COMPENDIUM PIZZAZZ!

Book E

Gerard Romo Garrido

TeeMates
Coolección

Toomates Coolección

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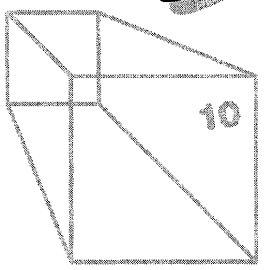
Middle School Math with Pizzazz!



10 20 30 40 50 60 70 80 90

Ratio and Proportion; Percent; Statistics and Graphs; Probability; Integers; Coordinate Graphing; Equations

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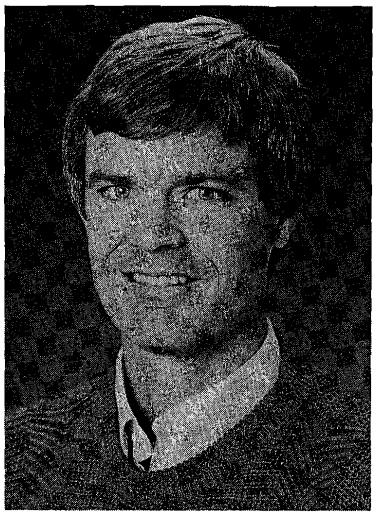

Steve Marcy and Janis Marcy

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NOTES FROM THE AUTHORS

MIDDLE SCHOOL MATH WITH PIZZAZZ! is a series of five books designed to provide practice with skills and concepts taught in today's middle school mathematics programs. The series uses many of the same puzzle formats as *PRE-ALGEBRA WITH PIZZAZZ!* and *ALGEBRA WITH PIZZAZZ!* both published by Creative Publications.

We believe that mastery of math skills and concepts requires both good teaching and a great deal of practice. Our goal is to provide puzzle activities that make this practice more meaningful and effective. To this end, we have tried to build into these activities three characteristics:

1. **KNOWLEDGE-OERESULTS.** Various devices are used in the puzzles to tell students whether or not their answers are correct. 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. He or she can then try again or ask for help. Additional feedback and reinforcement occurs when the student finds a puzzle solution that is appropriate. This immediate knowledge of results benefits students and also teachers, who no longer have to spend time confirming correct answers.

2. **A MOTIVATING GOAL FOR THE STUDENT.** The puzzles are designed so that students will construct a joke or unscramble the answer to a riddle in the process of checking their answers. The humor operates as an incentive, because the students are not rewarded with the punch line until they complete the exercises. While students may decry these jokes as "dumb" and groan loudly, our experience has been that they enjoy the jokes and look forward to solving the puzzles. The humor has a positive effect on class morale. In addition to humor, the variety and novelty of procedures for solving the puzzles help capture student interest. By keeping scrambled answer lists short and procedures simple, we have tried to minimize the time spent on finding answers or doing other puzzle mechanics.

3. **CAREFUL SELECTION OF TOPICS AND EXERCISES.** The puzzles within each topic area are carefully sequenced so that each one builds on skills and concepts previously covered. The sequence of exercises within each puzzle is designed to guide students in incremental, step-by-step fashion toward mastery of the skill or concept involved. A primary goal is the development of problem-solving ability. In order to solve problems, students need not only rules and strategies but also a meaningful understanding of basic concepts. Some puzzles in this series are designed specifically to build concepts. Other puzzles, especially those for estimation, also help deepen students' understanding by encouraging them to look at numbers as quantities rather than just as symbols to be manipulated. For puzzles specifically keyed to problem solving, we have tried to write problems that are interesting and uncontrived. We have included extra information in some problems, and have also mixed problem types within sets, so that the problems cannot be solved mechanically.

In addition to these efforts to make the puzzles effective, we have tried to make them easy to use. The topic for each puzzle is given both at the bottom of the puzzle page and in the Table of Contents on pages iv and v. Each puzzle is keyed to a specific topic in recent editions of leading middle school textbooks. Each puzzle requires duplicating only one page, and many of them provide space for student work. Finally, because the puzzles are self-correcting, they can eliminate the task of correcting assignments.

We hope that both you and your students will enjoy using these materials.

Steve and Janis Marcy

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NOTES ABOUT USING THE PUZZLES

The selection of topics for ***MIDDLE SCHOOL*** MATH WITH *PIZZAZZ!* reflects recent thinking about what is important in an updated middle school math program. Virtually every puzzle can be matched with a particular lesson in recent editions of popular textbooks. After students have received instruction in a topic and worked some sample exercises, you might assign a puzzle along with a selection of textbook exercises.

Students in the middle grades should begin to classify many mathematics problems and exercises into one of three categories:

1. **MENTAL MATH.** Problems for which an exact answer can be obtained mentally.

2. **ESTIMATION.** Problems for which an approximate answer, obtained mentally, is sufficient.

3. **TOOLS.** Problems requiring an exact answer that cannot be obtained mentally. Students will use paper and pencil and/or calculators.

Some of the puzzles in this series focus specifically on one of these categories. A few puzzles actually present problems in all three categories and ask the student to make the classification.

By the time they reach the middle grades, students should generally be permitted to use calculators for problems that require tools (Category 3). The most common argument against calculator use is that students will become overly dependent on them. This concern, though, appears to be based primarily on fear that students will rely on the calculator for problems in Categories 1 and 2, those that should be done mentally.

To solve problems in Category **3,** calculators are wonderful tools for computing. Students may also need paper and pencil to make diagrams, write equations, record results, etc., so they will need both kinds of tools. On the other hand, students should not need calculators for problems in Categories 1 and 2, problems that call for mental math or estimation. Skills in these areas are essential not only in daily life but also for the intelligent use of the calculator itself. The puzzles in this series reflect these three categories and the distinction between them.

When students do use calculators, you may want to have them write down whatever numbers and operations they punch in and their answers. This makes it easier to identify the cause of any error and assists in class management. Even when students do mental math or estimation puzzles, have them write a complete list of answers and, where appropriate, the process used to get the answers. Encourage students to write each answer before locating it in the answer list. Students should complete all the exercises even if they discover the answer to the joke or riddle earlier.

One advantage of using a puzzle as an assignment is that you can easily make a transparency of the page and display the exercises without having to recopy them on the board. You can then point to parts of a problem as you discuss it. It is often helpful to cut the transparency apart so that you can display exercises on part of the screen and write solutions on the remaining area.

Other books by Steve and Janis Marcy
published by Creative Publications

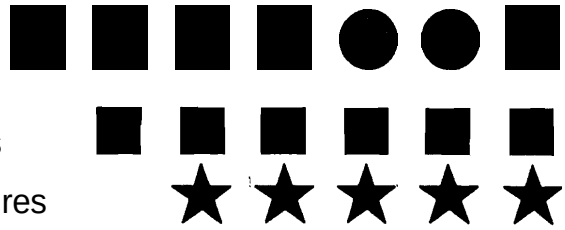
Pre-Algebra With Pizzazz! in a Binder
Covers most topics in a pre-algebra curriculum

Algebra With Pizzazz! in a Binder
Covers most topics in a first-year algebra curriculum

What Happened When There Was a Kidnapping at Bizarre Middle School?

Write each ratio in simplest form, then find your answer at the bottom of the page. Write the letter of the exercise in the box above the answer.

