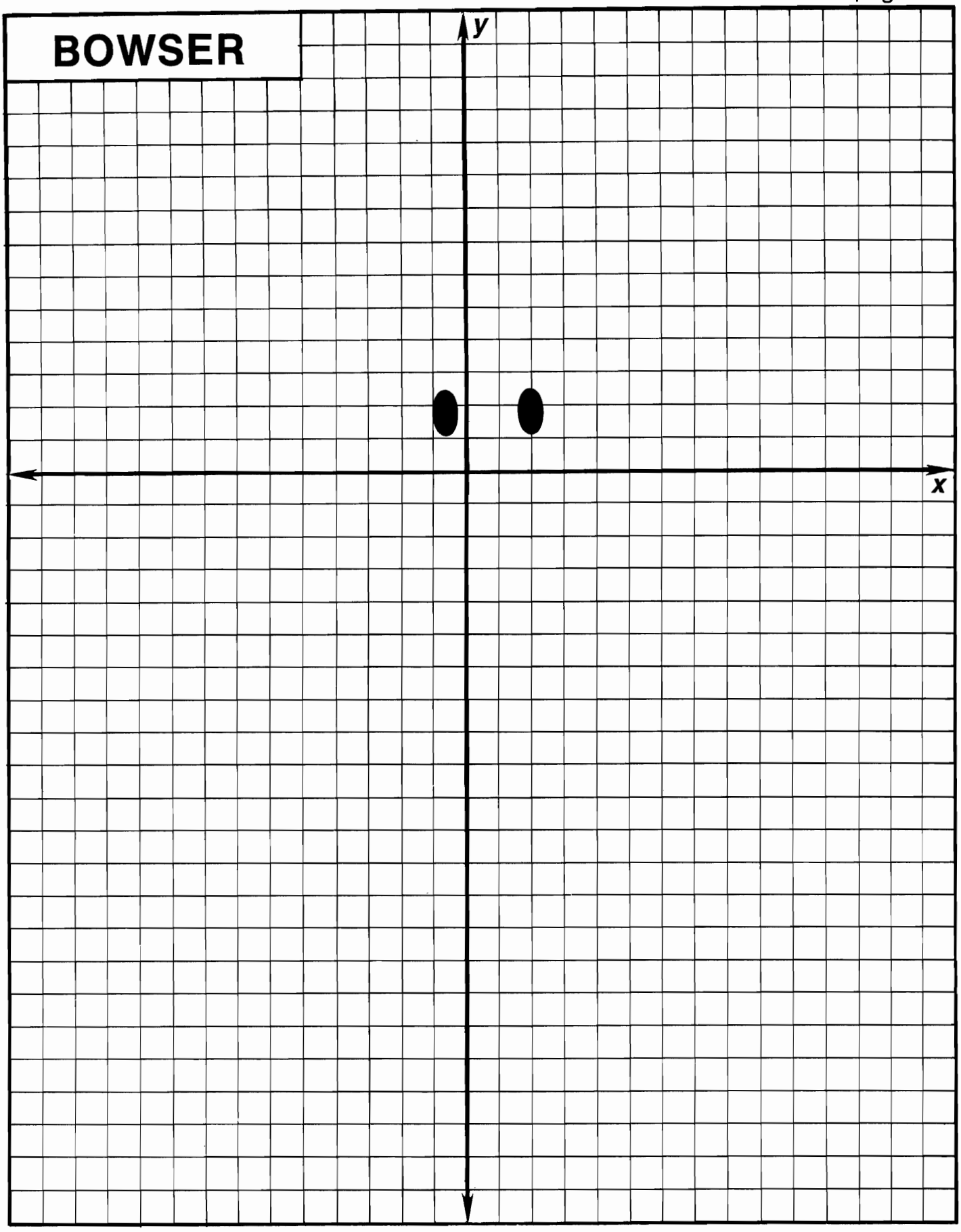
(⁻2, ⁻1.5)
(⁻5, ⁻1.5)
(⁻5.5, ⁻1)
(⁻5.5, 0)
(⁻5, 0.5)
(⁻2, 0.5)
(⁻1.5, 0)
(⁻1.5, ⁻1)
(⁻2, ⁻1.5)

SHADE IN THE AREA FORMED WITH THE POINTS ABOVE.

(⁻12.5, ⁻5)
(⁻11.5, ⁻3.5)
(⁻10.5, ⁻5)
(2, ⁻5)
(1, ⁻3.5)
(0, ⁻5)
(3.5, ⁻5)
(6.5, ⁻2)
(6.5, ⁻3.5)

STOP

BOWSER



How Did The Spanish Explorers Save Gas?

Complete the table for each function. Find any answer in the code key and notice the letter next to it. Write this letter in the box at the bottom of the page that contains the circled number from that row of the table. Keep working and you will discover the answer to the title question.

① $f(x) = 2x$

x	$f(x)$
5	㉖
3	⑨
0	③
$^{-}1$	㉑
$^{-}5$	⑮

② $f(x) = x - 4$

x	$f(x)$
7	㉜
4	⑫
0	㉙
$^{-}2$	㉘
$^{-}5$	㉟

③ $f(x) = {}^{-}3x$

x	$f(x)$
$^{-}2$	①
$^{-}1$	㉔
0	⑬
2	⑳
3	⑯

④ $f(x) = {}^{-}2x + 4$

x	$f(x)$
7	②
5	⑦
2	㉕
0	④
$^{-}1$	⑧

⑤ $f(x) = 1 + 5x$

x	$f(x)$
$^{-}2$	㉗
$^{-}1$	㉛
0	⑪
2	⑰

⑥ $f(x) = 3x - 7$

x	$f(x)$
5	㉓
1	⑲
0	⑤
$^{-}1$	⑩

⑦ $f(x) = {}^{-}x - 5$

x	$f(x)$
$^{-}8$	㉝
$^{-}5$	⑥
0	㉒
1	㊱

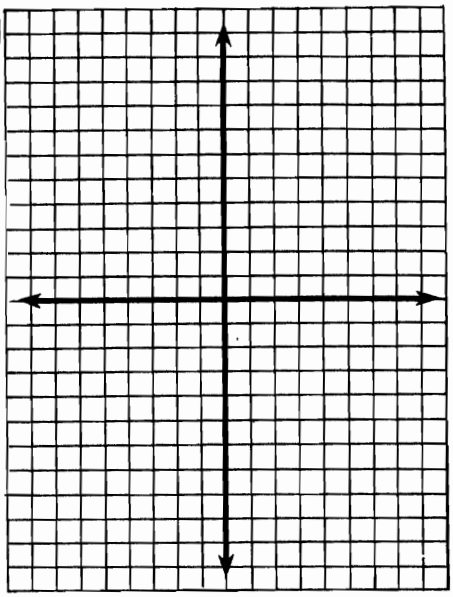
⑧ $f(x) = 6 - 2x$

x	$f(x)$
$^{-}2$	⑱
0	⑭
3	㉞
7	㉚

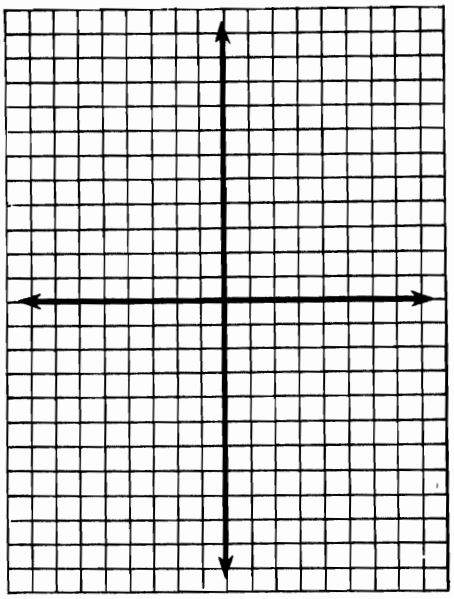
CODE KEY	
$^{-}10$	H
$^{-}9$	O
$^{-}8$	G
$^{-}7$	W
$^{-}6$	N
$^{-}5$	M
$^{-}4$	A
$^{-}2$	D
0	E
1	R
3	L
4	Y
6	T
8	I
10	S
11	U

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36

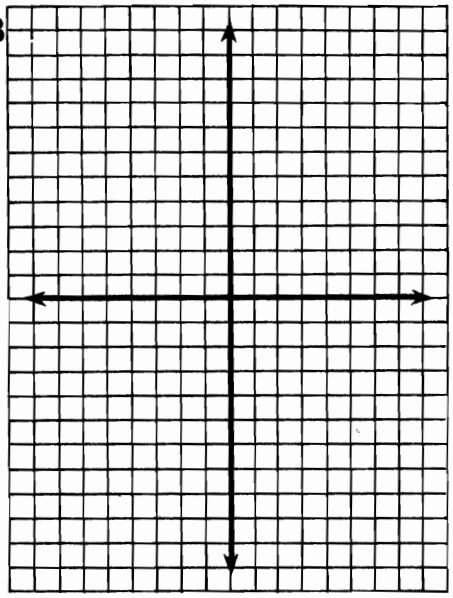
1



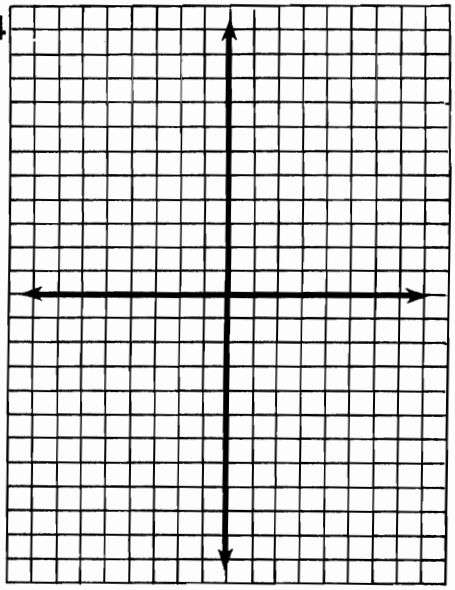
2



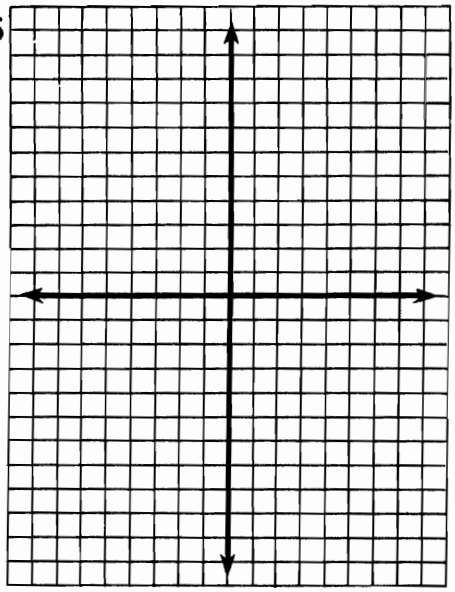
3



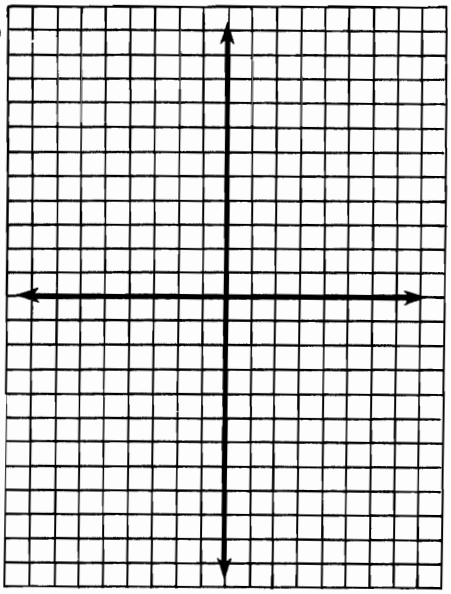
4



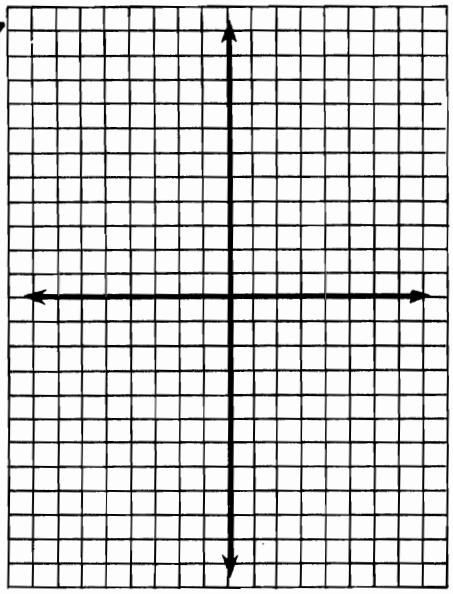
5



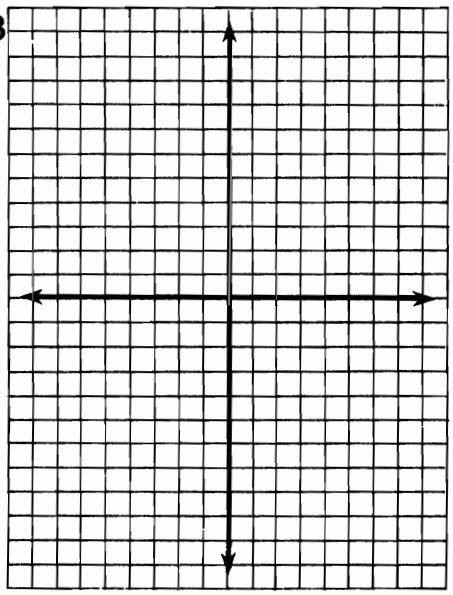
6



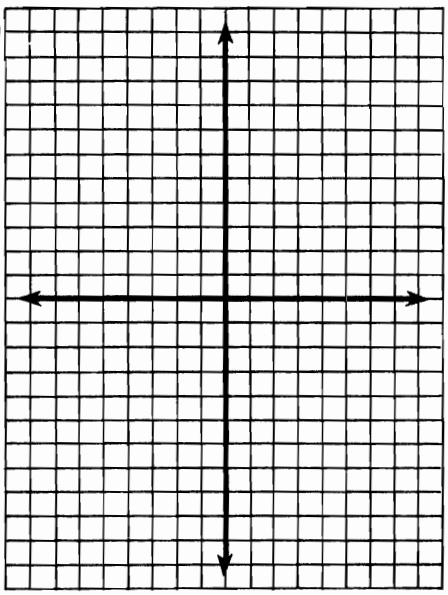
7



8



9



Why Did Orgo Take His Girl Friend To The Cornfield?

Complete the table for each function. Find each ordered pair in the code at the bottom of the page and write the corresponding letter above it. You will discover the answer to the title question (which is very corny).

① $f(x) = x^2 - 6$

x	f(x)	
$^-4$		E
$^-3$		A
$^-2$		H
$^-1$		N
0		I
1		S
2		E
3		O
4		D

② $f(x) = x^2 + 2x - 3$

x	f(x)	
3		E
2		T
1		A
0		E
$^-1$		D
$^-2$		T
$^-3$		S
$^-4$		E
$^-5$		I

③ $f(x) = 7 - x^2$

x	f(x)	
$^-4$		B
$^-3$		A
$^-2$		H
$^-1$		S
0		E
1		U
2		B
3		C
4		T

④ $f(x) = 2x^2 - 4x - 5$

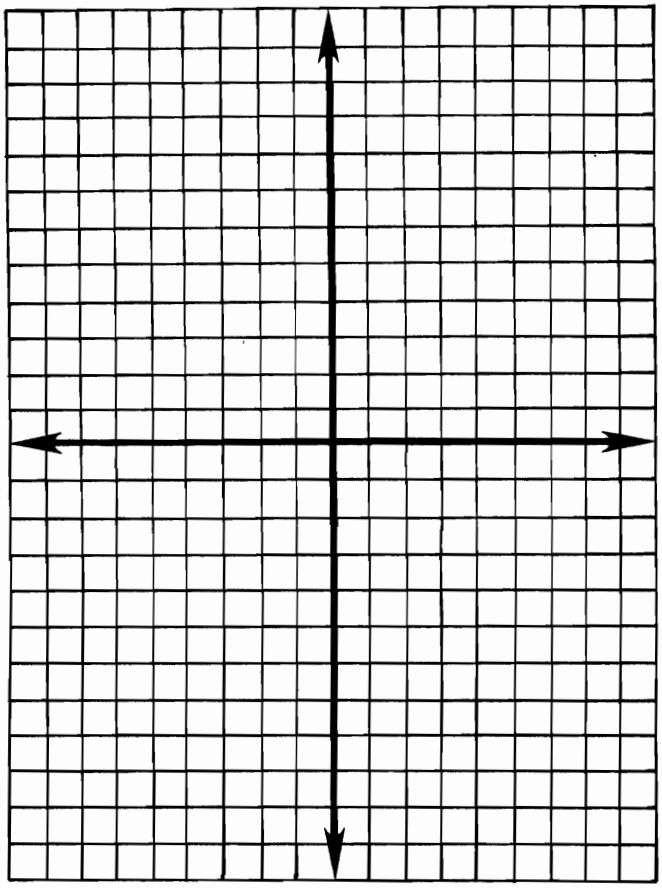
x	f(x)	
4		N
3		W
2		E
1		H
0		S
$^-1$		R
$^-2$		K

CODED ANSWER

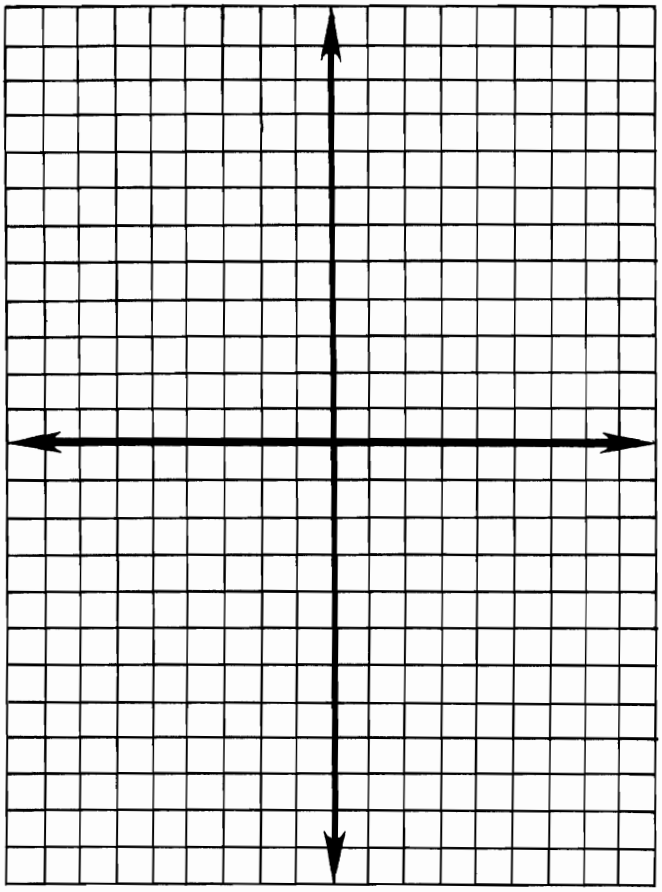
$(^-4,^-9)(^-4,5)(3,^-2)(^-3,3)(1,6)(1,^-5)(0,^-3)(^-2,3)(^-4,10)(3,1)(^-3,^-2)(^-1,^-5)(4,^-9)(2,^-2)(^-1,^-4)(2,5)(3,3)$

$(^-2,11)(^-5,12)(^-3,0)(0,^-5)(2,3)(3,12)(1,^-7)(0,^-6)(4,11)(4,10)(^-2,^-3)(^-2,^-2)(0,7)(2,^-5)(1,0)(^-1,1)(^-1,6)$

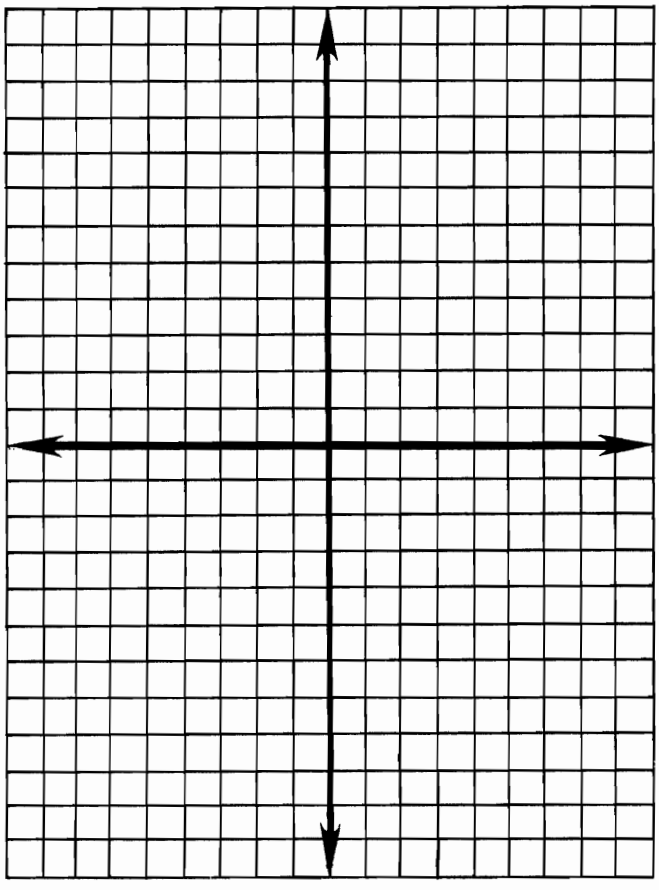
1.



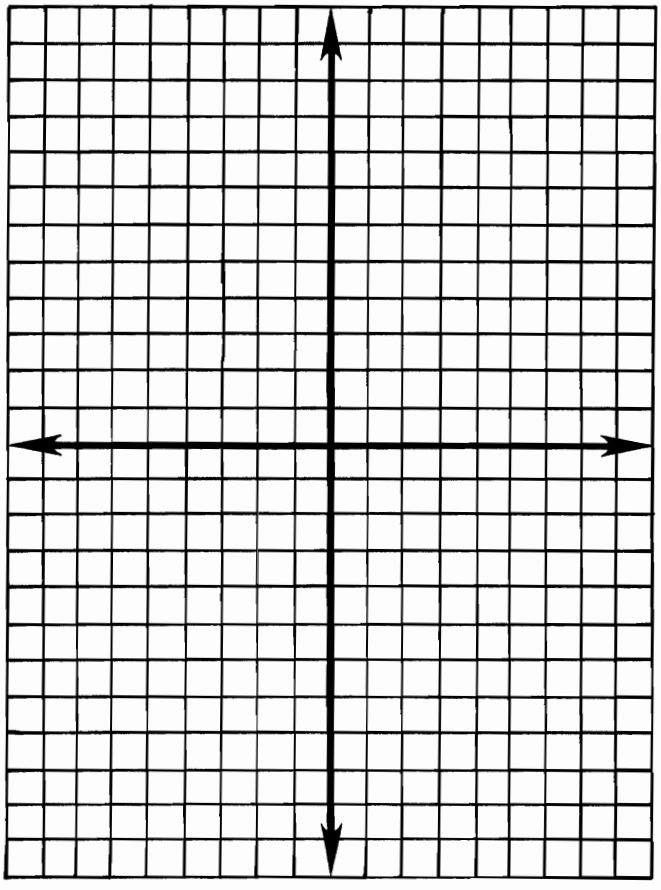
2.



3.



4.



Why Couldn't The Bowlegged Cowboy Round Up The Herd?

Complete the table for each function. Find each answer in the boxes at the bottom of the page and write the corresponding letter above it. You will discover the answer to the title question.

① $f(x) = \frac{x}{3}$

x	$f(x)$	
18		L
0		E
$^{-}3$		R
$^{-}6$		T

② $f(x) = x^3 + 1$

x	$f(x)$	
2		S
$^{-}2$		E
3		O
$^{-}5$		T

③ $f(x) = 1 - 4x^2$

x	$f(x)$	
1		E
2		L
$^{-}3$		A
0		O

④ $f(x) = \frac{x^2 + x}{x}$

x	$f(x)$	
1		E
4		H
10		E
100		U

⑤ $f(x) = (3x - 1)^2$

x	$f(x)$	
2		E
$^{-}1$		R
$^{-}2$		E
$^{-}3$		I

⑥ $f(x) = x^3 - x^2$

x	$f(x)$	
2		H
$^{-}2$		S
10		V
$^{-}10$		T

⑦ $f(x) = 2^x - 1$

x	$f(x)$	
2		C
3		N
4		G
6		H

⑧ $f(x) = \frac{24}{x + 1}$

x	$f(x)$	
2		D
$^{-}2$		G
$^{-}4$		C
$^{-}5$		V

4	2	3	1	101	6	8	7	$^{-}7$	900	11	$^{-}1$	15	25	$^{-}124$	5	100	9	$^{-}8$	$^{-}35$	$^{-}15$	$^{-}6$	0	$^{-}12$	$^{-}1100$	28	$^{-}24$	49	$^{-}2$	63	$^{-}3$	16

Find The Message

TO FIND THE HIDDEN MESSAGE, FOLLOW THESE DIRECTIONS:

Each row across has 7 rectangles. Only 4 of them contain solutions of the equation or inequality at the beginning of that row. CIRCLE these 4 solutions.

Over each solution you have circled, notice the number and letter. The number tells you where to put the letter in the boxes at the bottom of the page. You will spell out a five-word message.

	12-T	5-O	19-E	17-S	7-V	24-D	11-R
① $2x + y = 5$	(2, 1)	$(^{-}2, 9)$	$(^{-}1, 3)$	$(3, ^{-}1)$	(0, 4)	$(^{-}1, 7)$	$(4, ^{-}2)$

	22-M	11-E	3-L	21-O	9-I	18-U	19-A
② $3x - y = ^{-}1$	(1, 2)	(2, 7)	$(^{-}2, ^{-}3)$	$(^{-}1, ^{-}2)$	(0, 1)	$(3, ^{-}5)$	$(^{-}3, ^{-}8)$

	7-S	15-R	18-E	10-S	2-O	22-U	8-N
③ $2x + 3y \geq 0$	$(^{-}1, 2)$	$(0, ^{-}1)$	(3, 0)	$(^{-}2, 1)$	$(5, ^{-}3)$	(0, 0)	$(2, ^{-}2)$

	8-L	20-P	13-O	23-L	3-W	15-O	6-N
④ $^{-}3x + 2y = 4$	(2, 5)	$(0, \frac{1}{2})$	$(1, \frac{7}{2})$	$(\frac{2}{3}, 1)$	$(\frac{^{-}1}{3}, \frac{3}{2})$	$(^{-}2, ^{-}1)$	$(^{-}1, 3)$

	12-C	10-K	4-T	6-Y	23-N	16-A	20-R
⑤ $^{-}x - 5y < 1$	$(^{-}1, 0)$	(0, 2)	$(^{-}7, 1)$	$(^{-}5, 1)$	$(1, \frac{2}{5})$	$(^{-}3, ^{-}1)$	(2, 3)

	4-B	14-F	16-R	20-F	1-C	4-T	14-H
⑥ $2x + 5y = ^{-}2$	$(^{-}6, 2)$	$(5, ^{-}2)$	$(\frac{^{-}1}{2}, \frac{^{-}1}{5})$	$(^{-}3, 1)$	$(^{-}1, 0)$	$(0, \frac{2}{5})$	$(\frac{3}{2}, ^{-}1)$

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Why Didn't The Circus Managers Want Their Human Cannonball To Quit?

For any exercise below, solve the equation for y in terms of x. Find your answer in the answer columns and notice the number to the left of it. Each time this number appears in the code, write the letter of that exercise above it. Keep working and you will discover the answer to the title question.

Ⓛ $x + y = 2$

Ⓕ $^{-}2x + y = 5$

Ⓐ $5x + y = {}^{-}1$

Ⓤ $^{-}3x + y = {}^{-}4$

Ⓣ $x - y = 6$

Ⓔ $^{-}4x - y = 3$

Ⓢ $2x - y = {}^{-}2$

Ⓨ $x + 2y = 0$

Ⓓ $x + 2y = 5$

Ⓡ $^{-}3x + 2y = 0$

Ⓥ $^{-}3x + 2y = 4$

Ⓞ $6x + 3y = 1$

Ⓜ $5x - 2y = 0$

Ⓗ $4x - 2y = 3$

Ⓑ $^{-}3x - 5y = 10$

Ⓘ $x + 4y = {}^{-}2$

Ⓝ $^{-}6x - 2y = 5$

Ⓒ $x - 3y = {}^{-}4$

ANSWERS

① $y = \frac{^{-}x}{2}$

② $y = \frac{^{-}3}{5}x - 2$

③ $y = 3x - 4$

④ $y = \frac{x}{3} + \frac{4}{3}$

⑤ $y = \frac{3}{2}x + 2$

⑥ $y = {}^{-}x + 2$

⑦ $y = \frac{5}{2}x$

⑧ $y = 2x + 2$

⑨ $y = \frac{^{-}x}{2} + \frac{5}{2}$

⑩ $y = {}^{-}5x - 1$

⑪ $y = {}^{-}3x - \frac{5}{2}$

⑫ $y = x - 6$

⑬ $y = \frac{3}{2}x$

⑭ $y = \frac{^{-}x}{4} - \frac{1}{2}$

⑮ $y = 2x + 5$

⑯ $y = {}^{-}2x + \frac{1}{3}$

⑰ $y = 2x - \frac{3}{2}$

⑱ $y = {}^{-}4x - 3$

CODED ANSWER:

12 – 17 – 18 – 1 – 4 – 16 – 3 – 6 – 9 – 11 – 18 – 5 – 18 – 13 – 15 – 14 – 11 – 9

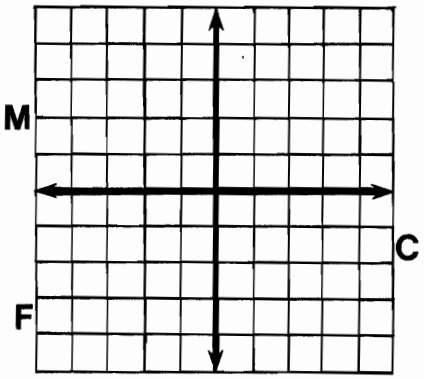
10 – 11 – 16 – 12 – 17 – 18 – 13 – 7 – 10 – 11 – 16 – 15 – 17 – 14 – 8

4 – 10 – 6 – 14 – 2 – 13 – 18

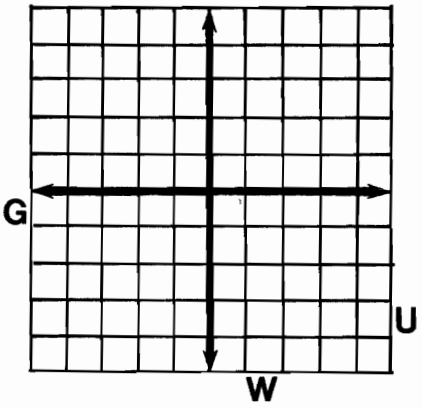
Why Did Miss Muffet Need A Road Map?

Graph any equation below. (Let each space along the axes represent 1 unit.) The graph, if extended, will cross a letter. Look for this letter in the string of letters near the bottom of the page and CROSS IT OUT each time it appears. When you finish, write the letters that have NOT been crossed out in the rectangle at the bottom of the page.

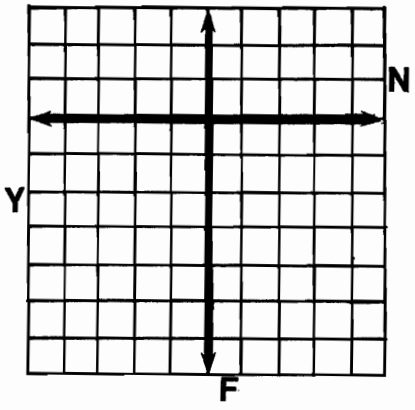
① $2x + 3y = 6$



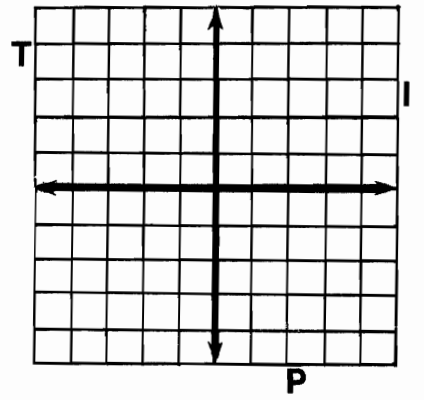
② $^{-}x + 2y = 4$



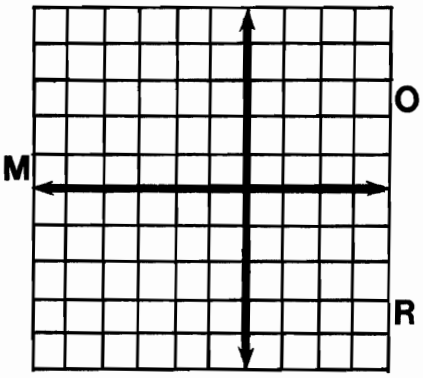
③ $3x + y = {}^{-}6$



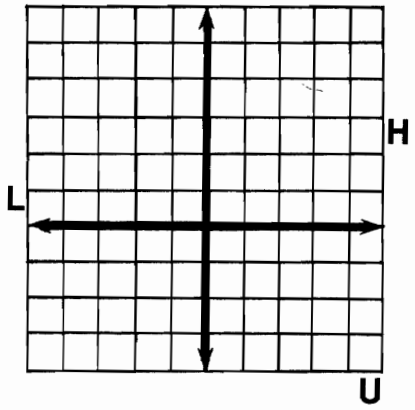
④ $4x - 3y = 12$



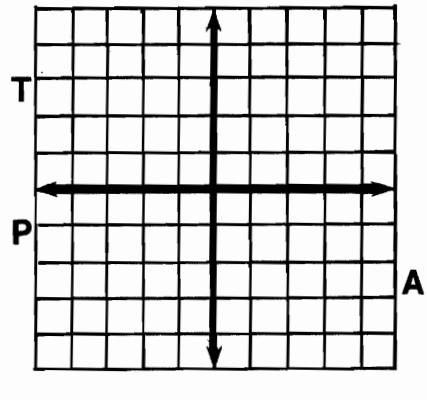
⑤ $^{-}3x - 5y = 15$



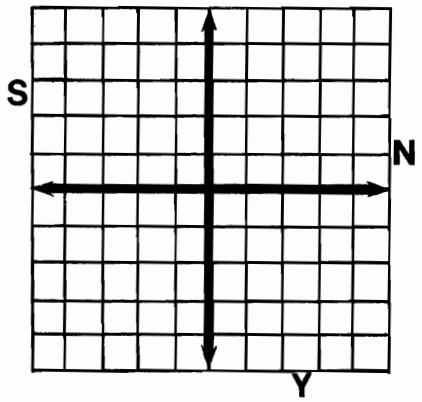
⑥ $2x + y = 5$



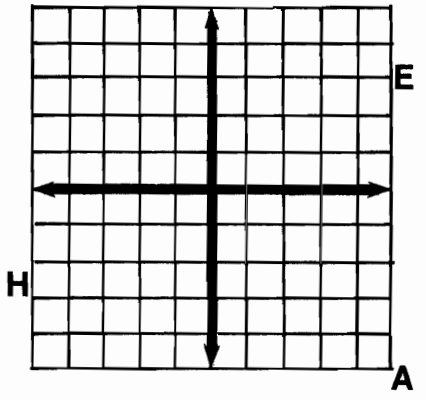
⑦ $x - 2y = {}^{-}3$



⑧ $^{-}3x + 5y = {}^{-}10$



⑨ $x + y = 0$



PUSHAPNELAGONFSANTMCHIMEAPCRAWNGIFPHEANIYUN

ANSWER:

Did you hear about...