I. Write .eachratio.



(E) Stars to squares
(H) squares to circles
(M) Stars to circles
(O) Circles to stars
(T) Stars to all figures
(E) Squares to all figures

II. A TV screen is 15 in. high and 20 in. wide. Write each ratio.

(H) Height to width
(A) Width to height

III. A magazine photograph is 24 cm long and 16 cm wide. Write each ratio.

24 cm

16 cm

(E) Length to width
(P) Width to length

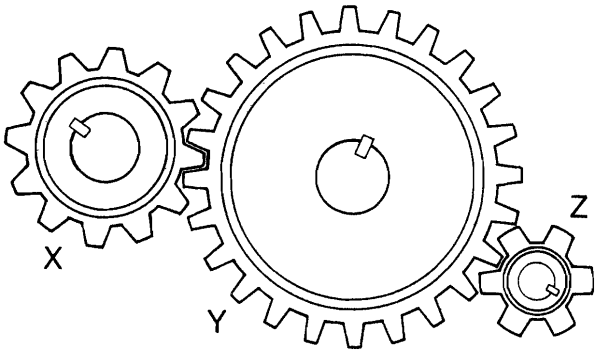
IV. There are 30 students in a class, including 16 boys. Write each ratio.

(H) Girls to boys
(E) Girls to all students
(R) Boys to girls
(I) Boys to all students

V. A fire-breathing swamp monster is 36 feet tall. When last observed, his shadow was 40 feet long. Write each ratio.

(T) Height of monster to length of shadow
(W) Length of shadow to height of monster

VI. Count the number of teeth on each gear. Then write each ratio.



(C) Teeth on Gear X to teeth on Gear Y
(U) Teeth on Gear Y to teeth on Gear Z
(K) Teeth on Gear X to teeth on Gear Z

$\frac{5}{18}$	$\frac{6}{7}$	$\frac{7}{15}$	$\frac{2}{5}$	$\frac{9}{10}$	$\frac{5}{6}$	$\frac{4}{3}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{1}{3}$	$\frac{8}{7}$	$\frac{5}{4}$	$\frac{10}{9}$	$\frac{7}{5}$	$\frac{2}{1}$	$\frac{3}{2}$	$\frac{7}{11}$	$\frac{3}{4}$	$\frac{8}{15}$	$\frac{5}{7}$	$\frac{8}{3}$	$\frac{4}{1}$	$\frac{2}{3}$

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Why Did the Writer Enjoy Living in a Basement?

Do each exercise and find your answer to the right. Write the letter of the answer in the box containing the number of the exercise. If the answer has a ●, shade in the box instead of writing a letter in it.

I. Write each ratio as a fraction in simplest form.

(1) 7 to 12

(2) 9:4

(3) 8 to 10

(4) 20 to 12

(5) 25:50

(6) 6 out of 15

(7) 80 to 60

(8) 35 out of 100

(9) 78 out of 780

(10) 90:30

(11) The ratio of wins to tosses for a team with 60 wins and 90 losses.

(12) The ratio of girls to boys in a 7th grade class with 300 girls and 250 boys.

(13) The ratio of red to blue for a purple paint made by mixing 24 oz of red with 28 oz of blue.

(14) The ratio of blue to red for a purple paint made by mixing 24 oz of red with 28 oz of blue.

Answers:

(H) $\frac{8}{5}$ (T) $\frac{4}{5}$

(A) $\frac{1}{10}$ ● $\frac{4}{3}$

● $\frac{6}{5}$ (D) $\frac{3}{10}$

(A) $\frac{7}{12}$ (S) $\frac{1}{2}$

of of

(A) $\frac{7}{6}$ (E) $\frac{9}{4}$

● $\frac{5}{3}$ (I) $\frac{6}{7}$

(E) $\frac{2}{3}$ (R) $\frac{2}{5}$

II. Write the ratio of the two measurements in the unit indicated (a *unit* rate).

(15) A car traveled 300 miles on 15 gallons of gas. (miles per gallon)

(16) Ima Smurf typed 120 words in 3 minutes. (words per minute)

(17) Dr. Cranium traveled 2,800 miles in 5 hours: (miles per hour)

(18) A gear revolved 960 times in 30 minutes. (revolutions per minute)

(19) Gloria Trench earned $144 in 8 hours. (dollars per hour)

(20) Roger Bannister ran 5,280 feet in 4 minutes. (feet per second) (HINT 4 min = ___?___ s)

Answers:

(M) 48 (B) 560

(C) 32 (L) 22

(T) 15 ● 20

(W) 40 (N) 520

(S) 18 (E) 36

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

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CRYPTIC QUIZ

1. What should the JOLLY GREEN GIANT receive?

6	5	18	11	16	15	52	18	70	2	80	18	9	12	13	80	20	30	1	18

2. Why did it take the GOAT more than 3 hours to finish a 20-page book?

5	18	21	8	9	12	16	6	24	4	18	20	3	60	5	10	16	7	20	3

Solve each proportion and find your answer in the code. Each time the answer appears, write the letter of the exercise above it.

(I) $\frac{2}{5} = \frac{12}{n}$ (S) $\frac{3}{4} = \frac{9}{n}$ (G) $\frac{6}{2} = \frac{21}{n}$

(O) $\frac{10}{4} = \frac{n}{6}$ (Y) $\frac{5}{15} = \frac{n}{9}$ (T) $\frac{12}{8} = \frac{n}{4}$

(U) $\frac{2}{n} = \frac{5}{25}$ (A) $\frac{33}{n} = \frac{11}{3}$ (L) $\frac{49}{n} = \frac{7}{10}$

(V) $\frac{n}{6} = \frac{6}{9}$ (Z) $\frac{n}{4} = \frac{18}{72}$ (H) $\frac{n}{2} = \frac{50}{20}$

(W) $\frac{14}{n} = \frac{7}{4}$ (E) $\frac{8}{12} = \frac{12}{n}$ (B) $\frac{n}{13} = \frac{4}{1}$

(R) $\frac{24}{6} = \frac{n}{5}$ (N) $\frac{n}{10} = \frac{40}{25}$ (P) $\frac{24}{n} = \frac{30}{100}$

What Did Snidely Say After Filling His Car With Super Premium, TopTest, Power Plus Gasoline?

Solve each problem and find your answer in the rectangle below. Cross out the box that contains your answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

1. The Jelly Junior High school color is made by mixing red paint with yellow paint. The ratio of red to yellow is 3 to 5. How much red paint should be mixed with 20 oz of yellow?
_____ oz

2. The Lawn Order lawnmower factory can produce 12 lawnmowers in 8 hours. How many hours will it take the factory to produce 30 lawnmowers?
_____ h

3. An object that weighs 10 lb on Earth would weigh only 4 lb on Mars. If you weigh 95 lb on Earth, how much would you weigh on Mars? _____ lb

4. The ratio of orange juice to pineapple juice in Tropical Treat punch is 4 to 3. Bill has 64 oz of orange juice. How much pineapple juice does he need?
_____ oz

5. A cookie recipe for 60 cookies calls for 4 cups of flour. How much flour is needed to make 90 cookies?
_____ cups

6. Jose can read 7 pages of his book in 5 minutes. At this rate, how long will it take him to read the entire 175-page book? _____ min

7. While exercising, Julie found that her heart was beating 12 times every 5 seconds. How many times was it beating per minute (60 seconds)?
_____

8. If there are 1,200 calories in 8 oz of hot fudge, how many calories are in 3 oz of hot fudge? _____ cal

9. At a certain college, the ratio of men to women is 6 to 5. If there are 1,500 men, how many women are there?
_____

10. One of the world's largest stained-glass windows is at Kennedy international Airport in New York. It is a rectangle with a height to length ratio of 2 to 25. If the window is 24 feet high, how long is it? _____ ft

HI	PU	TA	KE	EP	JU	NK	IN
450	48	1,210	300	12	125	340	20
GO	TO	HO	OD	NE	ED	GA	SS
136	1,250	6	15	40	144	38	7

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Did You Hear About...