A	B	C	D
E	F	G	H ?

DIRECTIONS: Solve any system of equations below by graphing. Find the solution in the answer column and notice the word next to it. Write this word in the box that has the same letter as that exercise.

KEEP WORKING AND YOU WILL HEAR ABOUT SOME UDDER NONSENSE!

Ⓐ $2x + y = 5$
$x - y = 4$

Ⓑ $3x + 2y = 12$
$2x + y = 7$

Ⓒ $^{-}2x + y = 5$
$x - y = {}^{-}3$

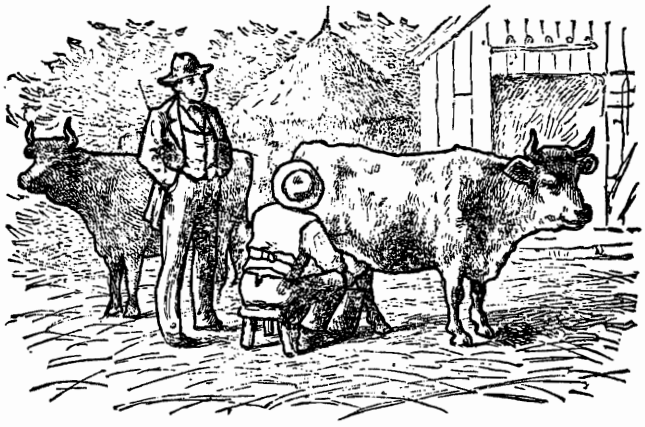
Ⓓ $x + 3y = 4$
$2x - y = 8$

Ⓔ $3x + y = {}^{-}5$
$x - 2y = 3$

Ⓕ $^{-}2x - y = 2$
$x - y = 5$

Ⓖ $2x + y = {}^{-}4$
$x - 2y = {}^{-}7$

Ⓗ $x + 3y = 7$
$^{-}x + y = {}^{-}3$

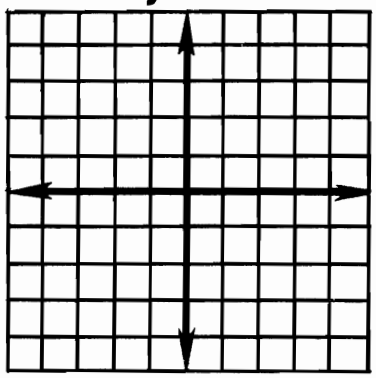


(3,4)—BEEF
($^{-}$3,3)—UDDER
(2,3)—OLD
($^{-}$3,2)—THE
(2,5)—GROUND
($^{-}$2,4)—HER
($^{-}$1,$^{-}$2)—FINALLY
(0,1)—STOPPED
($^{-}$2,1)—COW
(3,$^{-}$1)—THE
($^{-}$1,0)—MADE
(1,$^{-}$4)—KICKED
(4,0)—WHO
($^{-}$1,$^{-}$5)—MOO
(4,$^{-}$2)—FARMER
(4,1)—BUCKET
(1,1)—MILK

How Do Fish Go Into Business?

Graph any inequality below. Then read the three statements that appear under the coordinate grid for that exercise. Circle the letter of the statement that correctly describes the location of the graph. Write this letter in each box at the bottom of the second page that contains the number of that exercise.

① $x + y > 2$

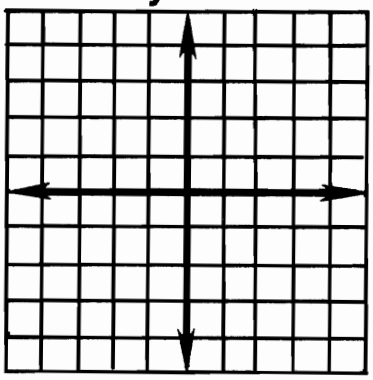


K Quadrants I, III, IV; includes boundary line.

O Quadrants I, II, IV; excludes boundary line.

U All four quadrants; excludes boundary line.

② $x + y \leq 2$

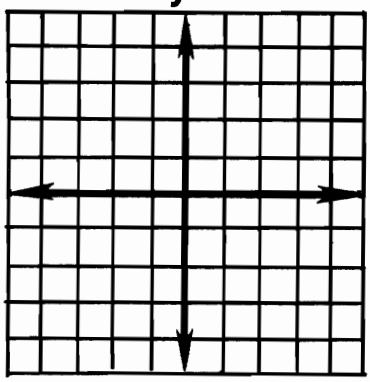


F Quadrants I, II, IV; includes boundary line.

P Quadrants I, II, III; excludes boundary line.

E All four quadrants; includes boundary line.

③ $2x - y \geq 4$

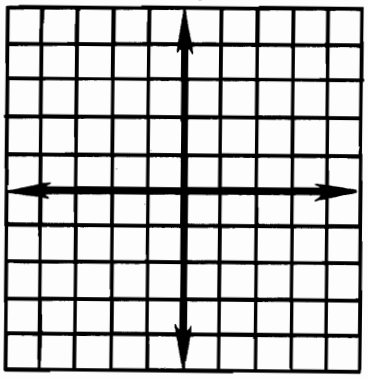


B All four quadrants; includes boundary line.

H Quadrants I, III, IV; includes boundary line.

R Quadrants I, III, IV; excludes boundary line.

④ $^{-}2x + y < 4$

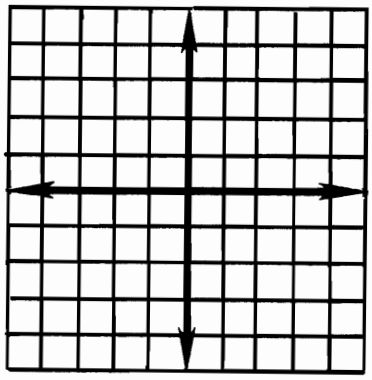


M All four quadrants; excludes boundary line.

V Quadrants II, III, IV; excludes boundary line.

G Quadrants I, II, III; excludes boundary line.

⑤ $x + y \geq {}^{-}3$

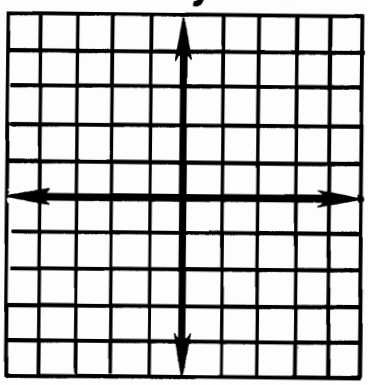


L All four quadrants; excludes boundary line.

S Quadrants II, III, IV; includes boundary line.

T All four quadrants; includes boundary line.

⑥ $3x - 2y \leq 6$

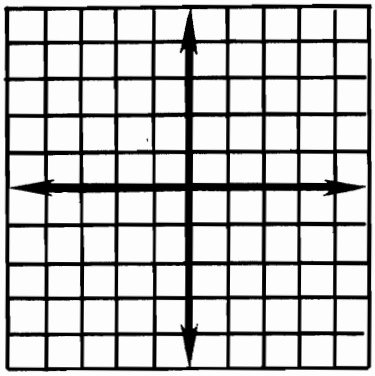


C All four quadrants; includes boundary line.

J Quadrants II, III, IV; includes boundary line.

D Quadrants I, III, IV; includes boundary line.

⑦ $3x + 2y > 6$

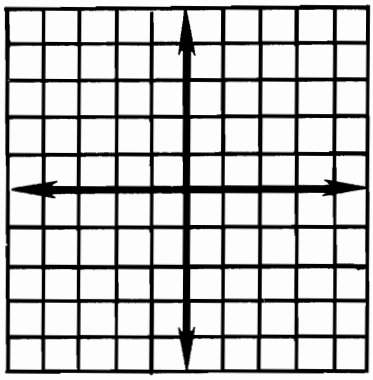


F Quadrants I, II, III; includes boundary line.

Z All four quadrants; excludes boundary line.

N Quadrants I, II, IV; excludes boundary line.

⑧ $^{-}x + 4y < {}^{-}4$

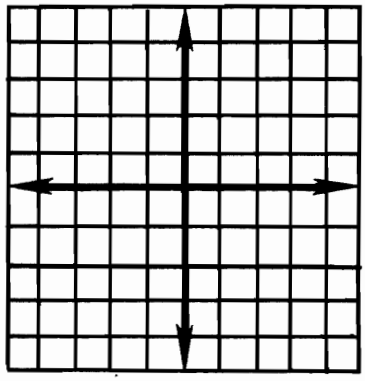


R All four quadrants; includes boundary line.

Y Quadrants I, III, IV; excludes boundary line.

I All four quadrants; excludes boundary line.

⑨ $2x - y < {}^{-}3$

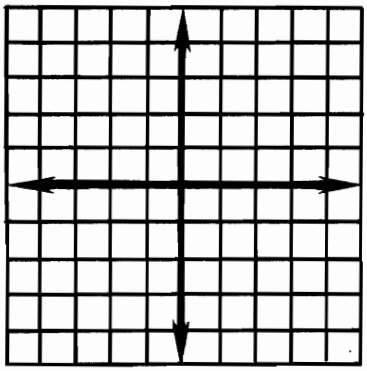


D Quadrants I, II, IV; includes boundary line

L Quadrants I, II, III; excludes boundary line

G All four quadrants; excludes boundary line

⑩ $x + 2y \leq 5$

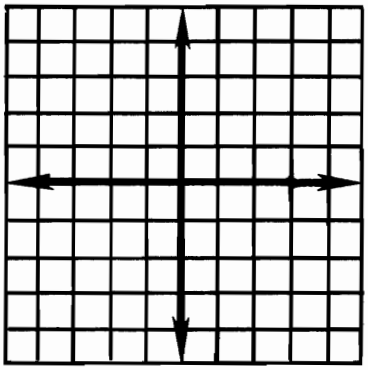


R All four quadrants; includes boundary line.

S Quadrants I, II, IV; includes boundary line.

F Quadrants II, III, IV; includes boundary line.

⑪ $^{-}3x - 4y > 12$

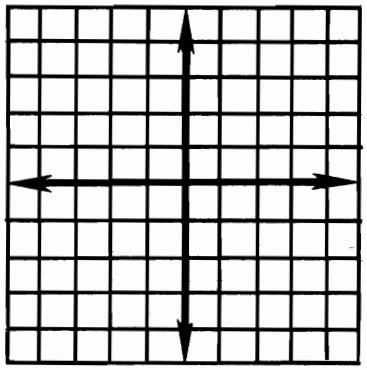


U Quadrants II, III, IV; includes boundary line.

I All four quadrants; excludes boundary line.

A Quadrants II, III, IV; excludes boundary line.

⑫ $x - y \geq 0$



S Quadrants I, III, IV; includes boundary line

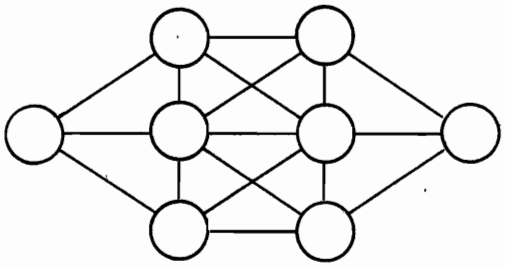
W Quadrants I, II, IV; includes boundary line

K Quadrants I, II, III; includes boundary line

5	3	2	8	12	5	11	10	5	1	7
11	12	4	11	9	9	12	6	11	9	2

Test of Genius

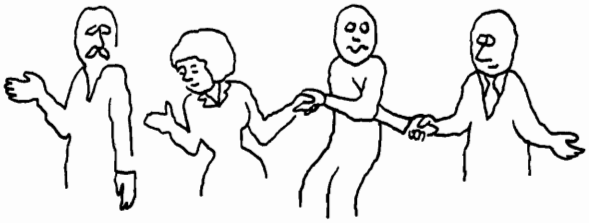
① Arrange the numbers 1 to 8 in the circles so that no two consecutive integers are in circles that are connected by line segments.



② Write a 10-digit numeral such that the first digit tells how many zeros there are in the entire numeral, the second digit tells how many ones there are in the numeral, the third digit tells how many twos, and so on.

__ __ __ __ __ __ __ __ __ __
0s 1s 2s 3s 4s 5s 6s 7s 8s 9s

③ Four old friends meet. If each one shakes hands with each of the others, how many handshakes are there altogether?



④ Two cars are traveling in the same direction on a road. The car that leads is traveling at 46 miles per hour. The other car is traveling at 70 miles per hour. How many miles apart will they be 30 minutes before the faster car catches the slower one?

⑤ An ancient ruler often condemned to death the people he no longer favored. However, he amused himself by giving his victims a chance to live if they were both clever and lucky.

The victim was given 6 vials filled with poison, 6 vials filled with water, and 2 boxes. He was to arrange the 12 vials in the 2 boxes. He could put any number he liked in each box, but he had to put at least one vial in each. After he had put all the vials into the boxes, the ruler would first select one of the boxes and then draw out one vial from that box. The victim would have to drink its contents.

What arrangement of vials in the boxes gives the condemned man the best chance of avoiding the poison?

⑥ Write a numeral with 6 nines whose value is 100. No operation symbols may be used, but a decimal point or fraction bar may be used.

⑦ What is special about this pattern of letters? Why are the letters arranged this way? (Hint: it has something to do with numbers.)

O T T F F S S E N T
E T T F F S S E N T
T T T T T T T T T T
T T T T T T T T T F
F F F F F F F F F F
F F F F F F F F F S
S S S S S S S S S S
S S S S S S S S S E
E E E E E E E E E N
N N N N N N N N N H

SCORING KEY
6 or 7—Superstar Genius
4 or 5—Star Genius
2 or 3—Genius
0 or 1—Genius of the Future

SOLUTIONS

Page 1

Flaming arrows are hot shots

Page 2

Someday my prints will come

S	−1 1/2
O	1 1/4
M	−2 3/4
E	1.5
D	2.75
A	−1.25
Y	−1/2
M	1/4
Y	0.5
P	−2.5
R	−2 1/3
I	1
N	2 1/8
T	−2 7/8
S	−0.33
W	2.33
I	1 3/8
L	1 2/3
L	−15/8
C	2/3
O	−0.75
M	−7/8
E	0

Page 3

Greater than 4
5, 9/2, 8
Less than −2
−3, −7, −5/2
Greater than −1/2
0, −1/4, 5
Less than 5 1/2
10/2, −10/2, −1/3
Greater than −7 1/3
−7, −1/3, 0
Less than −1
−3/2, −5, −2 2/3
Greater than 0
15, 7/8, 3 1/3

Selling coffee is a grind

Page 4

You may wish to contrast the graph of a number with an arrow representing that number. While the graph has a unique location on the number line, the arrow can start at any point on the line.

O	2	R	−3
L	−4	N	−5
I	−6	M	1
W	5	T	6
E	−1	P	−7
O	3	B	4
S	7	S	−2

Its snow problem
(It's no problem.)

Page 5

E	3	H	−9
O	−2	S	1
I	5	E	3 1/2
R	−5	R	−4 1/4
O	−3	N	9
E	6	S	−7
O	−4	W	−5 1/2
N	4	P	8
E	7	N	5 1/2
A	−1	T	−6 3/5
N	−6		

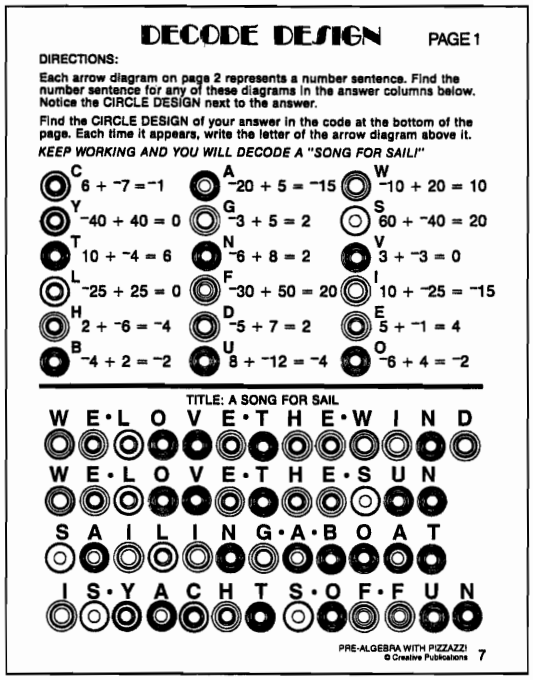
When one person is a tenor

Page 6

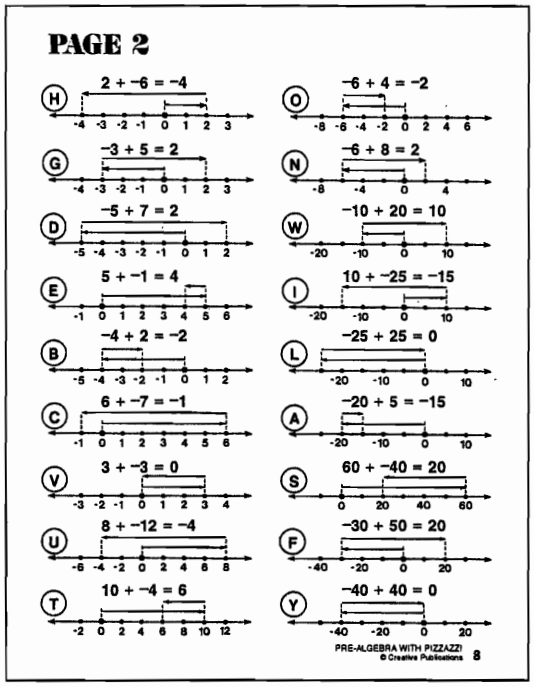
Mosquito showing a girlfriend his most recent job

H	−75	U	−56
D	−85	B	−900
C	−96	N	−952
G	−109	J	823
L	−142	R	−800
T	−35	I	−6
W	154	S	−72
F	−259	Q	−179
E	−226	O	−89
A	−323	M	−101

Page 7



Page 8



We love the wind
We love the sun
Sailing a boat
Is yachts of fun

Page 9

1.	−6	7.	3
2.	14	8.	7
3.	−4	9.	0
4.	−8	10.	4
5.	−4	11.	−10
6.	4	12.	0

13.	−7	31.	−3
14.	−13	32.	17
15.	−18	33.	−7
16.	−6	34.	−3
17.	−7	35.	5
18.	−13	36.	−4
19.	−4	37.	3
20.	7	38.	−3
21.	−15	39.	2
22.	−4	40.	−15
23.	3	41.	−13
24.	−7	42.	−7
25.	−1	43.	4
26.	−3	44.	7
27.	2	45.	−6
28.	−3	46.	8
29.	2	47.	−4
30.	3	48.	−7

An electric dishwasher gets you out of some tough scrapes

Page 10

Just fine tanks
A bout to improve
Worse dis year
Class y

I	−22
B	26
V	−83
E	59
M	49
K	−47
A	−78
D	−257
W	−19
J	30
U	37
F	−37
P	−93
L	161
T	8
O	0
Y	−186
N	−87
C	−846
R	2
S	−2

Page 11

I	174
B	166
S	−69
E	−291
D	76
P	−62
A	−113
T	−115
G	149
R	−25
H	−103
M	−23
O	216
Y	22
C	−108
L	34

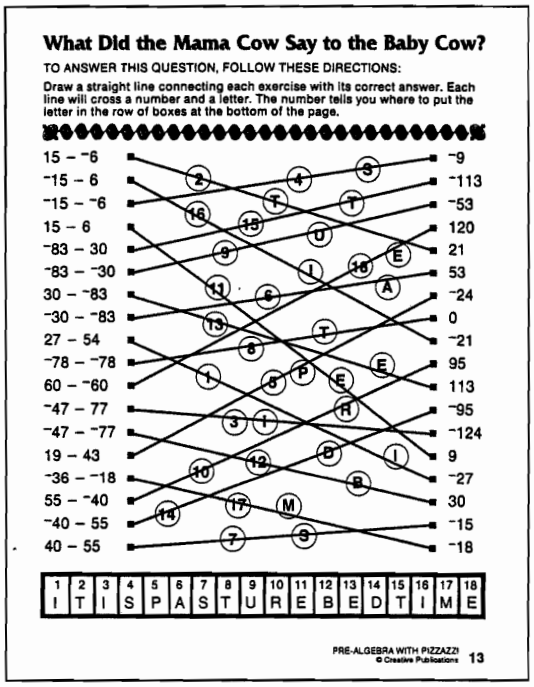
It had cycle logical problems (psychological problems)

Page 12

T	13	O	20
R	37	E	19
E	9	T	22
U	32	N	35
O	29	S	28
F	41	O	7
H	23	H	14
C	5	E	26
O	2	C	33
A	34	S	8
E	15	M	1
F	21	O	38
O	31	F	42
T	11	B	25
E	4	O	40
R	10	E	16
D	27	L	6
O	12	P	39
Y	30	G	18
E	24	V	3
D	17	D	36

Move closer to the edge of the bed so you can drop off

Page 13



It is pasture bedtime (past your bedtime)

Page 14

N	222	R	−411
T	−118	H	800
E	−823	K	−867
C	−441	U	−365
A	751	L	756
W	443	I	403
F	297	B	−97
D	−839	S	623
G	−89		

Unlawful is against the law and illegal is a sick bird (ill eagle)

Page 15

Y	−4	U	3
O	10	F	75
D	5	J	16
E	−9	D	15
U	17	H	−10
O	2	T	6
T	−11	S	−43
A	−18	I	−17
F	−14	O	−13
O	37	P	11
A	12	F	60
T	−29	R	−6
P	25	J	−64
O	−1	M	19
S	8	W	−20
E	−7	N	4
U	−50	R	−5
O	7	M	−8
T	−15	T	9
N	13	R	0
R	−12	G	−3

Just wait for the merry go round to stop and jump off

Page 16

Infant replay

Hare tonic

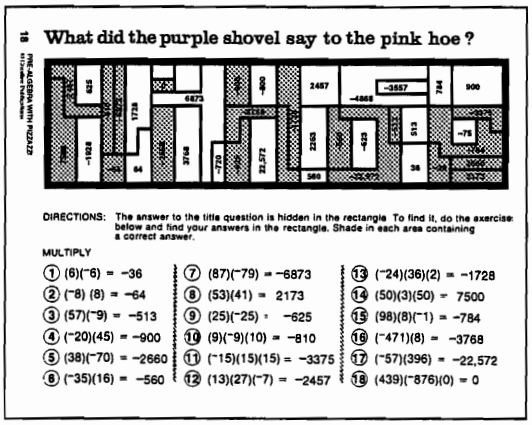
Man over board

L	−115	H	−254
C	−607	M	60
E	542	P	73
V	633	O	−129
Y	−382	F	5181
D	−589	A	476
T	534	R	19
B	−444	N	−7
I	−980		

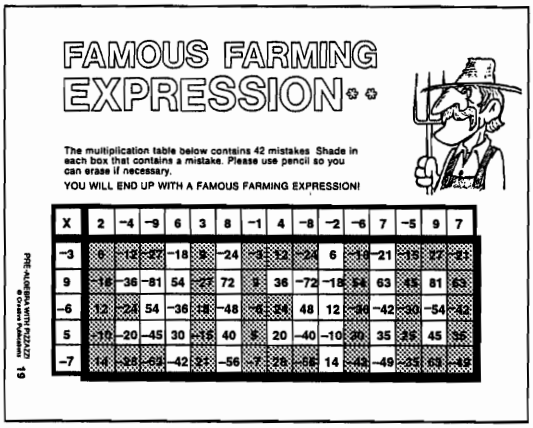
Page 17

Some pretzel bakers are trying to make a fortune in crooked dough

Page 18



Page 19



EIEIO

Page 20

1. 816
2. −2652
3. 224
4. −9534
5. −13,125
6. −47,700
7. −1512
8. 146,640
9. 4096
10. −2,988,000
11. −243

Joggers do better in the long run

Page 21

O	−120	A	6400
N	15	E	110
W	−37	I	−32
G	130	L	1400
D	30	M	−70
R	−106	U	−625
H	−196	T	−900
C	−190	F	−164
Y	50	S	125

He was a tailor who seamed nice and suited me fine so marriage was only fitting

Page 22

A	−3	V	30
E	4	M	−4
T	−5	V	−14
A	12	L	16
R	7	E	−18
A	1	O	25
E	−12	A	−25
O	−50	D	67
A	−10	E	−91
H	0	O	−15
D	−11	A	150
E	−215	V	13
T	8	O	9
E	15	L	311
O	−7	N	−2
A	75	V	−21
E	6	T	−150
R	−75	H	10
E	50	B	−311
T	−67	N	3
N	2	S	−9
H	−30	L	215
R	−6	H	−8
T	−170	L	−16
V	5	T	91
T	−1		

Better to have loved a short man than never to have loved a tall (at all)

Page 23

The unhappy guy who tried to kiss his girl friend in the fog and mist (missed)

A	29
B	−16
C	−45
D	−127
E	202
F	503
G	−78
H	639
I	−321
J	−7609
K	−436
L	12
M	−6000
N	0
O	−749

Page 24

T	−8	T	9
A	29	E	30
D	−27	H	−1
H	−6	D	−58
E	−22	O	−48
O	50	A	−55
L	−80	E	31
G	7	I	100
E	−5	L	3
I	−100	E	−9
T	−15	A	16
A	10	B	−87
N	77	T	−10
O	−18	R	14
S	12	N	−12
T	−24	D	75
E	−14	L	2
L	−26	T	72

The label said to tear along the dotted line

Page 25

1. −523
2. −226
3. −3176
4. 376
5. 435
6. 1299
7. 5040
8. −708
9. −78
10. −2161
11. −1728
12. −59
13. −11
14. 276
15. 1680
16. 0
17. 34
18. −1884

I Lava U

Page 26

Students need scissors for this puzzle (or they can use the fold and tear method).

If you want them to hand in more than just the hidden message, they need tape or glue to fasten the puzzle pieces in the correct arrangement, or ask them to pile the pieces in the order of the letters in the message and staple them together.

Wrestling always gets me down

Page 27

G	−4	V	−15
C	18	N	48
I	14	T	16
A	50	O	80
R	−28	D	−16
E	15	S	24

W −9 F 25
L 30

World's greatest lover of fractions

Page 28

G −1/2 E 1
K 1/4 W −5/6
T −3/2 O −3/4
D −2/3 S −1/7
Y −1/5 R −1
H 4/3 I 2/3
N −4/5 L 1/16
M 1/9 A 13/10
C −5/3 B −1/3

She wanted to see a man laying bricks

Page 29

A golden receiver

A Yamahahahaha

Ten sows and bucks (ten thousand)

D 5/12
I −3/10
O −1 5/24
M −1/20
U −13/15
T 1/4
R 1/12
W −1 1/15
K 19/36
V 1/3
N −1 13/24
Y 29/48
C 1/18
G −1 1/3
B −39/40
L 67/100
E −17/30
H 17/24
A −7/18
S 9/20

Page 30

Regrouping is not necessary for this puzzle.

S −3 3/4
O −5 1/15
A 2 1/6
F −2 13/30
U −7 9/20
T 5/12
M −4 19/48
L 2 5/28
D 4 8/15
N −5 5/18
W −7 7/20
C −9 1/36
G 9 13/33
I −1/18
H −1 1/2
R −1 7/24
E −6 3/40
B 0

A bear must beware when losing his hair because after all how much cold air can a bare bear bear?

Page 31

1. −6 7/12
2. 9 11/20
3. −4 1/3
4. 2 3/8
5. 1 8/15
6. 9 7/30
7. −9 1/36
8. −1 9/10
9. −6 17/24
10. −4 1/2
11. −4 19/35
12. −3 13/20
13. 5 7/24
14. 5/18
15. 7 31/40
16. 5/12

They curl up and dye

Page 32

1. 1 1/6
2. −3 7/30
3. −4 19/30
4. 8 5/18
5. 7 29/60
6. −5 27/40
7. 6 13/20
8. −2 3/8
9. 5 17/24
10. −11/24
11. 5 7/24
12. −6 31/48
13. −5 5/18
14. −9 11/36
15. 3 5/12
16. 1 9/10
17. −4 23/30
18. 1/8

Kids with mumps have a swell time

Pages 33–34

These problems are of three types. They require the student to compute one of the following: 1) the value of some variable after a gain or a loss (1, 2, 9, 12); 2) the difference between two values (3, 5, 7, 11, 13); 3) a net change (4, 6, 8, 10).

1. 45 1/2 degrees C
2. $97
3. 1104 yards
4. $24,300
5. 67 1/2 meters
6. −8
7. 6 5/6 hours
8. 1 2/3 yards
9. −26 degrees C
10. +2 1/8 points
11. 22 1/5 cm
12. 1723 meters
13. 307 1/2 meters

Many shop teachers do not believe in stone because they never saw it

Page 35

N 12 E 23
I 7 I 15
E 17 H 1
D 10 A 11
A 25 N 20
E 2 Y 30
H 22 E 9
A 4 S 24
O 19 W 3
E 27 R 16
D 13 D 28
A 29 H 6
T 21 M 26
S 5 R 8
D 18 F 14

He was hired and fired on the same day

Page 36

N −2 2/5
O −3 1/3
E 3/4
O −2/3
E −3 1/3
A 2/15
E 5 5/6
N 5 5/6
A 3/4
I −2 2/5
V 3/4
U −2/3
H 3/4
Y −2/3
L −3 1/3
O 5 5/6
H −3 1/3

You have a hole in one

Page 37

Miss Keetow

Candy Liverright

Rufus Caving

G 15 M 87
A 44 L 54
F 49 T 64
O 13 D 94
E 76 K 62
Y 22 S 92
I 78 V 84
W 69 U 88
N 35 C 93
H 77 R 90

Page 38

Men, get in the boat

Long time, no sea

I'd rather fly a kite

H −3 1/4
G −8
D 7 1/3
Y 2 1/4
I 8 1/8
F −20
B −1 2/3
R −2 1/10
K 15 3/4
S −7 1/3
M 8 2/5
A 18 1/5
L −24
T 9 4/5
N −1 1/16
O −25
E 2 4/7

Page 39

L 5/4 S 10/23
H −2 C −1
Y −11/3 I −4/71
M 2/25 V 10/9
O −8/15 U 8/37
E 1/10 A −7/47
P 3/100 R 3/50
G −9 W −5/47
K −12/43 T 7/3

Very clumsy tightrope walker

Page 40

S −6/7 V 3/8
C 3/5 O −9/2
Y −15/14 U −2/21
A 33/26 N −1/10
E −20/21 L −2/9
D −4/9 P 12
T 10/3 H 3/7
G 2/9 R 35/2
I −33/8 F −7

Hugh and only Hugh can prevent florist friars

(You and only you can prevent forest fires)

Page 41

Y −1 1/2 F −7/20
O 1 1/5 K 3
S −2/3 R −21/62
E −5/9 K −3
O −4 2/3 T 1 1/2
R 11/27 S −1/7
R −9 1/2 B 40
C −7 7/8

For stocky brokers

Page 42

1. −1 7/15
2. −1/5
3. −9/28
4. 2 1/4
5. −2 7/12
6. −2 1/2
7. 3 1/3
8. −5
9. 5 11/24
10. −4 7/30
11. 7 4/5
12. −36
13. 5 11/36
14. −4 3/8
15. −1
16. 5 5/7
17. 4 9/20
18. 1 3/5
19. 1

I W (I double you)

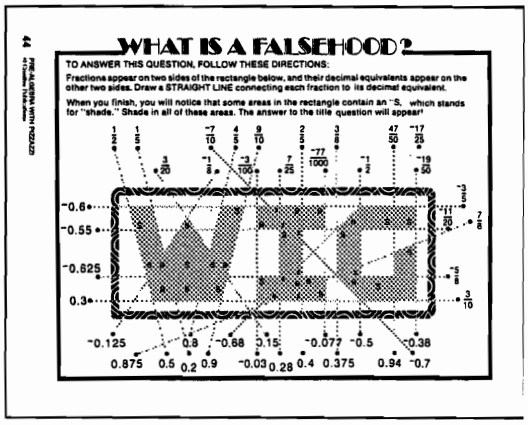
Page 43

1. 1 7/8
2. 18 7/12
3. 2 3/5
4. 4 2/5
5. 4 1/5
6. 27 3/8
7. 2 5/6
8. 9 1/3
9. 27
10. 1/10
11. 24
12. 8400

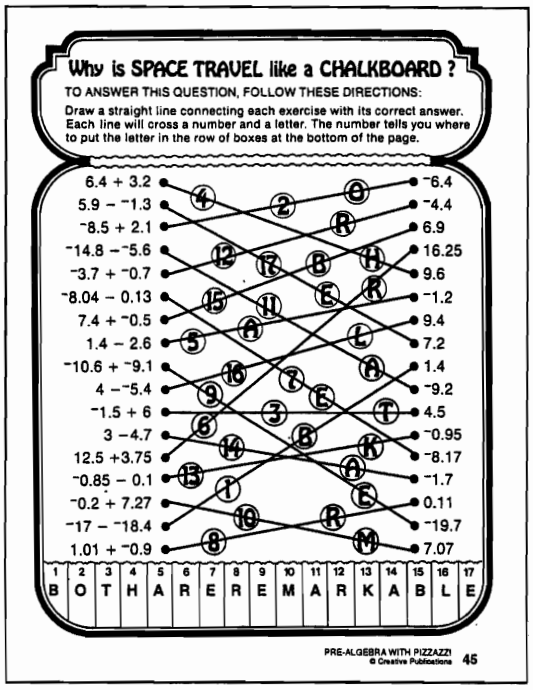
He had a suite tooth (sweet tooth)

Page 44

These fractions are all equivalent to terminating decimals.