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

Use a calculator to do each exercise. Find your answer and notice the word next to it. Write this word in the box containing the letter of the exercise.

I. Solve. Round each answer to the nearest tenth.

(A) $\frac{7.5}{12} = \frac{4.2}{x}$

(B) $\frac{15}{8} = \frac{80}{x}$

(C) $\frac{6}{9.4} = \frac{x}{32}$

(D) $\frac{7.9}{x} = \frac{1}{25}$

(E) $\frac{12}{x} = \frac{3.14}{1}$

(F) $\frac{x}{58} = \frac{37.5}{100}$

II. Solve. Round each answer to the nearest whole number.

(G) Tom's red bicycle travels 50 ft for every 3 pedal turns. How many pedal turns are needed to travel a mile (5,280 ft)?

(H) For a survey, a company decided to call 7 out of every 5,000 people. How many people should be called in a town of 78,000 people?

(I) Gloria Trench checked her gas mileage and found that she had used 16.6 gal of gas to travel 372 mi. At this rate, how many gallons will she use to travel from San Francisco to Washington, D.C., a distance of 2,850 mi?

(J) A U.S. nickel contains 3.9 g of copper and 1.2 g of nickel. How many kilograms of copper must be combined with 500 kg of nickel to make nickel coins?

(K) On the stock exchange, 100 shares of Pizzazz Corp. stock are selling for $425. How many shares can be purchased for $1,000?

(L) At Paul Bunyon's logging camp, the cook scrambled 20 eggs for every 3 loggers. How many eggs did he need for the 288 loggers at the camp?

24.7 PIECES
21.8 STORIES
1,840 FAINTED
197.5 DROPPED
19.6 THAT
1,625 CAN
6.7 THE
116 BOX
20.4 WHO
127 TRASH
1,355 PILE
317 INTO
235 AND
3.8 TEN
42.7 WRITER
109 A
324 FROM
1,920 LIVED
211.5 WROTE

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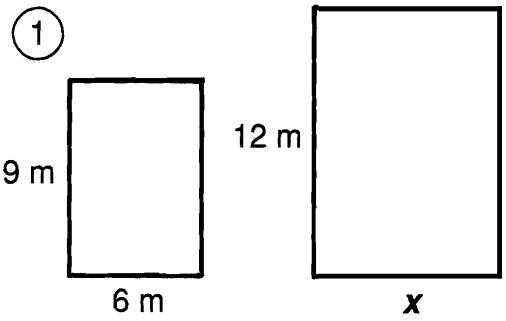
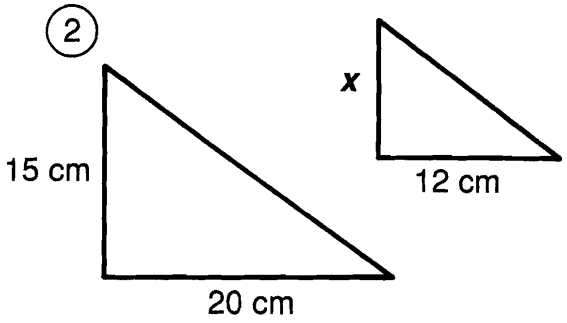
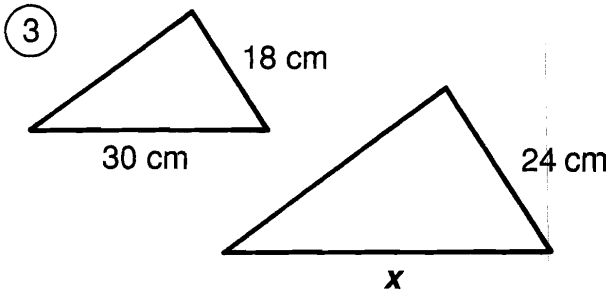
What Is a Termite's Favorite Breakfast?

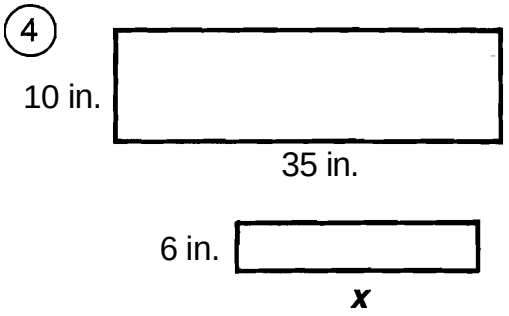
For each pair of similar figures, find the length x. Cross out the letter next to your answer. When you finish, the answer to the title question will remain.

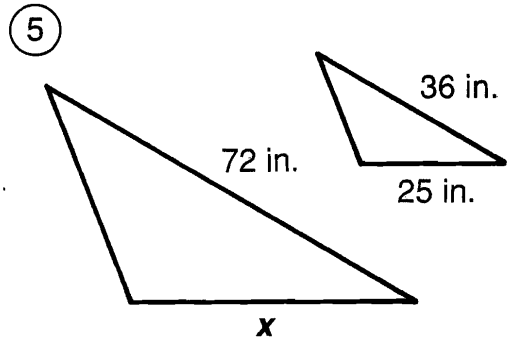
W	42 m
F	40 cm
O	48 in.
O	18 m
C	10 cm
A	44 cm
D	21 in.
K	46 m
M	16 ft
S	12 cm
E	24 in.
G	8 m
G	50 in.
A	20 m
T	15 ft
L	14 cm
E	9 cm

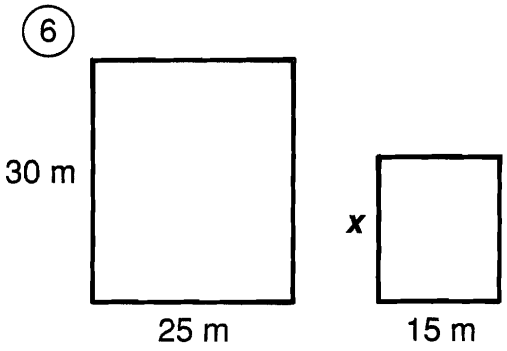


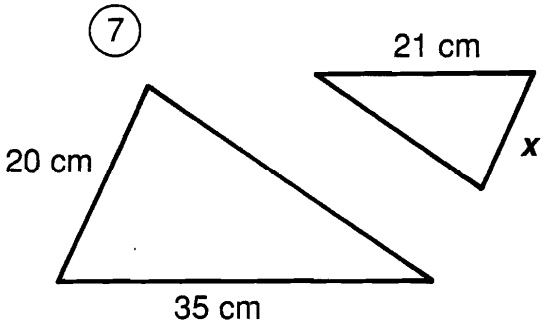


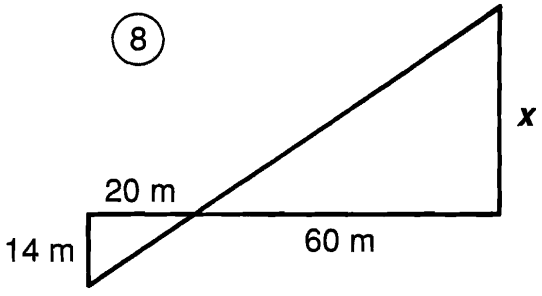












(9) A flagpole casts a shadow 10 ft long. If a man 6 ft tall casts a shadow 4 ft long at the same time of day, how tall is the flagpole?