Page 45



Both are remarkable

Page 46

1. 6.505
2. −1.83
3. −8.17
4. 1.09
5. 3.992
6. −182.608
7. −7.003
8. 4.002
9. −6.66
10. 3.124
11. −3.68
12. 4.945

Volunteers are good for nothing

Page 47

W 3.1
H 11.288
N 0.04
S −26.15
V −22.007
O −8.538
A 1.3
M −22.043
K 16.371
R −479.409
T 9.09
L −0.194
E 10

Real estate men have to know a lot

Page 48

1. −0.12
2. 0.012
3. 1.2
4. −0.0012
5. −0.24
6. 0.24
7. −0.024
8. 0.024
9. −24
10. −2
11. 0.0002
12. −0.2
13. 0.2

I. 0.012
S. 0.2
E. 0.0002
O. −0.24
S. −0.12
A. −24
X. 1.2
L. −0.2
M. −2
T. −0.024
C. 0.024
S. 0.24
L. −0.0012

Six lost camels

Page 49

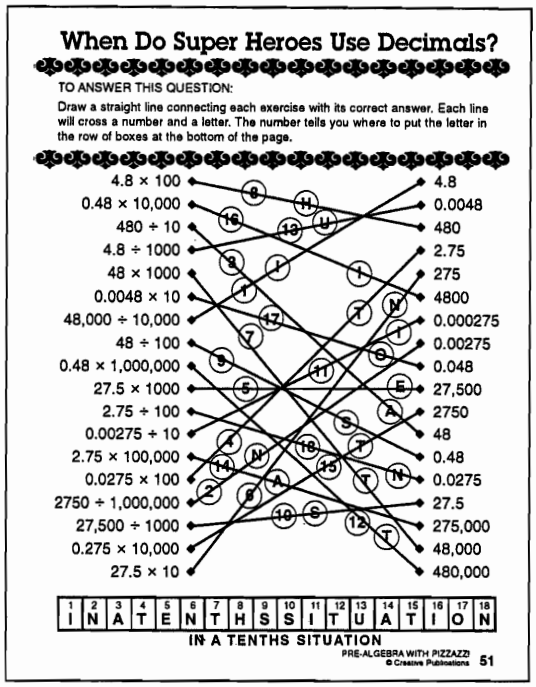
The best place to visit a popular restaurant is on the moon because there's only one sixth of the weight

Page 50

1. −16.25
2. 2.7
3. −19.67
4. 0.325
5. 194.7 degrees C
6. 47.2 km
7. 13.884 g
8. −23.02 points
9. −138.7 yards
10. 146.3 degrees C

He had harp failure

Page 51



In a tenths situation (tense situation)

Page 52

Remains to be seen

Sea for yourself

We like clothes calls

I 0.2
N 0.04
F −0.879
K 6.556
T −3.7
U 4.39
A −379
W 0.083
C 68
Y −5.008
R −4390
B −275
O 68.037
H 2789.06
E 800
M −0.0079
L 7.09
S −70.9

Page 53

The sloth mentioned in the next-to-last problem is the world's slowest-moving land mammal.

G −5.6
D 0.27
G 17.6
N −0.083
O −495
O 8.08
R −5.4
E 0.0409
U −1.8
O −2.04
N −75
D −0.008
Y 360
D 32
H 6.25
A 40

On grounded hog day

Page 54

D −34.64
S −21.195
U 0.602
E −7.35
H −17.437
B −16.95
F −43.12
O 66.7
N 65.394
W 6
L −43.081
R 40.09
T 43.61
A −35.767
I 0.272
P −2037.5

If it were little, white, and round it would be an aspirin

Page 55

R 27.95
P 0.34
L 2.795
E 17.574
U −24.004
I −70.6
A 460.046
N 0.1
S −1.118
T −65
O −18.004
M 4501
W −0.43
G 450.1
H −432.526
Y −0.04

Sleep with a hanger in your mouth

Page 56

It is a "Z-row"

A	67	L	−14
B	−11	M	−3
C	40	N	69
D	0	P	−51
E	−2	Q	92
F	−29	R	17
G	48	S	−75
H	−4	T	53
I	−45	U	−37
J	78	V	−95
K	33		

Page 57

The missing link

He went hay wire

Pulling a fast one

A	−28	M	0
K	−45	P	−98
T	45	H	1
O	7	F	5
U	−46	W	−6
E	−61	N	−8
Y	14	S	84
G	−73	I	−9
R	2	L	9

Page 58

As a follow-up, you might have students identify the property or properties illustrated by each true equation.

True: M, O, V, I, E, S, A, R, E, A, R

False: E, E, L, T, R, E, A, T

Movies are a reel treat

Page 59

N	8	H	19
Y	−7	R	75
A	−3	I	−4
G	−6	W	13
L	59	P	−19
C	20	E	98
S	−17	T	50

Electricity is watts happening (what's happening)

Page 60

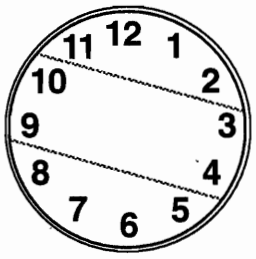
Piccolo player as seen from inside piccolo

A 2500
E −680
F 4050
R 9577
M −190
C −2412
N −4740
Y 1425

D −660
O 8330
L −8000
S −2208
I 0
P −77

Page 61

You may prefer to use these questions one at a time.

1. 28
2. $200
3. 4 brothers, 3 sisters
4. #4
5. Too much; he would earn more than $10,500,000.
6. 24
7. Larry
8. 
9. Top row; it includes all the letters having no curved lines.

Page 62

Caution students NOT to connect the last point in each group of problems to the first point in the next group. Also, you might suggest that students use a ruler to connect the dots.

1. 49
2. 16
3. 36
4. 1/9

lift pencil

1. −8
2. 0.25
3. 1/64
4. 10,000
5. 0.01

lift pencil

1. 64
2. −8
3. 216/125
4. 0.0081

lift pencil

1. 16/625
2. −27/343
3. 64
4. 0.0001
5. 10,000

lift pencil

1. −1
2. 16/625
3. 0.0001
4. 16

lift pencil

1. 2197
2. 0.0081
3. −1
4. −32
5. 1/64

stop

Page 63

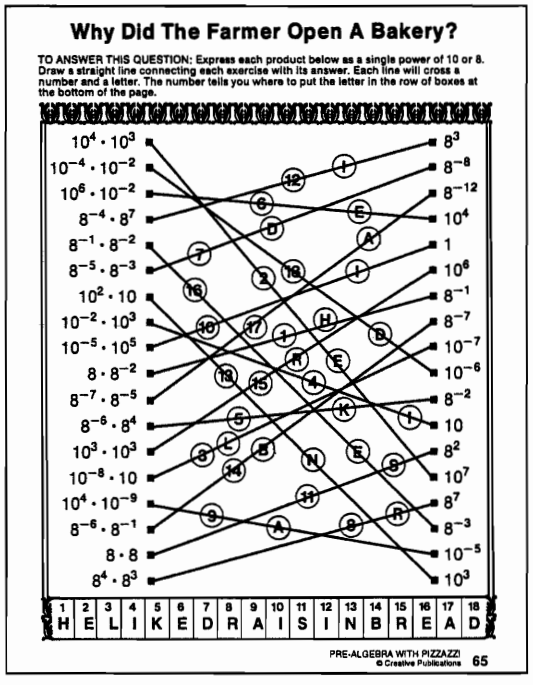
1. A
2. R
3. S
4. E
5. A
6. E
7. T
8. A
9. H
10. F

Page 64

7—A 17—R 2—O
10—U 19—I 21—D
9—O 5—I 16—E
13—E 6—S 4—L
14—T 11—R 15—T
12—L 20—R 8—F
3—W 1—F 18—B

Fowl is a four letter bird (four-letter word)

Page 65



Page 66

1. 1000
2. 0.001
3. 0.00000001
4. 100
5. 1,000,000,000
6. 100,000
7. 1
8. 0.001
9. 0.0000000001
10. 0.0000000001
11. 100
12. 0.001
13. 10
14. 10,000,000
15. 0.00000001
16. 0.01
17. 0.1
18. 1000
19. 1
20. 10
21. 0.000001
22. 0.0001
23. 0.00001

He was hit by a guided muscle (guided missile)

Page 67

A nervous manor
Knight gown
Breath analyzer

W 10^6
A 10^{-11}
I 10^5
Z 10^{-1}
O 10^{-3}
S 10^{-6}
L 10^2
H 10^{-5}
Y 10^0
U 10^{-7}
E 10^3
K 10^9
V 10^{-8}
F 10^{12}
S 10^{-2}
L 10^7
G 10^{-13}
R 10^4
N 10^{-4}

Page 68

1. 76,009
2. 5,000,480
3. 46.3
4. 2050.071
5. 40,000.8022
6. 5.0004
7. 700.06009
8. 20.5071
9. 4006.000036
10. 4.0802

Fortune tellers have a lot on the ball

Page 69

The absent minded eye doctor who fell into his lens grinding machine and made a spectacle of himself

A 0.9
D 61.08
G 77.005
J −0.0087
M 1.000973
P 6.0005
B −3.7
E −0.775
H −500.6
K 14.0605
N 18.02001
Q 0.043201
C −0.37
F 0.084
I −0.4954
L −0.00004
O −0.000065
R −9.007

Page 70

0.4	E
−2.47	H
76.084	T
5.9002	Y
−4.1	E
98.500	H
−0.76	V
7.80	A
56.0	O
−0.050	T
0.7476	W
9.00	E
−40.0	T
−60.009	F
1.00	L
75.18	E
−60.000	T
10.00	E
10.0	F

They have two left feet

Page 71

V 0.333
K 0.571
O 0.583
T 0.688
W 0.375
C 0.5
D 0.867
F 0.889
S 0.364
A 0.07
Y 0.833
U 0.596
I 0.594
B 0.05
R 0.667
E 0.8
M 0.680
H 0.75

Have you ever heard of a home where the birthday cakes roam

Page 72

You might wish to point out to students the pattern in problems 8, 9, and 10. For a special challenge, ask students to find the decimal equivalent of 1/81. (Answer: $0.\overline{012345679}$)

1. $0.\overline{3}$
2. $0.\overline{5}$
3. $0.8\overline{3}$
4. $0.4\overline{6}$
5. $0.41\overline{6}$
6. $0.\overline{428571}$
7. $0.\overline{48}$
8. $0.\overline{09}$
9. $0.\overline{18}$
10. $0.\overline{27}$
11. $0.1\overline{85}$
12. $0.\overline{076923}$
13. $0.1\overline{36}$
14. $0.\overline{6}$

People who make pillows really have to know their stuff

Page 73

1. 0.66 2/3
2. 0.12 1/2

3. 0.58 1/3
4. 0.68 3/4
5. 0.88 8/9
6. 0.06 2/3
7. 1.33 1/3
8. 0.90 5/8
9. 1.06 1/4
10. 0.87 1/2
11. 0.25 25/27
12. 2.37 1/2
13. 0.37 1/2
14. 5.37 1/2
15. 6.66 2/3
16. 7.66 2/3
17. 0.16 2/3
18. 3.62 1/2
19. 0.62 1/2
20. 0.83 1/3

Don't let good food go to waist (go to waste)

Page 74

Half heartedly

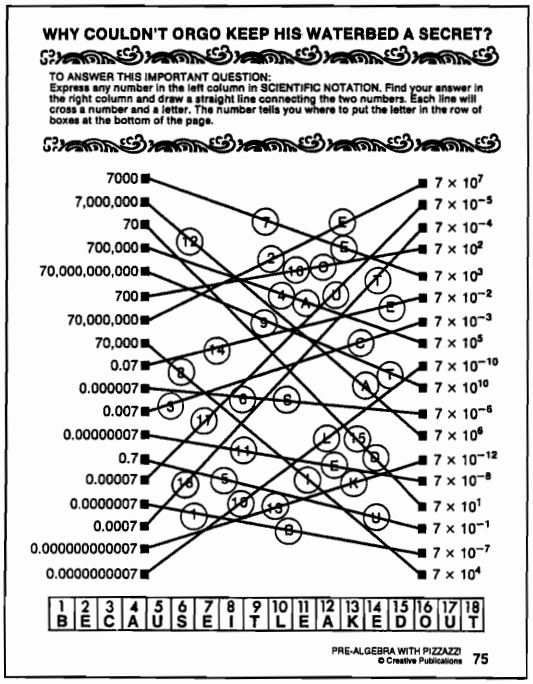
Absent mindedly

Woefully

Off handedly

A 14/11
T 2/3
W 4/9
Y 4/3
B 23/33
L 11/9
R 10/11
E 136/99
S 2/111
I 51/333
M 1/6
U 2/15
O 7/18
N 2/55
D 8/33
H 80/333
F 11/45

Page 75



Page 76

1. E **7.** M
2. S **8.** A
3. H **9.** N
4. O **10.** I
5. K **11.** L
6. T **12.** W

A lion that makes its own wine

Page 77

The price of beef is getting so high these days that many hot dog makers are finding it very hard to make both ends meat (both ends meet)

Page 78

Before doing this puzzle, students may need practice changing answers like 15.75×10^{-9} back to scientific notation. Also, you might wish to discuss with students the implications of the last two exercises (e.g. food supply).

1. 8×10^{8}
2. 9×10^{3}
3. 6.3×10^{3}
4. 4.2×10^{-6}
5. 4×10^{-8}
6. 7.2×10^{9}
7. 4.05×10^{4}
8. 4.56×10^{-7}
9. 1.575×10^{-8}
10. 1.7×10^{-29}
11. 8.1×10^{13} km
12. 2.5×10^{5} g
13. 2.475×10^{14} g

There's no police like Holmes (no place like home)

Page 79

The two guys who robbed a music store and got away with the lute (the loot)

A 3×10^{4}
B 4×10^{-6}
C 2×10^{-5}
D 1.2×10^{-2}
E 1.5×10^{10}
F 5×10^{5}
G 8×10^{-2}
H 3×10^{-8}
I 4×10^{-7}
J 5×10^{2}
K 2×10^{10}
L 5×10^{7}
M 2.6×10^{3}
N 2×10^{5}

Page 80

1. 2.8×10^{7}
2. 6×10^{3}
3. 1.5×10^{4}
4. 1.6×10^{2}
5. 3×10^{-1}
6. 1.6×10^{-5}
7. 3.6×10^{-7}
8. 4×10^{1}
9. 2.8×10^{-1}
10. 4×10
11. 2×10^{2}
12. 4×10^{-2}
13. 3×10^{3}
14. 6×10^{-7}
15. 2×10^{-3}
16. 3×10^{4}
17. 1.5×10^{10}
18. 2.5×10^{0}

U. R. A. U. M. B. N. (You are a human being)

Page 81

The last number is the first 20 decimals of pi.

Rational: M A I D M A R I O N M

Irrational: A R R I E D A H O O D

Maid Marion married a hood (Robin Hood)

Page 82

1. O **8.** D
2. G **9.** L
3. E **10.** M
4. K **11.** S
5. T **12.** N
6. W **13.** C
7. I **14.** A

Making a long distance caw (call)

Page 83

S 1/3 **W** 3/14
N 8/1 **T** 1/6
Y 3/5 **L** 8/3
K 3/2 **U** 2/9
F 3/7 **H** 60/13
E 4/1 **D** 4/7
I 2/5 **A** 72/127
R 9/8 **O** 59/77
G 5/4 **C** 19/26

Crocodiles are always looking for a handout

Page 84

1. 9 **11.** 2
2. 15 **12.** 3
3. 8 **13.** 1 1/2
4. 35 **14.** 3 1/3
5. 33 **15.** 2 3/4
6. 24 **16.** 3 3/5
7. 14 **17.** 1 1/5
8. 50 **18.** 2 1/3
9. 60 **19.** 9/11
10. 21 **20.** 7/8

Ruth rode on my motorbike

On the seat in back of me

I took a bump at fifty five

And rode on ruthlessly

Page 85

A 24 **N** 350
R 12 **A** 6
B 10 **K** 13 1/3
O 7 **H** 11 1/5
E 13 3/4 **T** 800
I 2 1/2 **T** 18 2/3
A 7 1/7 **C** 30
E 4 2/5 **V** 1 2/3
U 6 1/3 **M** 1 1/2
A 4 5/7 **T** 1 3/5

Take a thumber vacation (summer vacation)

Page 86

1. 225
2. 210
3. 30
4. 50
5. 11 1/5
6. 266 2/3
7. 1 1/2
8. 3 3/4
9. 24
10. 6 1/2
11. 15
12. 2240
13. 2 1/10
14. 360

HALO

Page 87

(Since you are) Such a fantastic math student you will love working with percents

H 35% **N** 83%
R 40% **I** 74%
F 150% **C** 200%
Y 375% **E** 300%
D 4% **P** 1.1%
G 97.5% **A** 0.11%
L 1% **U** 11%
V 1/2% **W** 50%
O 2/3% **T** 5%
K 19% **S** 500%
M 65%

Page 88

A nervous wreck

The king obese (of beasts)

Long distance

C 1/5 **U** 3/2
O 1/2 **W** 5/4
A 3/20 **D** 1/3
H 67/100 **N** 1/200
S 9/25 **V** 5/2
G 3/4 **L** 1/25
I 3/10 **R** 2/3
T 2/5 **B** 1/300
K 1/100 **E** 1/50

Page 89

1. CO
2. M
3. PAS
4. SE
5. SA
6. REA
7. L
8. WAY
9. SS
10. OL
11. DW
12. IT
13. H
14. COMPLET
15. EDI
16. RECT
17. ION
18. S

Compasses are always sold with complete directions

Page 90

Clock for telling what time it was

E 70 **I** 7
N 26 **S** 1.5
O 45 **F** 4.25
A 7 **M** 2.5
G 84 **C** 72.3
R 40 **W** 167
H 2 **L** 230
K 15 **T** 150.5

Page 91

You might suggest that students use 1%, 10%, 50%, 100%, 150%, and 200% as benchmarks to aid in estimating. The authors have found that this puzzle makes a good activity for the overhead projector.