(10) A photograph is 25 cm wide and 20 am high. It must be reduced to fit a space that is 8 cm high. Find the width of the reduced photograph.

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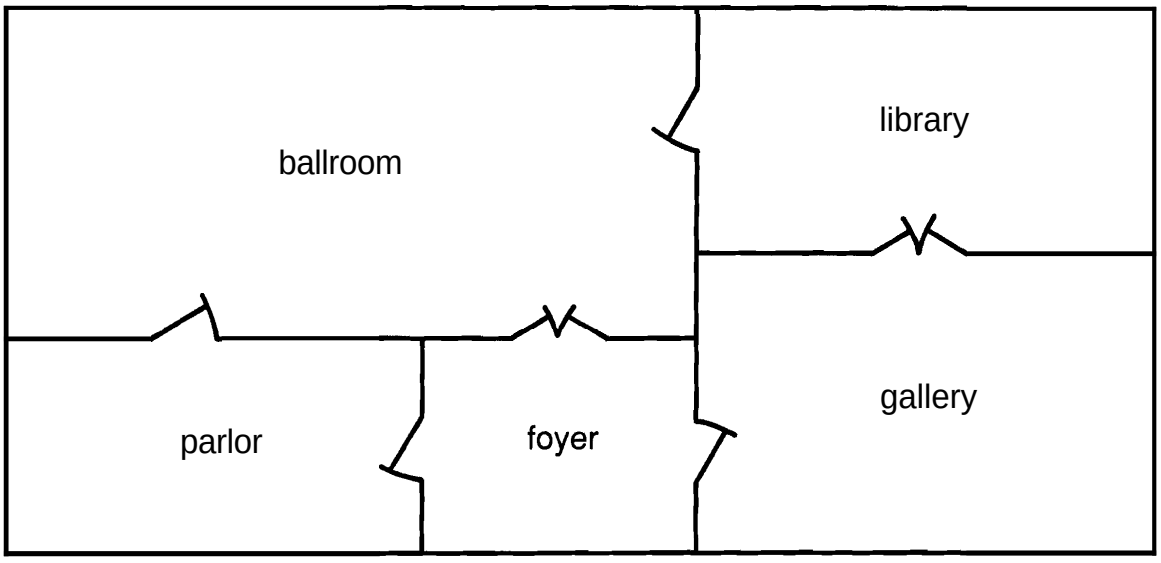
What *Goes* Ha! Ha! Ha! Thud?

Scale → 2 cm : 3 m



This is a scale drawing of one floor in a European castle. Do each exercise and find your answer in the adjacent answer column. Write the letter of the answer in each box containing the number of the exercise.

I. One dimension is given for each room. Measure to find the other dimension to the nearest tenth of a centimeter.

(1) ballroom 4.3 cm by _____

(2) library 3.2 cm by _____

(3) parlor 2.8 cm by _____

(4) foyer 2.8 cm by _____

(5) gallery _____ by 6.0 cm

(U) 3.6 cm (N) 6.0 cm

(K) 6.3 cm (V) 3.4 cm

(S) 9.1 cm (O) 5.5 cm

(E) 3.9 cm (B) 8.4 cm

II. Find the actual room dimensions. ("Length" refers to the longer dimension and "width" to the shorter dimension.)

(6) length of the ballroom

(7) width of the ballroom

(8) length of the library

(9) width of the library

(10) length of the parlor

(11) width of the parlor

(12) length of the foyer

(13) width of the gallery

(P) 8.65 m (F) 4.2 m

(M) 9 m (I) 13.65 m

(A) 5.4 m (L) 8.25 m

(C) 13.25 m (T) 6.15 m

(D) 6.45 m (R) 5.1 m

(H) 5.85 m (G) 4.8 m

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

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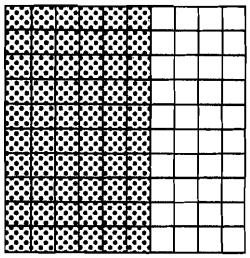
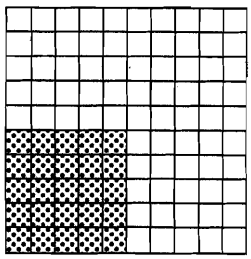
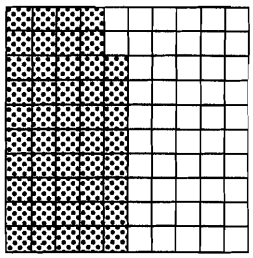
What Do Centipedes Hate To Do?

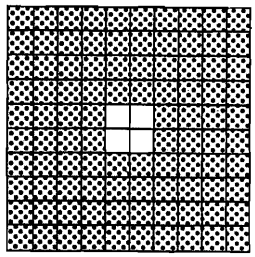
Do each exercise and find your answer at the bottom of the page. Write the letter of the exercise in the box containing the answer.

I. Write a percent for the amount shaded.

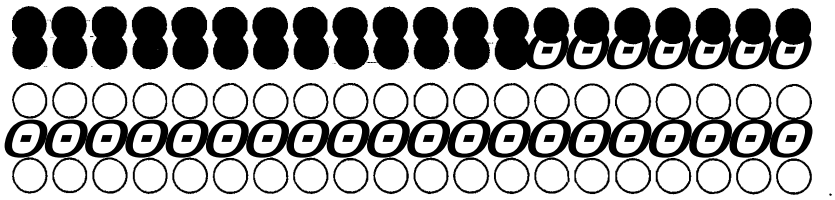
(T) 

(E) 

(F) 

(O) 

II. Write a percent for each group of circles.



(A) the shaded circles

(E) the unshaded circles

III. Write a percent for each ratio.

(S) 1 to 100	(N) 83 to 100	(O) 54 : 100	(T) 2 : 10
(W) $\frac{75}{100}$	(H) $\frac{24}{100}$	(O) $\frac{8}{10}$	(F) $\frac{5}{10}$
(H) 0.62	(O) 0.98	(Y) 0.4	(R) 0.1
(T) 0.03	(G) 0.86	(A) 0.07	(T) 1.0

IV. Solve.

(D) There are 100 centimeters in a meter. What percent of a meter is **30** cm?

(T) There are 100 cents in a dollar. What percent of a dollar is $0.15?

(O) Of the 100 million acres in California, the federal government owns **45** million acres. What percent is this?

(N) Gulliver tossed a coin 100 times and got **43** heads. What percent of the tosses were *tails?*

(F) Of 100 students surveyed, 90 chose math as their favorite subject. What percent chose math?

(R) A sheet of 100 stamps has 22 stamps left. What percent of the stamps has already been used?

1%	3%	7%	10%	15%	18%	20%	24%	25%	29%	30%	33%	40%	42%	45%	48%	50%
54%	57%	59%	60%	62%	67%	71%	75%	78%	80%	83%	86%	88%	90%	96%	98%	100%

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MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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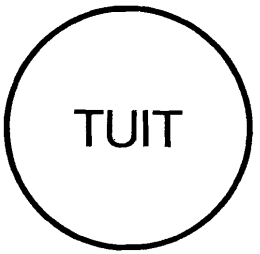
Why Did the Teacher Give One of Her Students a Button Like This One?



Write each answer and then find it in the corresponding set of answers. Print the letter of the exercise in the box above the answer.

Write each decimal as a percent.

(E) 0.33	(T) 0.65	(A) 0.91
(U) 0.47	(E) 0.16	(H) 0.82
(S) 0.04	(T) 0.07	(D) 0.01
(H) 0.2	(N) 0.9	(T) 0.5

7%	20%	33%	36%	4%	50%	47%	1%	16%	90%	65%	11%	82%	91%	

Write each fraction as a percent.

(D) $\frac{17}{100}$	(L) $\frac{75}{100}$	(A) $\frac{44}{100}$	(D) $\frac{23}{100}$
(O) $\frac{8}{100}$	(E) $\frac{3}{100}$	(D) $\frac{5}{100}$	(W) $\frac{100}{100}$
(H) $\frac{6}{10}$	(S) $\frac{4}{10}$	(U) $\frac{7}{10}$	(I) $\frac{1}{10}$

5%	14%	40%	44%	10%	17%	81%	60%	3%	42%	100%	8%	70%	75%	23%	64%

Write each percent as a decimal.

(E) 25%	(D) 67%	(G) 39%
(H) 98%	(S) 13%	(E) 71%
(N) 3%	(U) 8%	(H) 2%
(Y) 40%	(W) 90%	(T) 50%

0.13	0.5	0.08	0.67	0.4	0.21	0.9	0.98	0.25	0.03	0.78	0.02	0.71	0.50	0.39

Write each percent as a fraction in lowest terms.

(U) 23%	(T) 7%	(O) 81%
(D) 10%	(A) 25%	(T) 60%
(I) 90%	(O) 35%	(T) 2%
(N) 75%	(R) 5%	(U) 50%

$\frac{81}{100}$	$\frac{3}{5}$	$\frac{3}{10}$	$\frac{1}{4}$	$\frac{9}{25}$	$\frac{1}{20}$	$\frac{7}{20}$		$\frac{3}{4}$	$\frac{1}{10}$	$\frac{4}{5}$	**1-18**	$\frac{1}{2}$	$\frac{9}{10}$	$\frac{1}{50}$

Why Didn't Dexter Want a Pocket Calculator?

Do each exercise and find your answer in the answer columns. Write the letter of the exercise in the box containing the number of the answer.

I. Write each percent as a fraction in lowest terms.

(W) 20%
(A) 15%
(H) 25%
(Y) 30%
(R) 4%
(W) 18%
(S) 13%
(E) 95%
(E) 80%
(K) 45%
(E) 75%
(D) 70%
(O) 36%
(A) 66%
(H) 49%
(Y) 50%

ANSWERS

(29) $\frac{4}{5}$ (17) $\frac{49}{100}$ (21) $\frac{3}{20}$ (26) $\frac{9}{25}$
(1) $\frac{1}{4}$ (38) $\frac{7}{10}$ (19) $\frac{9}{50}$ (12) $\frac{9}{20}$
(23) $\frac{1}{2}$ (15) $\frac{1}{5}$ (2) $\frac{19}{20}$ (10) $\frac{3}{10}$
(31) $\frac{13}{100}$ (34) $\frac{3}{4}$ (6) $\frac{1}{25}$ (8) $\frac{33}{50}$

II. Write each fraction as a percent.

(A) $\frac{2}{5}$
(C) $\frac{9}{10}$
(H) $\frac{3}{25}$
(D) $\frac{1}{50}$
(T) $\frac{3}{5}$
(H) $\frac{7}{10}$
(L) $\frac{17}{20}$
(M) $\frac{24}{25}$
(E) $\frac{1}{20}$
(A) $\frac{7}{20}$
(N) $\frac{16}{25}$
(O) $\frac{23}{50}$
(E) $\frac{1}{4}$
(P) $\frac{3}{4}$
(K) $\frac{9}{100}$
(N) $\frac{67}{100}$

ANSWERS

(9) 2% (37) 40% (11) 72%
(14) 5% (18) 46% (25) 75%
(28) 9% (30) 60% (5) 85%
(33) 12% (22) 64% (24) 88%
(7) 25% (13) 67% (27) 90%
(4) 35% (36) 70% (20) 96%

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

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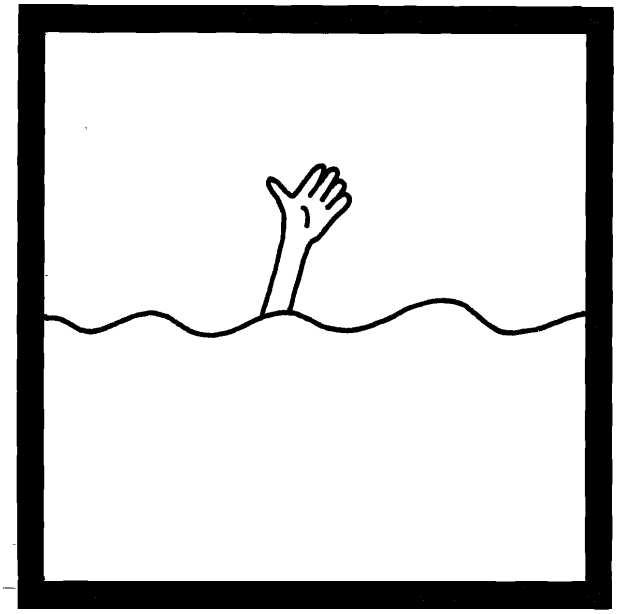
What Are the Titles?

1.



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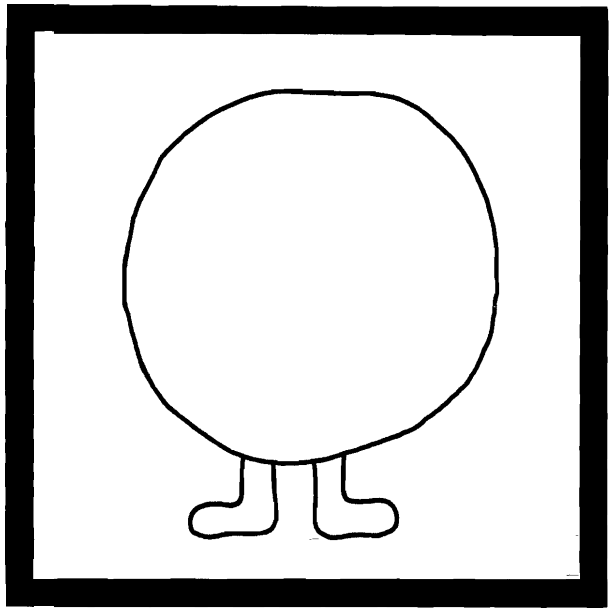

Title 1:

94%	42%	68%	13%	26%	83%	3%	15%	22%	55%	13%	6%	33%	44%	13%	42%	3%

Title 2:

57%	86%	57%	57%	23%	13%	92%	8%	86%	4%	71%	44%	55%	42%	4%	73%

TO DECODE THE TITLES OF THESE TWO PICTURES:

Write each fraction as a percent rounded to the nearest whole percent. Find your answer in the code. Each time the answer appears, write the letter of the exercise above it.