1.	H	**12.**	H
2.	E	**13.**	A
3.	T	**14.**	T
4.	I	**15.**	I
5.	S	**16.**	O
6.	U	**17.**	H
7.	T	**18.**	N
8.	E	**19.**	W
9.	G	**20.**	D
10.	E	**21.**	V
11.	S		

She thought it was devine (the vine)

Page 92

Gets the picture

Can save your hide

Will go out on a limb

G	71%	**C**	77%
N	38%	**A**	117%
U	22%	**D**	144%
M	83%	**O**	173%
S	67%	**E**	233%
Y	42%	**H**	248%
W	6%	**P**	8%
R	53%	**T**	9%
V	88%	**L**	7%
B	24%	**I**	3%

Page 93

1.	91.7	**8.**	114.0
2.	59.4	**9.**	269.3
3.	40.7	**10.**	385.9
4.	6.3	**11.**	0.8
5.	87.0	**12.**	0.6
6.	1.2	**13.**	0.1
7.	133.3		

Jumping to a conclusion

Page 94

5	E	**17**	A
10	H	**7**	I
16	O	**2**	N
20	S	**19**	I
14	A	**11**	E
24	D	**6**	N
3	O	**18**	F
13	E	**9**	W
1	A	**22**	R
8	S	**4**	V
23	E	**15**	L
12	R	**21**	B

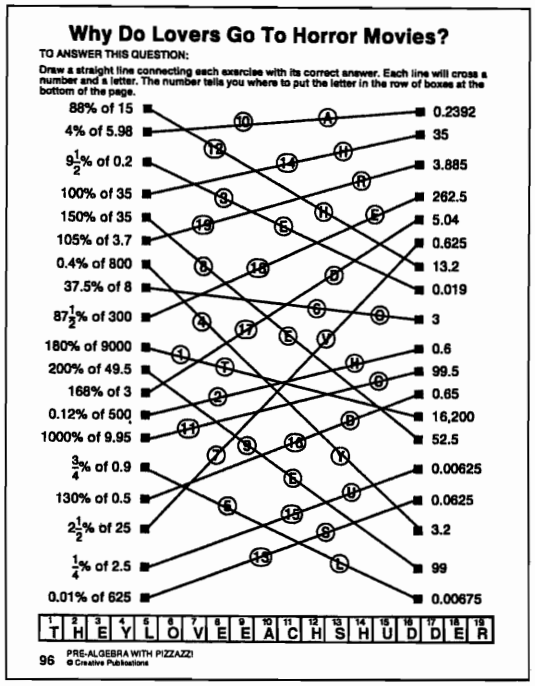
An oven is where a loaf is bred (bread)

Page 95

1. 14.49
2. 7.99
3. 63.75
4. 19.848
5. 1.66
6. 2.052
7. 0.316
8. 0.6955
9. 0.21875
10. 5.4027
11. 33.75
12. 0.76
13. 7.404
14. 0.0154
15. 129.995

Smokey the Bear has a furry godmother (fairy godmother)

Page 96



Page 97

D	$45	**M**	$53.91
E	$33.75	**A**	$61.95
U	$88	**L**	$52
W	$84.15	**O**	$50.97
H	$47.70	**R**	$56.07
Y	$35.10	**P**	$65.36
N	$92.40	**T**	$54.34
S	$89.20	**C**	$53.52

Two's company and three's a cloud (a crowd)

Page 98

E	60	**H**	4.50
A	36.75	**G**	54
R	87.75	**C**	19.50
T	140	**N**	25.35
L	200	**S**	21
I	135	**B**	27.30
O	225		

Cannonballs are big shots

Page 99

Students might be interested to know that in the election discussed in problem 2, the candidate with the most popular votes (Cleveland) lost the election.

S	0.675
O	88,000
E	0.0825
I	0.0025
S	65
R	26.25
E	8750
R	2550
A	61,500
D	2261
Q	6.416
W	46.8

Q's are weird O's

Page 100

View from an airplane of a used bathtub lot

O	50	**P**	80
E	25	**S**	33 1/3
N	60	**L**	44
M	10	**V**	5
I	30	**A**	175
U	200	**T**	66 2/3
D	300	**H**	12
F	400	**R**	20
W	150	**B**	6

Page 101

The five states referred to in problem 13 are: Alaska, North Dakota, Nevada, Wyoming, and Hawaii.

1. 81 1/4
2. 41 2/3
3. 137 1/2
4. 2 2/9
5. 21 7/8
6. 83 1/3
7. 300
8. 166 2/3
9. 80 20/21
10. 86 2/3%
11. 77 1/3%
12. 133 1/3%
13. 90%
14. 66 2/3%
15. 4 1/2%
16. 30 1/2%

Bakers knead dough

Page 102

The bank robber who stepped on a scale and got a weigh

A	20%
B	12 1/2%
C	60%
D	13 1/3%
E	25%
F	22 2/9%
G	50%
H	33 1/3%
I	150%
J	41 2/3%
K	6 1/4%
L	225%

Page 103

Sluggish

Knot bad

Fare, just fare

Really a drag

H	200	**Y**	24
U	780	**J**	18
B	130	**D**	198
E	75	**R**	70
I	80	**F**	12
T	50	**N**	90
O	60	**G**	25
L	72	**A**	40
K	36	**S**	100

Page 104

The Wrong Brothers

He came in sickened (second)

A	300
T	800
D	2275
H	40
G	134
I	3080
M	50,000
W	15
S	6
K	120
O	30,000
B	25
N	3500
C	2000
E	400
R	350

Page 105

Two elephants not on speaking terms

O	11.96	**M**	24
R	30	**W**	6.9
L	72	**N**	85
S	20.4	**K**	12
I	75	**E**	11.5
H	50	**P**	89
A	11.9	**T**	99
G	4		

Page 106

K	196	**C**	44
Y	45	**L**	7 1/2
O	200	**V**	90
A	4.48	**H**	0.88
X	16 2/3	**T**	175
I	52	**W**	300
S	144	**E**	2.25
D	53 1/3	**P**	12 1/2
R	450	**N**	1.75

Hotel workers are very inn-experienced

Page 107

1. 20.9 kilograms
2. 2%
3. $7500
4. 200 meters
5. 35.03 kilometers per second
6. 65%
7. 1536
8. $250,000
9. 23 1/3%

A four loaf cleaver (four leaf clover)

Page 108

1.	N	**7.**	X
2.	U	**8.**	S
3.	A	**9.**	V
4.	W	**10.**	E
5.	H	**11.**	R
6.	O		

He was a nervous Rex (nervous wreck)

Page 109

1.	1/2	**9.**	1/3
2.	1/2	**10.**	1/4
3.	50	**11.**	1/5
4.	1/6	**12.**	1/5
5.	1/6	**13.**	1/5
6.	1/6	**14.**	2/5
7.	15	**15.**	2/5
8.	5/12	**16.**	30

Be a little boulder

Page 110

E	1/3	**H**	3/10
T	1/4	**L**	7/10
I	5/12	**A**	2/5
E	1/12	**Y**	1/5
L	7/12	**S**	1/10
E	3/4	**H**	9/10
S	1/2	**F**	3/5
R	1/6	**H**	4/5

They are shellfish (selfish)

Page 111

E	3/10	**T**	1/4
N	1/2	**A**	3/4
A	1/10	**N**	1/12
I	7/10	**U**	11/12
A	5/12	**A**	6/13
N	1/3	**S**	5/13
D	1/6	**B**	1/13
N	7/12	**L**	10/13

An unlisted banana

Pages 112–113

Unlike most puzzles, this mini-program provides instruction as well as practice. For maximum benefit, students will need to read and study it several times.

1.	I	**9.**	Y
2.	E	**10.**	T
3.	S	**11.**	L
4.	I	**12.**	N
5.	E	**13.**	R
6.	O	**14.**	W
7.	A	**15.**	U
8.	U		

Wire you insulate (Why are you in so late?)

Page 114

In the preceding puzzle, several different outcomes are labeled as the same event (e.g. six ways to get 7 with two dice). In this puzzle, each outcome is considered a unique event (e.g. in tossing a coin twice, HT and TH are treated as different events).

1. 1/8
2. 1/8
3. 1/8
4. 1/16
5. 1/16
6. 1/2
7. 1/2
8. 3/5
9. 9/25
10. 6/25
11. 4/25
12. 6/25
13. 1/4
14. 1/8
15. 1/16

They are tearable

Page 115

E	24	**U**	20
A	120	**M**	30
N	5040	**T**	7
I	144	**F**	336
S	240	**O**	15
R	6	**Z**	84
H	11	**W**	21
L	9	**D**	10

I am the wonderful wizard of odds (Oz)

Page 116

A	24
S	720
D	12
O	40
I	362,880
V	90
L	20
P	15,600
R	15,120
C	9240
E	9000

Icicles are eavesdroppers

Page 117

For a special challenge, have students find the number of different 5-card poker hands that can be dealt from a 52-card deck (Answer: 2,598,960).

R	10	**G**	5
O	6	**I**	56
E	15	**P**	36
T	21	**F**	35
L	1	**C**	70
D	84	**H**	126
N	20	**A**	45
S	28		

Coin flippers can get a head

Page 118

You may prefer to use these questions one at a time.

1. 4
2. Tom, manager; Dick, teller; Harry, cashier
3. Start with the two boys crossing, one staying on the other side, the other returning, and continue from there.
4. Fido
5.

6. One solution:

7	2	11	6
10			3
4			9
5	1	12	8

7. 9 seconds
8. 11
9. Clockwise, 60 rpm

Page 119

A	angle
I	degree
N	vertex
O	90 degrees
U	right
S	interior
N	obtuse
G	complementary
T	adjacent
N	supplementary
D	acute
F	angle EOD
I	angle BOC
N	congruent
F	vertical
R	sides

It's off and running

Page 120

A vicious circle

Half a centipede

S	76°	**D**	43°
R	104°	**P**	74°
A	112°	**H**	65°
N	119°	**V**	62°
O	53°	**E**	35°
T	127°	**F**	60°
L	54°	**I**	120°
U	45°	**C**	40°

Page 121

Thunderwear

Too far to see

A dead giveaway

R	48°	**H**	80°
U	132°	**N**	35°
V	50°	**W**	66°
A	36°	**F**	105°
Y	31°	**O**	130°
I	33°	**G**	55°
T	40°	**E**	90°
S	30°	**D**	95°

Page 122

In addition to providing practice with a protractor, this puzzle might be used in discussing the angle measures of a polygon. For example, the quadrilateral, pentagon, and hexagon could be divided into triangles to show that the sum of angle measures must be 360°, 540°, and 720° respectively.

A	63°	**O**	136°
R	32°	**R**	100°
E	85°	**C**	104°
I	17°	**F**	118°
A	24°	**S**	96°
S	139°	**C**	150°
M	29°	**K**	93°
D	164°	**P**	115°
N	77°	**H**	159°
A	90°	**R**	107°
G	82°		

From chasing parked cars

Page 123

1.	N	**8.**	W
2.	C	**9.**	R
3.	E	**10.**	H
4.	G	**11.**	U
5.	A	**12.**	L
6.	I	**13.**	S
7.	K	**14.**	P

He was pressing his luck

Page 124

The third figure in this puzzle can be used to prove that the angle measures of a triangle add to 180°. The fourth figure can be used to show the relationships among the angles of a parallelogram.

1.	135°	**12.**	110°
2.	135°	**13.**	40°
3.	45°	**14.**	140°
4.	45°	**15.**	55°
5.	45°	**16.**	55°
6.	45°	**17.**	85°
7.	110°	**18.**	115°
8.	110°	**19.**	65°
9.	110°	**20.**	65°
10.	70°	**21.**	115°
11.	70°		

It operates on batteries

Page 125

T I
S I
U M H C
O T O
O L C D
T O
A H S W
E H T M
T O U
E I D T

It is much too cold to wash them out Tide (outside)

Page 126

1. polygon
2. quadrilateral
3. pentagon
4. angles
5. octagon
6. decagon
7. scalene
8. isosceles
9. equilateral
10. right
11. parallelogram
12. rectangle
13. trapezoid
14. rhombus
15. square

Clothes dryers end hang ups

Page 127

T	circle
I	center
S	radius
E	chord
U	diameter
I	half
T	central angle
E	arc
I	110°
S	250°
H	150°
L	210°
I	30°
D	330°
M	minor arc
G	major arc

Disguise the limit

Page 128

1.	35°	**13.**	90°
2.	145°	**14.**	270°
3.	80°	**15.**	90°
4.	80°	**16.**	180°
5.	35°	**17.**	100°
6.	325°	**18.**	80°
7.	145°	**19.**	80°
8.	215°	**20.**	100°
9.	90°	**21.**	260°
10.	23°	**22.**	280°
11.	67°	**23.**	260°
12.	293°	**24.**	180°

You are closer to the ceiling

Page 129

It was pigeon towed

Page 130

Two feet of his legs stuck out

Page 131

Store detectives are counter spies

Page 132

1.	H	**5.**	T
2.	O	**6.**	N
3.	I	**7.**	E
4.	R	**8.**	S

To see the son rise

Page 133

You might suggest that students draw two small triangles for each exercise and label the sides given and the side to be found.

Make him wear shoes

By the M on his pajamas

I	11	**R**	9 1/3
T	20	**P**	5 3/5
E	9	**S**	3.91
N	35	**W**	1.92
Y	6	**H**	4.39
K	3 8/9	**J**	2/3
O	8 1/4	**A**	10
B	2 2/5	**M**	12.5

Page 134

Box containing thirty-five spare parts for a porcupine

O	1.9	**U**	130
E	8.6	**F**	200
Y	14.7	**T**	8
A	19	**H**	0.8
G	81	**X**	9.2
I	192	**N**	7.0
B	1.5	**C**	70
S	1.0	**R**	167
V	13.0	**P**	173

Page 135

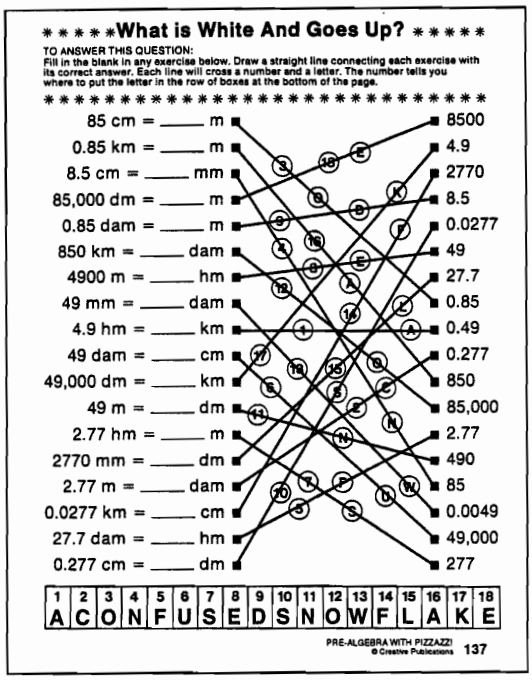
The horse who wanted to be a big movie star but ended up doing bit parts

Page 136

1. 0.575
2. 5750
3. 470
4. 93,300
5. 80
6. 3991
7. 690
8. 0.8
9. 0.02005
10. 6.9
11. 4.7
12. 7.02
13. 0.00933
14. 200,500
15. 20
16. 436,660
17. 0.05
18. 2000

Parking tickets are fine things

Page 137



Page 138

A 19.7 m
T 26.8 m
I 18.6 m
J 47.4 m
O 37.7 m
U 26.74 m
E 34.6 m
D 27.6 m
C 39.2 m
S 68.02 m
H 135.97 m
Y 10.3 m
N 16.7 m
R 50.8 m
G 50.3 m

The Grand Canyon is just gorges (just gorgeous)

Page 139

1. 12
2. 4.3
3. 27.3
4. 3.25
5. 16.3
6. 17.1
7. 4 1/4
8. 2.4
9. 2.75
10. 5 1/5
11. 4.9
12. 17 5/6

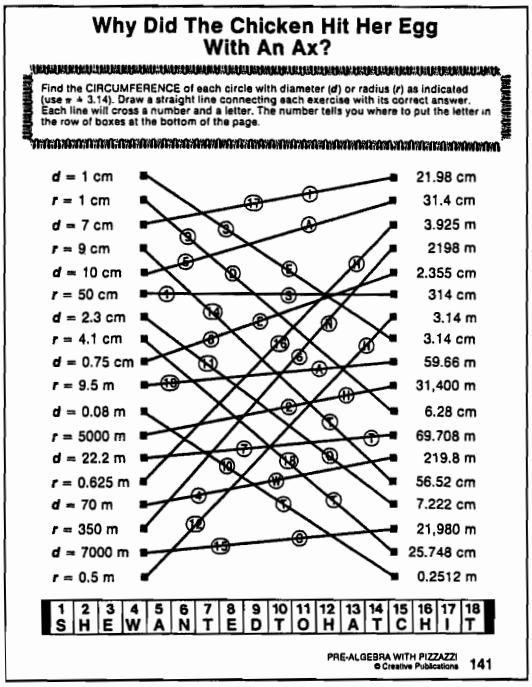
The car spangled spanner (Star Spangled Banner)

Page 140

1.	93.6	**6.**	306
2.	12.64	**7.**	4.61
3.	34.9	**8.**	286
4.	7.4	**9.**	3.29
5.	40		

Magic is tricky business

Page 141



Page 142

1. 28.26 m
2. 77.1 m
3. 47.4 m
4. 14.28 m
5. 80.8 m
6. 26.534 m
7. 75.36 m
8. 31.85 m
9. 30.84

Whackakey (Waikiki)

Page 143

E 3
L uncertain
Y 2
S 4
H 1
A 3
N 6
E uncertain
H 2
I 4
O 5
E 1
O 6
V 3
T 5
A uncertain
G 4
E 3
T 1
E 2
N 5
T 2
T uncertain
R 4
L 3
D 5
B uncertain
N 4

They don't leave rings on the table

Page 144

G H U
P Q DD
L K KK
J W
BB AA
KK LL
BB O N
F S
L Y
M Z
CC DD
U T G
I II
C D DD
EE E F
II JJ
AA A B
Y X KK
5370481 (Upside down it reads, 18 holes.)