(O) $\frac{1}{3}$	(U) $\frac{6}{7}$	(T) $\frac{2}{9}$	(A) $\frac{5}{12}$
(P) $\frac{11}{15}$	(E) $\frac{1}{8}$	(I) $\frac{5}{6}$	(L) $\frac{7}{30}$
(H) $\frac{6}{11}$	(W) $\frac{15}{16}$	(G) $\frac{1}{13}$	(N) $\frac{1}{32}$
(V) $\frac{27}{40}$	(C) $\frac{4}{9}$	(M) $\frac{3}{80}$	(B) $\frac{57}{100}$

Did You **Hear About...**

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

Answers A - J:

- $57\frac{1}{6}\%$ ABOUT
- $16\frac{2}{3}\%$ HEARD
- $73\frac{5}{11}\%$ THAT
- $2\frac{1}{2}\%$ AND
- $88\frac{1}{8}\%$ THEN
- $37\frac{1}{2}\%$ THE
- $28\frac{4}{7}\%$ RAINED
- $3\frac{1}{4}\%$ MORE
- $77\frac{7}{9}\%$ WHO
- $17\frac{1}{6}\%$ SAID
- $58\frac{1}{3}\%$ IT
- $18\frac{3}{4}\%$ INCH
- $66\frac{2}{3}\%$ KID
- $29\frac{1}{7}\%$ WAS
- $87\frac{1}{2}\%$ THREE
- $72\frac{8}{11}\%$ AN
- $16\frac{1}{4}\%$ EXTRA

Do each exercise and find your answer in the appropriate answer column. Notice the word next to the answer. Write this word in the box containing the letter of the exercise.

I. Write each fraction as a percent that contains a fraction.

(A) $\frac{3}{8}$ (B) $\frac{2}{3}$ (C) $\frac{7}{9}$

(D) $\frac{1}{6}$ (E) $\frac{7}{12}$ (F) $\frac{2}{7}$

(G) $\frac{8}{11}$ (H) $\frac{3}{16}$ (I) $\frac{1}{40}$

(J) On a math quiz, Raoul got 7 out of 8 problems correct. What percent were correct?

II. Write each fraction as a percent rounded to the nearest tenth of a percent.

(K) $\frac{1}{3}$ (L) $\frac{4}{7}$ (M) $\frac{8}{9}$

(N) $\frac{5}{6}$ (O) $\frac{2}{17}$ (P) $\frac{13}{32}$

(Q) $\frac{1}{12}$ (R) $\frac{1}{15}$ (S) $\frac{5}{8}$

(T) Jennifer shot the basketball 16 times and made 7 baskets. What was her shooting percentage?

Answers K - T:

- 8.3% LOOKING
- 6.4% AROUND
- 33.3% QUARTERS
- 41.4% NIGHT
- 88.9% SPENT
- 62.5% THE
- 11.8% WHOLE
- 43.5% PUDDLES
- 57.1% AND
- 6.7% FOR
- 85.6% SEVEN
- 62.8% SOME
- 40.6% DAY
- 8.7% TRYING
- 43.8% QUARTERS
- 11.2% NEXT
- 83.3% THE

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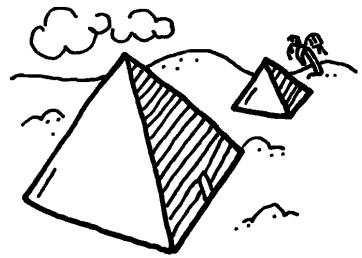
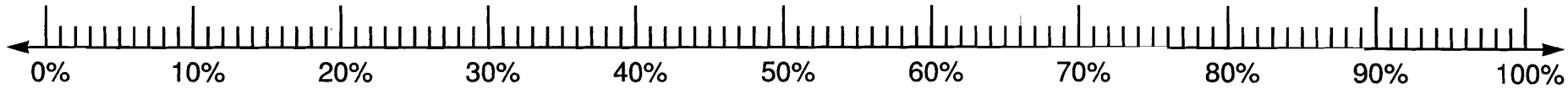
Where Is Most of the Money in Egypt Kept?



Write a percent for each fraction. Find the point on the number line that corresponds to the percent. Write the letter of the exercise above the number line at that point.



(S) $\frac{1}{2}$	(H) $\frac{1}{5}$	(N) $\frac{1}{10}$	(T) $\frac{1}{8}$	(A) $\frac{1}{3}$
(E) $\frac{1}{4}$	(K) $\frac{2}{5}$	(B) $\frac{3}{10}$	(N) $\frac{3}{8}$	(T) $\frac{2}{3}$
(E) $\frac{3}{4}$	(O) $\frac{3}{5}$	(H) $\frac{7}{10}$	(F) $\frac{5}{8}$	(I) $\frac{1}{100}$
	(N) $\frac{4}{5}$	(L) $\frac{9}{10}$	(I) $\frac{7}{8}$	(E) 1

EXTRA:

Use your answers and the number line above to put a > or < in each ◯.

$\frac{3}{10}$ ◯ $\frac{1}{3}$ $\quad$ $\frac{3}{8}$ ◯ $\frac{2}{5}$ $\quad$ $\frac{2}{3}$ ◯ $\frac{5}{8}$ $\quad$ $\frac{3}{4}$ ◯ $\frac{4}{5}$

What Happened After Old King Cole Ordered That Chopped Cabbage Must Be Mixed With Mayonnaise?

Do each exercise and find your answer in the answer column below it. Write the letter of the answer in the box containing the number of the exercise.

I. Write each percent as a decimal.

(1) 42%	(6) 9%	(11) 15%
(2) 18%	(7) 2%	(12) 62.5%
(3) 77%	(8) 5%	(13) 33.3%
(4) 4.2%	(9) 20%	(14) 1.5%
(5) 1.8%	(10) 50%	(15) 150%

Answers:	Answers:	Answers:
(R) 1.8	(E) **0.02**	(S) **0.0333**
(A) 0.042	(L) **0.005**	(C) **1.5**
(P) 0.077	(B) **0.2**	(N) **0.625**
(E) 0.42	(O) **0.09**	● **15.0**
(K) 0.77	(H) **0.05**	(M) **0.333**
● 0.018	(F) **2.0**	(I) **0.15**
(G) 4.2	● **0.5**	(Y) **6.25**
(S) 0.18	(A) **0.009**	(T) **0.015**

II. Writeeachdecimalasapercent.

(16) 0.38	(21) 0.04	(26) 0.46
(17) 0.94	(22) 0.08	(27) 0.125
(18) 0.75	(23) 0.01	(28) 0.667
(19) 0.094	(24) 0.8	(29) 0.046
(20) 0.075	(25) 0.1	(30) 1.25

Answers:	Answers:	Answers:
(N) **94%**	● **8%**	(C) **4.6%**
(W) **7.5%**	(T) **40%**	(L) **12.5%**
(G) **3.8%**	(W) 10%	(P) **0.46%**
● **75%**	(S) **4%**	(S) **66.7%**
(I) **0.94%**	(N) **100%**	(A) **1.25%**
(E) **38%**	(A) **80%**	(K) **6.67%**
(R) **750%**	(O) 1%	● **46%**
(A) **9.4%**	(V) **0.8%**	(L) **125%**

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

MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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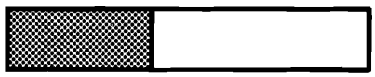
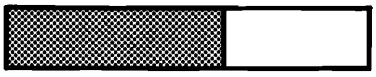
Why Did The Coffee Taste Like Mud?