Page 145

A challenging assignment or class activity using this puzzle is to have students make up an original problem for which each computation provides the solution. In addition, you might discuss with students why each solution has the unit of measure that it has.

1. 2.16 cm
2. 6.9 m^2
3. 8.06
4. 0.439 m/sec
5. 62.7778 cm
6. 131.0 mm^2
7. 20.038 km
8. 15.91 km/hr
9. 0.0610
10. 390.0 cm^2
11. 1.618 mm
12. 180.00 km
13. 0.0140 km/sec
14. 2.0

He was making a tossed salad

Page 146

H	39	**F**	25 1/2
L	22 1/2	**Y**	26
U	38	**T**	25
O	40	**R**	41 1/2
I	22	**S**	29
P	34	**E**	30

Sleep is the rest of your life

Page 147

1. 28 cm^2
2. 35 cm^2
3. 24 cm^2
4. 30 cm^2
5. 27.04 cm^2
6. 66.7 cm^2
7. 38.71 cm^2
8. 49.95 cm^2
9. 39.48 cm^2
10. 46.02 cm^2
11. 82.31 cm^2
12. 47.35 cm^2

A drill pickle (dill pickle)

Page 148

1. I
2. T
3. H
4. W
5. A
6. C
7. E
8. D
9. M
10. O
11. R
12. S

His mother said a cross word

Page 149

T	15	**D**	161.5
O	16	**S**	36.48
Y	18	**B**	20.92
A	17.5	**C**	0.291
G	24.5	**L**	155
E	27.2	**H**	1.125
I	4.86	**P**	0.875
N	0.11		

A bicycle shop has things to pedal

Page 150

C and Y (Candy)

1. 22.9 m, 19.14 m^2
2. 16.2 m, 8.25 m^2
3. 5.8 m, 1.445 m^2

4. 26.3 m, 16.65 m^2
5. 2.66 m, 0.3318 m^2
6. 26.43 m, 27.99 m^2
7. 16.7 m, 7.755 m^2
8. 69 m, 67.5 m^2
9. 21.75 m, 21.45 m^2
10. 5 m, 0.7125 m^2
11. 44.05 m, 41 m^2

Page 151

The landlord who asked a knight to collect money from his tenants so he could see a sir come for rents (circumference)

Page 152

For question 2.C, you might also have students compute the distance from A to B around the circle. The answer is the same.

1. A 254.34 m^2
   B 69.66 m^2
   C 56.52 m
2. A 7.065 m^2
   B 3.5325 m^2
   C 4.71 m
   D 9.42 m
3. 2.7 cm
4. A 25.12 m
   B 50.24 m^2
   C 163.52 m^2
5. 2.3 cm
6. A 400 m
   B 2826 m
   C 9174 m^2

A V 8 R (aviator)

Page 153

L	24	F	75
G	45	I	630
N	60	B	480
R	56	Y	720
D	36	H	2640
E	27	T	2700
O	64	A	336
U	48	P	300
W	72	S	340

Buying two and a half pairs of shoes

Page 154

1. 360.8 cm^3
2. 268.45 cm^3
3. 1071 cm^3
4. 1.5 cm^3
5. 244.4 cm^3
6. 826.4 cm^3
7. 5832 mm^3
8. 3933 m^3
9. 420 m^3
10. 1.4 m^3
11. 3360 kg

With a sixth sense stamp (six-cent stamp)

Page 155

1. 364.5 cm^3
2. 199.2 cm^3
3. 102.93 cm^3
4. 2080 m^3
5. 97.92 cm^3
6. 590 m^3
7. 367.95 cm^3
8. 13,860 mm^3
9. 110.7 m^3

Abominable (A bomb in a bull)

Page 156

The first four exercises can be used to show the relationship between the volume of a prism and the volume of a pyramid.

1. 144 cm^3
2. 48 cm^3
3. 30.6 cm^3
4. 10.2 cm^3
5. 720 cm^3
6. 30 cm^3
7. 0.18 cm^3
8. 170 cm^3

A vise guy (wise guy)

Page 157

1.	R	7.	N
2.	I	8.	B
3.	E	9.	M
4.	S	10.	K
5.	H	11.	C
6.	F	12.	O

Chickens come from broken homes

Page 158

A stuck up kid

Loch jaw (lock jaw)

Snappy answers

A raven maniac (raving maniac)

R	6	V	10
O	8	K	30
E	−6	L	40
T	−8	M	−90
C	12	J	−120
I	−7	P	2
Y	7	U	23
H	9	N	15
W	3	A	80
D	5	S	225

Page 159

The students take only makeup exams

Page 160

She wanted to be on the safe side

Page 161

1.	S	5.	A
2.	U	6.	E
3.	I	7.	C
4.	H	8.	Y
9.	R	12.	N
10.	K	13.	T
11.	P		

They can't keep their trunks up

Page 162

A	$\sqrt{100}$	G	$\sqrt{477}$
O	$\sqrt{170}$	U	$\sqrt{233}$
S	$\sqrt{205}$	H	$\sqrt{61}$
N	$\sqrt{200}$	L	$\sqrt{136}$
E	$\sqrt{289}$	F	$\sqrt{65}$
T	$\sqrt{305}$	R	$\sqrt{277}$
I	$\sqrt{225}$	D	$\sqrt{625}$
M	$\sqrt{169}$		

The farmer had no regard for the feeling of udders (of others)

Page 163

1.	D	12.	T
2.	V	13.	F
3.	O	14.	E
4.	E	15.	F
5.	G	16.	L
6.	A	17.	N
7.	S	18.	H
8.	O	19.	I
9.	R	20.	A
10.	U	21.	F
11.	F	22.	E

Dogs often have a ruff life (rough life)

Page 164

1. A $\sqrt{130}$ cm
   B $\sqrt{146}$ cm
   C $\sqrt{80}$ cm
   D $\sqrt{289}$
2. $\sqrt{109}$ m
3. $\sqrt{493}$ cm
4. $\sqrt{52}$ m
5. $\sqrt{1384}$ cm
6. $\sqrt{505}$ km
7. $\sqrt{3200}$ cm
8. $\sqrt{97}$ m
9. $\sqrt{15025}$ cm
10. $\sqrt{676}$ m

A B B (a baby)

Page 165

S	$\sqrt{95}$	W	$\sqrt{3}$
O	$\sqrt{171}$	M	$\sqrt{2}$
H	$\sqrt{100}$	T	$\sqrt{1}$
I	$\sqrt{137}$	N	$\sqrt{4}$
E	$\sqrt{169}$	Y	$\sqrt{168}$
L	$\sqrt{51}$	A	$\sqrt{49}$
F	$\sqrt{121}$	P	$\sqrt{150}$
K	$\sqrt{81}$	R	$\sqrt{144}$
U	$\sqrt{156}$	G	$\sqrt{16}$

Pythagoras was a famous Greek who knew all the right angles

Page 166

1. A $\sqrt{136}$
   B $\sqrt{95}$
   C $\sqrt{105}$
   D $\sqrt{40}$
2. $\sqrt{16200}$ feet
3. $\sqrt{1275}$ m
4. A $\sqrt{144}$ m = 12 m
   B 204 m^2
5. $\sqrt{260}$ feet
6. $\sqrt{821}$ yards
7. $\sqrt{3.24}$ km

I C U R A B U T L N (I see you are a beauty, Ellen)

Page 167

As a follow-up, you might ask students to express some or all of their answers as decimals. Also, have students confirm that each triangle has the Pythagorean property.

1.	A	13.	B
2.	T	14.	E
3.	E	15.	A
4.	C	16.	W
5.	A	17.	C
6.	D	18.	T
7.	A	19.	S
8.	E	20.	N
9.	O	21.	K
10.	I	22.	R
11.	E	23.	R
12.	T	24.	F

It wanted to be a safe cracker

Page 168

L	0.574	T	0.174
T	0.176	Y	60°
E	0.423	O	0.466
A	0.342	T	55°
I	0.996	H	8.66
T	1.192	L	5°
A	0.643	R	3.732
H	75°	S	40°
T	0.819	H	0.259
E	45°	P	65°

That really hit the spot

Page 169

The farmer who gave his rooster the name Robinson because he crew so

(Robinson Crusoe)

Page 170

Jim Panzee

Hugo Furst

Annette Andajar

U	37°	G	36°
I	23°	R	34°
D	55°	H	60°
E	29°	F	15°
O	21°	Z	77°
T	53°	J	56°
S	62°	N	45°
M	72°	A	6°
P	66° or 67°		

Page 171

1. A 142.7
   B 153.3
   C 139.0
2. A 38
   B 80.5
3. A 137,900 km
   B 44,278.6 km
   C 56.3 km/sec
   D 19.7 km/sec
4. 4.0
5. A 34 cm
   B 191.8 cm
   C 13.8 kg
   D 84.3 kg

TANGO (tan go)

Page 172

Exercise 2 illustrates how an extreme value can influence the mean more strongly than the median. The last exercise illustrates that a mode need not be near the mean or median.

1. A 45
   B 2.7
   C 15.5
   D 5.6
   E $5.10
2. A $100,000
   B $20,000
3. A 89
   B 1.66 m
   C 7
4. A 8.7 cm
   B 9.4 cm
   C 2.4 cm

They melted

Page 173

Scaling the vertical axis for the second set of data is left as a problem for the student. You might have students construct a frequency polygon as well as a histogram for each set of data.

P	2	I	5
A	3	Y	7.5
I	7	E	17.5
E	13	A	32.5
T	10	H	25
A	5	V	12.5

Total: 40

L	6	H	20
T	16	S	13
Y	14	H	8.5
C	18	F	4.5

Total: 200

They have a physical fit

Page 174

1.	N	7.	E
2.	G	8.	H
3.	A	9.	M
4.	V	10.	I
5.	L	11.	B
6.	S		

A small bee in a big hive

Page 175

1.	O	**7.**	A
2.	I	**8.**	R
3.	C	**9.**	K
4.	E	**10.**	T
5.	H	**11.**	S
6.	U		

Three seasick tourists

Page 176

25%	D	$125	A	90°	
21%	O	$105	E	76°	
14%	T	$70	I	50°	
C	40%	E	$200	S	144°
15%	A	6 oz	W	54°	
26%	O	10.4 oz	H	94°	
32%	T	12.8 oz	K	115°	
10%	W	4 oz	H	36°	
B	17%	T	6.8 oz	L	61°
N	100%	S	360°		

He wanted to blow his stack

Page 177

1.	108°	**9.**	65°
2.	76°	**10.**	40°
3.	83°	**11.**	90°
4.	61°	**12.**	72°
5.	32°	**13.**	36°
6.	86°	**14.**	119°
7.	148°	**15.**	18°
8.	22°	**16.**	25°

They were dropping like flies

Page 178

This puzzle may be used to illustrate that, when computing the central angle, it is sometimes easier to use the fraction and other times easier to use the percent of the total.

T	3/8	O	371/2%	D	135°
W	1/12	N	8 1/3%	I	30°
O	1/4	T	25%	U	90°
N	1/8	S	12 1/2%	O	45°
E	1/6	T	16 2/3%	I	60°
L	8/25	O	32%	N	115°
T	1/3	W	33 1/3%	T	120°
O	21/100	K	21%	F	76°
E	3/25	C	12%	H	43°
S	1/60	D	1 2/3%	C	6°

It doesn't know how to conduct itself

Page 179

You may prefer to use these questions one at a time.

1. 27

2. Mr. Black — brown
Mr. Brown — green
Mr. Green — black

3. 18

4. $90

5. Each figure is a numeral, 1–4, plus its mirror image. The next figure would be: 3

6. $1.19

7. 3 red — 8
2 red — 12
1 red — 6
0 red — 1

8. When they pass, they are the same distance from New York.

Page 180

It was a tight squeeze

A case of blackmail

Apricots

P	72	**C**	24
L	16	**Q**	38
G	14	**K**	35
U	45	**E**	6
W	20	**M**	84
I	99	**R**	27
H	15	**B**	41
O	13	**T**	7
Z	5	**S**	25
F	42	**A**	18

Page 181

S	17	**I**	8
F	5	**E**	16
E	28	**H**	1
I	15	**T**	20
O	23	**X**	9
T	29	**L**	3
A	13	**P**	24
Y	11	**B**	12
I	19	**N**	22
A	26	**T**	6
S	7	**E**	4
H	21	**C**	27
E	2	**B**	14
O	32	**O**	30
T	10	**L**	25
W	18	**G**	31

He left sixty babies with no place to go

Page 182

1.	E	62
2.	A	23
3.	E	49
4.	S	51
5.	E	83
6.	A	34
7.	E	44
8.	B	65
9.	U	188
10.	E	66
11.	H	72
12.	E	48
13.	C	108
14.	F	142
15.	H	63
16.	S	41
17.	C	93
18.	L	101

Because he has fleece (fleas)

Page 183

M	19	**S**	12
G	−11	**X**	−18
P	15	**F**	−65
A	10	**H**	25
C	36	**E**	−31
N	−79	**B**	32
T	55	**I**	17
U	−48	**R**	44

Running a rabbit farm is a hare raising experience (hair-raising experience)

Page 184

1. $5x$

2. $-2y$

3. $-6x$

4. $8y$

5. $-10x$

6. $-4y$

7. $-9x + 7$

8. $-y - 3$

9. $x + 5$

10. $6y - 6$

11. $-8x - 13$

12. $-2y + 6$

13. $5x - 13y - 5$

14. $-7x - 9y - 5$

15. $7x + 5y + 5$

16. $4x - 2y - 4$

17. $-5x + y$

18. $-x + 2y + 5$

19. $5x - 2y + 4$

20. $12x + 6y - 12$

21. $-x - 8y + 5$

22. $-2x + 5y$

23. $x + 6y - 7$

24. $-3x - y$

X L R 8 (accelerate)

Page 185

1.	E	**11.**	H
2.	H	**12.**	S
3.	E	**13.**	A
4.	S	**14.**	N
5.	S	**15.**	I
6.	U	**16.**	R
7.	L	**17.**	E
8.	A	**18.**	R
9.	L	**19.**	G
10.	I	**20.**	A

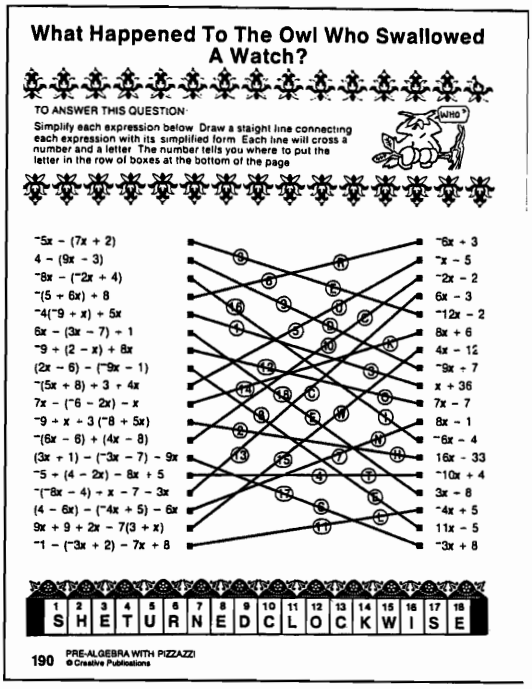
He uses all his rain gear (reindeer)

Page 186

1.	43	**10.**	5
2.	−6	**11.**	−9
3.	−14	**12.**	30
4.	16	**13.**	−18
5.	23	**14.**	44
6.	−20	**15.**	−12
7.	−51	**16.**	22
8.	34	**17.**	11
9.	17		

They ended up in a tie

Page 190



Page 187

T	18	**H**	19
A	23	**E**	8
E	2	**T**	6
H	7	**N**	27
D	25	**F**	1
I	14	**B**	21
U	11	**R**	12
F	5	**E**	16
G	28	**M**	9
D	17	**N**	24
E	20	**R**	22
V	15	**W**	3
I	26	**V**	13
O	4	**S**	10

Few of them survived the branding

Page 188

The rookie football player who kept asking his coach to flood the football field with water so he could go in as a sub

Page 189

Meat loafer

Play buoy

Stalk broker

T	6	**P**	48
U	−28	**K**	−61
Y	41	**B**	−20
R	−79	**M**	−49
F	−12	**A**	12
S	10	**O**	−114
E	121	**L**	14

Page 191

1.	L	**10.**	R
2.	I	**11.**	H
3.	E	**12.**	N
4.	Y	**13.**	J
5.	A	**14.**	D
6.	S	**15.**	M
7.	O	**16.**	C
8.	K	**17.**	T
9.	U		

He just couldn't tack it anymore (take it)

Page 192

T	11	**W**	9
E	15	**D**	18
S	25	**H**	12
O	8	**E**	28
A	20	**N**	10
N	17	**T**	5
E	2	**R**	21
U	4	**E**	14
O	26	**N**	27
S	6	**D**	7
A	16	**I**	23
R	22	**P**	3
E	24	**R**	13
H	1	**C**	19

He puts down three and carries one

Page 193

If a lady trips and falls the reason her brother cannot help her is that he cannot be a brother and assist her too (and a sister too)

Page 194

A lickety split

A walkie talkie

Organized grime

C	97	**M**	160
N	−10	**G**	21
E	−29	**P**	−39
D	18	**O**	16
S	−99	**R**	−19
A	−69	**W**	−66
Y	10	**K**	−20
Z	−18	**I**	133
T	158	**L**	−13

Page 195

S	−1	**E**	−1
O	9	**T**	18
I	18	**N**	3
C	2	**A**	−5
T	9	**L**	−5
E	−4	**C**	−1
O	−1	**W**	3
O	3	**M**	−4
A	2	**B**	2
L	−5	**M**	−1
K	2		

It all comes back to me now

Page 196

Students may find it helpful and interesting to discuss an example of each formula before they begin work on this puzzle. You may wish to discuss the units of measurement used in each formula.