For each exercise, circle the best estimate. Write the letter next to your answer in the box containing the exercise number.

I. Circle the percent that tells about how much of the bar is shaded.

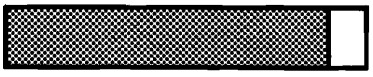
1. 
(H) 15% (U) 40%

2. 
(R) 80% (I) 60%

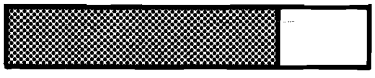
3.
(T) 25% (M) 38%

4.
(S) 67% (P) 52%

5.
(L) 24% (D) 10%

6. 
(A) 90% (I) 75%

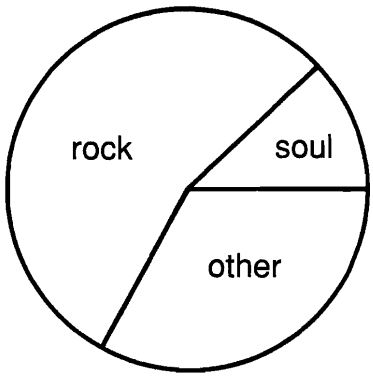
7.
(V) 46% (O) 33%

8. 
(F) 60% (T) 75%

9.
(U) 50% (R) 5%

II. The circle graphs show the results of a student poll. Circle the best estimate for the percent described.

Favorite Kind of Music



10. About what percent chose rock music?

(P) 75% (S) 55% (L) 40%

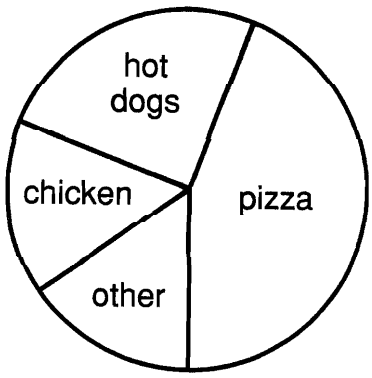
11. About what percent chose soul music?

(W) 12% (F) 2% (H) 23%

12. About what percent chose other kinds of music?

(L) 46% (G) 33% (T) 67%

Favorite School Lunch



13. About what percent chose hot dogs?

(C) 38% (H) 15% (J) 25%

14. About what percent chose pizza?

(S) 60% (L) 50% (N) 45%

15. About what percent chose chicken?

(R) 15% (E) 26% (A) 4%

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

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What Did Olga's Uncle Give Her For Cold Feet?

Do each exercise mentally, write your answer, and then mark it in the answer columns. For each set of exercises, there is one extra answer. Write the letter of this answer in the corresponding box at the right.

6	3	10	7	1	9	5	2	8	4

1

10% of 200 cm
5% of 4 cm
1% of 40 cm

Answers:
(J) 20 cm
(B) 40 cm
(O) 80 cm
(S) cm

2

100% of 90 lb
50% of 90 lb
10% of 90 lb

(C) 4.5 lb
(L) 9 lb
(Y) 90 lb
(D) 45 lb

3

(10% of 300 ducks
(5% of 500 ducks
(1% of 500 ducks

(A) 500 ducks
(I) 25 ducks
(T) 50 ducks
(U) 250 ducks

4

100% of 48 L
50% of 48
10% of 48

(S) 12 L
(F) 4.8 L
(M) 24 L
(R) 48 L

5

100% of 15 min
5% of 15 min
1% of 15 min

(Y) 1.5 min
(A) 15 min
(C) 7.5 min
(O) 5 min

6

10% of 120 volts
50% of 120 volts
1% of 120 volts

Answers:
(H) 60 volts
(V) 1.2 volts
(N) 30 volts
(B) 12 volts

7

50% of 64 oz
10% of 64 oz
1% of 64 oz

(R) 6.4 oz
(C) 3.2 oz
(L) 0.64 oz
(N) 32 oz

8

5% of 25 m^2
10% of 25 m^2
1% of 25 m^2

(H) 2.5 m^2
(I) 0.25 m^2
(A) 12.5 m^2
(K) 1.25 m^2

9

50% of 101 kg
10% of 101 kg
1% of 101 kg

(S) 5.05 kg
(N) 50.5 kg
(D) 10.1 kg
(P) 1.01 kg

10

100% of 5,280 ft
10% of 5,280 ft
1% of 5,280 ft

(R) 528 ft
(L) 52.8 ft
(E) 5.28 ft
(T) 5,280 ft

MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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What Happened to the Guy Who Ate Ten Pounds of Powdered Food for Dinner?

Do each exercise mentally, then find your answer in the corresponding set of answers.
Write the letter of the exercise in the box containing the answer.

$50\% = \frac{1}{2}$	$33\frac{1}{3}\% = \frac{1}{3}$	$25\% = \frac{1}{4}$	$20\% = \frac{1}{5}$	$12\frac{1}{2}\% = \frac{1}{8}$	$10\% = \frac{1}{10}$

I. Use the chart above to find each percent mentally.

(H) 25% of 36	(G) 20% of 15	(T) 50% of 26	(O) $33\frac{1}{3}\%$ of 60	(G) $12\frac{1}{2}\%$ of 40
(T) 10% of 70	(A) 50% of 180	(H) 25% of 200	(T) $12\frac{1}{2}\%$ of 16	(I) 20% of 60
(G) $33\frac{1}{3}\%$ of 24	(U) 10% of 360	(T) 20% of 500	(E) 50% of 48	(H) $33\frac{1}{3}\%$ of 120
(A) 25% of 44	(C) $12\frac{1}{2}\%$ of 240	(H) 10% of 800	(T) 100% of 32	(N) 100% of 999

13	50	11	100	25	999	12	5	80	2	15	9	24	42	8	20	32	18	30	90	36	3	40	7

II. Use compatible numbers to estimate each percent.

(E) 19% of 30	(A) 48% of 64	(N) 26% of 80	(D) 33% of 90	(I) 9% of 600
(T) 12% of 72	(E) 24% of 280	(L) 21% of 200	(I) 51% of 72	(N) 13% of 88
(E) 9% of 40	(A) 32% of 150	(O) 14% of 640	(D) 27% of 400	(H) 53% of 900
(X) 34% of 36	(N) 18% of 75	(D) 11% of 720	(R) 99% of 18	(P) 102% of 250

36	20	45	9	450	6	75	18	50	60	15	23	32	11	100	5	70	12	250	40	80	72	4	30

How Did Everybody Know When Sir Lancelot Was in Love with a Lady?

Estimate each percent. Under each exercise, circle the letter of the better choice. Write this letter in the box containing the number of the exercise.

HINT First change the percent to a simple fraction. Then change the amount to a number that is easy to divide by the denominator of the fraction.