1.	320	H
2.	220	E
3.	60	O
4.	210	Y
5.	20	N
6.	31	F
7.	9	V
8.	170	L
9.	32	R
10.	15	C
11.	144	D
12.	6400	A
13.	0.24	G
14.	15.36	P
15.	75	C
16.	240	M

I really gave him a piece of my mind

Page 197

You may want to have students show on a separate paper how they arrived at each answer.

Yes: W H I S T L E R S M O T H E

No: R W A S F R A M E D

Whistler's mother was framed

Page 198

You may want to have students show on a separate paper a proof that each of their answers is a solution.

1.	2	**12.**	4
2.	−2	**13.**	7
3.	7	**14.**	9
4.	4	**15.**	−2
5.	−1	**16.**	8
6.	−2	**17.**	−3
7.	−10	**18.**	−7
8.	−5	**19.**	−8
9.	4	**20.**	−4
10.	−3	**21.**	3
11.	−2	**22.**	6

You peso much and you own it (pay so much)

Page 199

H	−14	**P**	−21
I	12	**S**	27
O	24	**Y**	64
U	13	**C**	−84
E	−11	**W**	−24
R	−35	**N**	43
L	−25	**M**	−17
A	34	**T**	42

The yam is a sweet potato while the announcer is a common tater (a commentator)

Page 200

There are a lot of people in the world who are still trying to decide whether or not splitting the atom was a wise crack

Page 201

Firepole used for false alarms

O	4	**M**	−1
A	7	**U**	9
D	14	**P**	5
I	−6	**R**	−21
S	−8	**L**	−11
E	−3	**F**	2

Two white rabbits in a snowstorm

I	11	**H**	12
M	2	**R**	25
A	−15	**W**	−17
O	−13	**B**	−4
E	−7	**T**	−30
N	24	**S**	6

Page 202

1.	14	**9.**	42
2.	−12	**10.**	−72
3.	28	**11.**	60
4.	−40	**12.**	200
5.	−24	**13.**	−198
6.	45	**14.**	−50
7.	−39	**15.**	180
8.	56	**16.**	54
17.	−55	**20.**	38
18.	144	**21.**	96
19.	−9		

Rhyme doesn't pay (Crime doesn't pay)

Page 203

Look at that can of people

He was jumping for Joy

I	−8	**S**	5
E	9	**L**	−56
K	−33	**G**	28
F	31	**H**	7
W	−6	**C**	−96
R	100	**A**	−35
T	−12	**P**	39
U	−24	**O**	36
N	130	**J**	25
Y	−69		

Page 204

The curious young science student who sat up all night trying to figure out where the sun goes until it finally dawned on him

Page 205

Old mailmen never die, they just lose their zip

Old chemists never die, they just fail to react

Old burglars never die, they just steal away

H	1 3/4
O	−4 1/3
Y	−2 1/2
T	3/5
W	10 1/2
E	2/5
U	−5 5/7
G	−20
M	−4/9
N	3 1/3
B	1 5/6
P	−10
I	7 1/5
F	−3/4
R	−8
Z	6/7
C	1 5/7
A	6 2/3
L	−1/15
S	−4

Page 206

Some farmers are selling something they call pirate corn because it costs a buck an ear (a buccaneer)

Page 207

You may wish to integrate the puzzles on problem solving (pages 213–220) with this puzzle and with the following puzzles on equations.

Each has a point

The Nobelly Prize

His boss chewed him out

S	5	**D**	−1
M	−2	**Y**	9
T	−7	**P**	−8
U	12	**C**	18
N	−4	**F**	−3
A	10	**O**	7
W	6	**B**	14
I	3	**E**	−5
K	−15	**H**	4
L	−6	**R**	−11
Z	8		

Page 208

A dumb criminal

In favor of the metric system

R	32	**C**	44
O	14	**L**	−28
Y	36	**F**	−5
E	4	**T**	−180
B	−8	**D**	45
A	−50	**V**	19
N	−72	**S**	18
U	21	**I**	−40
H	6	**M**	−63

Page 209

Sand

1.	−3/5
2.	1 1/2
3.	−21
4.	8
5.	−4/7
6.	5 1/3
7.	−2 1/4
8.	−1/4
9.	−2 2/3
10.	5
11.	−20
12.	−6 1/2
13.	12
14.	1 3/7
15.	3
16.	−3 1/3
17.	60
18.	−6
19.	4 1/4
20.	2 3/5
21.	−2 1/7
22.	−18
23.	8/9
24.	−10

Page 210

Quarter that joined the March of Dimes

I	4	**H**	−3
E	−7	**O**	−1
C	1	**U**	−6
F	3	**D**	8
A	6	**R**	2
S	−2	**Q**	18
N	−4	**T**	−5
J	7	**M**	−13

Page 211

1.	1 3/5
2.	−2 1/2
3.	−2/3
4.	1 1/4
5.	−5/12
6.	13/14
7.	10
8.	−5 1/2
9.	7 1/2
10.	−1
11.	7/15
12.	−5 1/4
13.	−4 5/8
14.	3/16
15.	−1/5
16.	7

He had trouble getting a date

Page 212

You might suggest that students use a ruler to connect the dots. Blanks are provided for the solutions, to help students avoid skipping a solution when connecting the dots.

1.	3	**10.**	−14
2.	6	**11.**	1
3.	4	**12.**	−7
4.	−2	**13.**	−3
5.	−9	**14.**	18
6.	13	**15.**	−21
7.	5	**16.**	−7
8.	−8	**17.**	10
9.	−2	**18.**	3

Page 213

Circular centipede under a beach umbrella

D	6	**M**	5
L	−3	**P**	−14
N	7	**U**	8
H	2	**T**	1
A	−4	**R**	−25
I	10	**E**	−1
B	−12	**C**	−9

Page 214

F	19	**T**	6
H	7	**G**	11
E	27	**A**	4
I	14	**I**	21
S	22	**T**	2

O	18	**H**	20
S	5	**R**	28
E	26	**I**	1
H	16	**L**	13
W	3	**C**	23
I	10	**H**	9
A	24	**T**	17
G	15	**R**	25
E	8	**H**	12

It was the highlight of his career

Page 215

I	24	**S**	15
E	21	**T**	14
A	−10	**W**	600
T	−12	**R**	4200
Y	70	**K**	272
I	−240	**D**	80
A	48	**R**	1800
T	453		

It was a dirty trek (dirty trick)

Page 216

1.	8	**8.**	−32
2.	−4	**9.**	6296
3.	11	**10.**	27
4.	5	**11.**	555
5.	54	**12.**	96
6.	−3	**13.**	78
7.	16	**14.**	119

They both have the same middle name

Page 217

1. 9, 36
2. 11, 33
3. 20, 27
4. 14, 24
5. 13, 18
6. 8, 17
7. 10, 58
8. 15, 27
9. 7, 26
10. 32
11. 12

It's twirly (too early)

Page 218

1. 4, 28
2. 8, 21
3. 30, 12
4. 29, 38
5. 5, 44
6. 93, 20
7. 31 m, 44 m
8. 11, 59
9. 24, 6, 15
10. 10, 20, 19
11. 4, 36, 39
12. 30°, 70°, 80°

When he's hanging by his teeth

Page 219

Eileen Dover

Rusty Hinges

Adaline Moore

L	3	**I**	−7
V	−2	**Y**	1
G	−4	**A**	−1
D	6	**S**	10
M	2	**U**	−15
R	−5	**O**	12
T	−9	**E**	4
H	8	**N**	−11

Page 220

The famous rodeo rider who would do anything for a buck

A	3	**G**	4, 9
B	11	**H**	5, 8
C	5	**I**	19, 10
D	−2	**J**	1, 3
E	7	**K**	8, 2
F	−4		

Page 221

1.	N	**6.**	P
2.	A	**7.**	R
3.	H	**8.**	V
4.	E	**9.**	B
5.	O	**10.**	T

To prevent bat breath (bad breath)

Page 222

1. D
2. I
3. G
4. Y
5. A
6. H
7. R
8. L
9. S
10. U
11. N
12. F
13. O
14. P
15. W
16. E
17. M
18. J

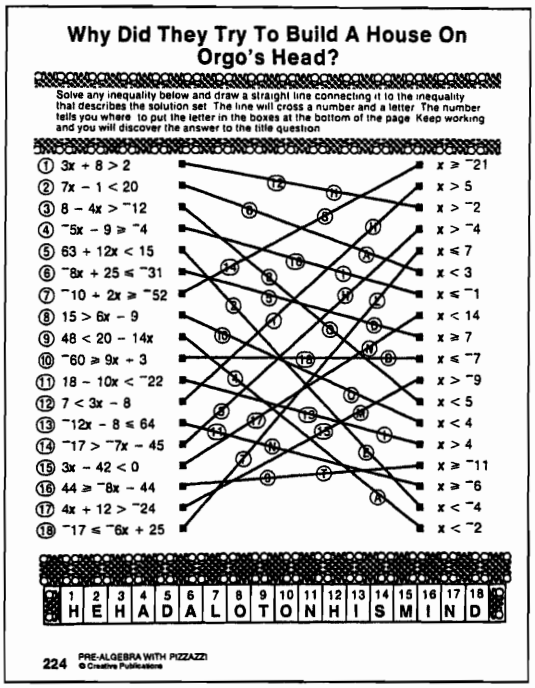
He wondered why he was feeling so jumpy

Page 223

1. N
2. L
3. O
4. U
5. C
6. S
7. E
8. G
9. K
10. W
11. F
12. N
13. H
14. E
15. U
16. U
17. A
18. S
19. A
20. I
21. G
22. P
23. E
24. L
25. C

Chickens use fowl language

Page 224



It was living on spins and needles (pins and needles)

Page 225

The cross-eyed college professor who seemed to have absolutely no control over his pupils

Page 226

1. IF
2. AN
3. AX
4. DROPS
5. ON
6. YOUR
7. CAR
8. YOU
9. MIGHT
10. HAVE
11. AN
12. AX
13. DENT

(an accident)

Page 227

You may wish to have students express some of the unions in the left column as compound inequalities using the word "or" (e.g. $\{ x \mid x > 2 \text{ or } x < -1 \}$).

1.	D	**8.**	V
2.	O	**9.**	E
3.	W	**10.**	T
4.	I	**11.**	L
5.	G	**12.**	N
6.	A	**13.**	S
7.	P		

Page 228

You may wish to have students express some of the intersections in the left column as compound inequalities using the word "and" (e.g. $\{ x \mid x > -2 \text{ and } x < 3 \}$) or, where appropriate, in compact form (e.g. $\{ x \mid -2 < x < 3 \}$).

1.	O	**8.**	V
2.	A	**9.**	H
3.	T	**10.**	B
4.	W	**11.**	I
5.	N	**12.**	E
6.	U	**13.**	R
7.	Y		

Where in earth have you been?

Page 229

You may wish to have students rewrite exercises 2, 4, 6, and 14 in compact form (e.g. $\{ x \mid -3 \leq x < 2 \}$).

1.	G	**8.**	M
2.	N	**9.**	I
3.	H	**10.**	E
4.	T	**11.**	B
5.	U	**12.**	S
6.	O	**13.**	A
7.	L	**14.**	P

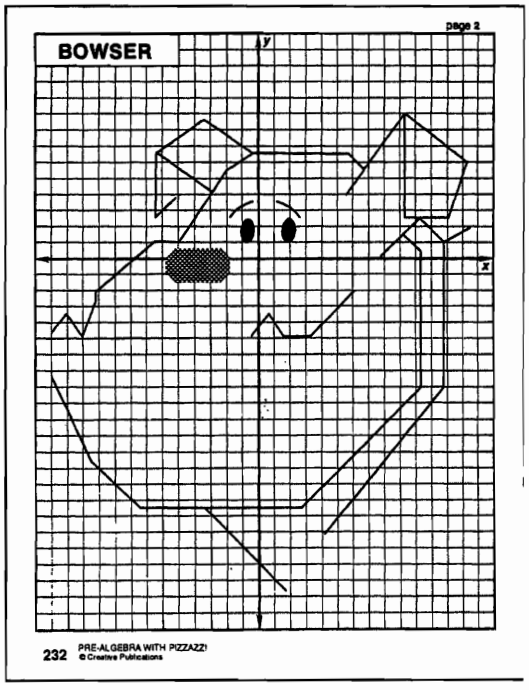
Someone eating alphabet soup

Page 230

I never knew we both lived on the same block

Page 231–232

Numbers are not printed along the *x*-axis and the *y*-axis, as it is felt students may benefit from doing this themselves. An overhead transparency of this page may prove helpful in getting students started.



Page 233

Coordinate grids suitable for graphing these functions are provided on page 234.

1.	10	26	S
	6	9	T
	0	3	E
	−2	21	D
	−10	15	H
2.	3	32	L
	0	12	E
	−4	29	A
	−6	28	N
	−9	35	O
3.	6	1	T
	3	24	L
	0	13	E
	−6	20	N
	−9	16	O
4.	−10	2	H
	−6	7	N
	0	25	E
	4	4	Y
	6	8	T
5.	−9	27	O
	−4	31	A
	1	11	R
	11	17	U
6.	8	23	I
	−4	19	A
	−7	5	W
	−10	10	H
7.	3	33	L
	0	6	E
	−5	22	M
	−6	36	N
8.	10	18	S
	6	14	T
	0	34	E
	−8	30	G

They went three thousand miles on a galleon (on a gallon)

Page 235

Coordinate grids suitable for graphing these functions are provided on page 236.

1.	10	E
	3	A
	−2	H
	−5	N
	−6	I
	−5	S
	−2	E
	3	O
	10	D
2.	12	E
	5	T
	0	A
	−3	E
	−4	D
	−3	T
	0	S
	5	E
	12	I
3.	−9	B
	−2	A
	3	H
	6	S
	7	E
	6	U
	3	B
	−2	C
	−9	T
4.	11	N
	1	W
	−5	E
	−7	H
	−5	S
	1	R
	11	K

Because he wanted to kiss behind the ears

Page 237

It is not intended that students graph these functions, but rather that they be exposed to a variety of more complex functions.

1.	6	L
	0	E
	−1	R
	−2	T
2.	9	S
	−7	E
	28	O
	−124	T
3.	−3	E
	−15	L
	−35	A
	1	O
4.	2	E
	5	H
	11	E
	101	U
5.	25	E
	16	R
	49	E
	100	I
6.	4	H
	−12	S
	900	V
	−1100	T
7.	3	C
	7	N
	15	G
	63	H
8.	8	D
	−24	G
	−8	C
	−6	V

He could never get his calves together

Page 238

1.	(2, 1)	(−2, 9)
	(3, −1)	(−1, 7)
2.	(2, 7)	(−1, −2)
	(0, 1)	(−3, −8)
3.	(−1, 2)	(3, 0)
	(5, −3)	(0, 0)
4.	(2, 5)	(1, 7/2)
	(−1/3, 3/2)	(−2, −1)
5.	(0, 2)	(−5, 1)
	(1, 2/5)	(2, 3)
6.	(−6, 2)	(−1/2, −1/5)
	(−1, 0)	(3/2, −1)

Cowboys like to horse around

Page 239

L	6	**R**	13
F	15	**V**	5
A	10	**O**	16
U	3	**M**	7
T	12	**H**	17
E	18	**B**	2
S	8	**I**	14
Y	1	**N**	11
D	9	**C**	4

They could never find another man of his calibre

Page 240

Since the graph of each equation is a straight line, only two solutions are needed. The simplest solutions are of the form $(x, 0)$ and $(0, y)$.

She lost her whey (lost her way)

Page 241

You may want to provide students with copies of page 233 (or print it on the back of this page) for graphing these systems of equations.

The old cow who finally kicked the bucket

A	(3, −1)
B	(2, 3)
C	(−2, 1)
D	(4, 0)
E	(−1, −2)
F	(1, −4)
G	(−3, 2)
H	(4, 1)

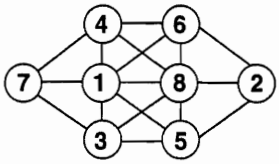
Page 242–243

1. O
2. E
3. H
4. M
5. T
6. C
7. N
8. Y
9. L
10. R
11. A
12. S

They start on a small scale

Page 244

1.



2. 6, 210, 001, 000
3. 6
4. 12
5. One vial of water in one box, the other 11 vials in the other box
6. 99 99/99
7. They are the first letters of the number words (one, two, three ... hundred).