(1) 26% of 27	(2) 49% of 61	(3) 33% of 299
(V) about 10	(G) about 25	(P) about 100
(A) about 7	(D) about 30	(L) about 120
(4) 18% of 42	(5) 41% of 42	(6) 58% of 42
(F) about 12	(O) about 16	(U) about 20
(R) about 8	(S) about 10	(I) about 24
(7) 74% of 45	(8) 67% of 88	(9) 13% of 25
(H) about 33	(E) about 60	(L) about 5
(N) about 27	(T) about 50	(R) about 3
(10) 37% of 25	(11) 63% of 25	(12) 86% of 25
(M) about 12	(U) about 15	(S) about 21
(T) about 9	(K) about 20	(N) about 18
(13) 68% of 118	(14) 79% of 31	(15) 24% of $202
(B) about 72	(G) about 28	(T) about $44
(O) about 80	(H) about 24	(R) about $50
(16) 36% of $75	(17) 62% of $162	(18) 76% of $47
(E) about $27	(O) about $90	(R) about $36
(I) about $36	(U) about $100	(L) about $30
(19) 39% of 152	(20) 52% of 495	(21) 98% of 1,010
(F) about 54	(E) about 240	(M) about 1,000
(H) about 60	(N) about 250	(P) about 100

$50\% = \frac{1}{2}$

$25\% = \frac{1}{4}$

$75\% = \frac{3}{4}$

$33\frac{1}{3}\% = \frac{1}{3}$

$66\frac{2}{3}\% = \frac{2}{3}$

$20\% = \frac{1}{5}$

$40\% = \frac{2}{5}$

$60\% = \frac{3}{5}$

$80\% = \frac{4}{5}$

$12\frac{1}{2}\% = \frac{1}{8}$

$37\frac{1}{2}\% = \frac{3}{8}$

$62\frac{1}{2}\% = \frac{5}{8}$

$87\frac{1}{2}\% = \frac{7}{8}$

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

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MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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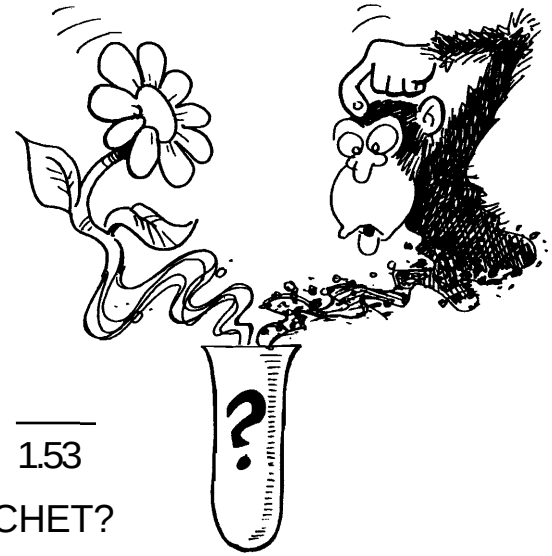
DOUBLE CROSS



1. What do you get when you cross a MONKEY with a FLOWER?

48.6	56.3	140	16	6.12	8.4	9.6	128	9.6	48.6	720	1.53	62.9

2. What do you get when you cross a BABY with a COMPUTER?

1.53	16	21.87	6.7	118.8	7.8	140	6.12	6.7	140	2.24	6.12	118.8	1.53

3. What do you get when you cross a PENNY FROM LONDON with a HATCHET?

48.6	720	24.7	46.5	720	75	39.6	6.12	1.53	16	122.8	48.6	48.3	750	140	46.5	720	118.8

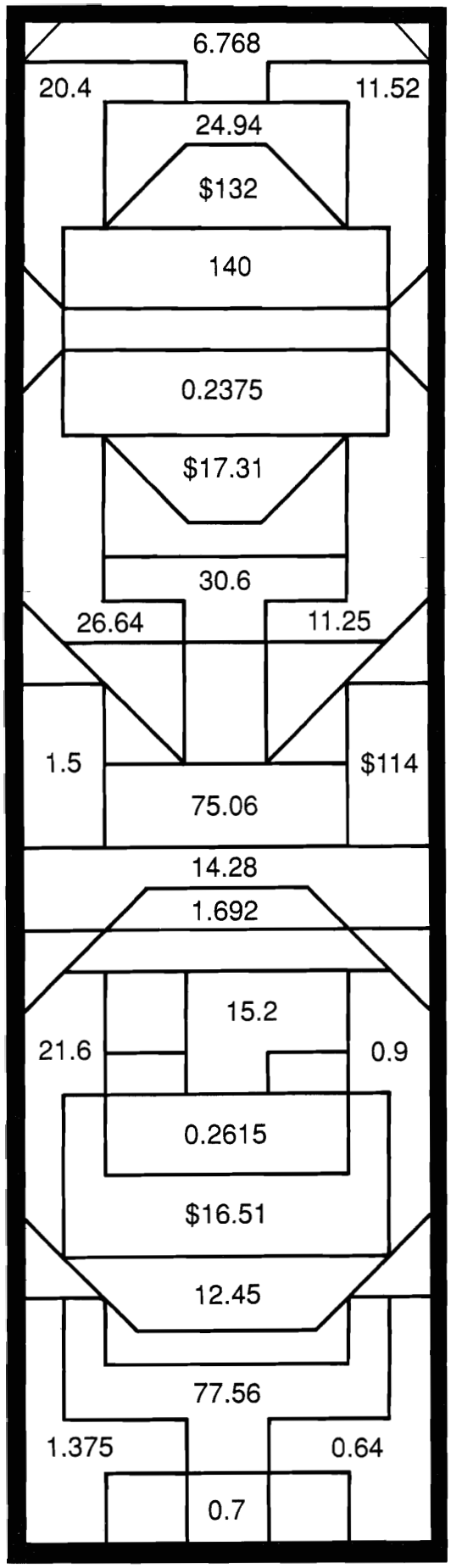
TO DECODE THE ANSWERS TO THESE THREE QUESTIONS:

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

(I) 18% of 34	(O) 27% of 81	(Y) 85% of 74	(A) 54% of 90	(T) 33% of 360
(E) 62% of 75	(U) 4% of 56	(M) 6% of 140	(G) 12% of 625	(R) 5% of 134
(L) 90% of 44	(S) 9% of 17	(P) 48% of 20	(X) 70% of 69	(H) 2% of 800

(N) Some doctors recommend that no more than 30% of a person's daily calories come from fats. Following this recommendation, if you eat 2,400 calories in a day, what is the maximum number that should come from fats?

(C) When training for a fight, Rocky tries to maintain a heart rate that is 80% of his maximum heart rate. Rocky has a resting heart rate of 60 and a maximum heart rate of 175 beats per minute. What is his training heart rate?



What Can You Use to Stick Blocks of Snow Together?

Do the exercises below and find your answers in the rectangle. Shade in each area containing a correct answer. You will learn how to build an ice house.

(1) 21% of 68

(2) 85% of 36

(3) 8% of 144

(4) 3% of 720

(5) 2.5% of 55

(6) 9.4% of 18

(7) 6.8% of 300

(8) 33.3% of 80

(9) 4% of 16

(10) 7.5% of 12

(11) 30% of 37.5

(12) 72% of 9.4

(13) 3.8% of 400

(14) 87.5% of 160

(15) 70% of 110.8

(16) 5% of 4.75

(17) Fabio is a video salesman. On each sale, he earns a commission of 12%. One of his customers bought a TV for $550 and a VCR for $400. How much did he earn in commissions?

(18) Robin bought a bow and 15 arrows at Nottingham Archery Supply. The total price was $254. In Nottingham there is a 6.5% sales tax. How much tax did Robin pay?

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What Does An Artificial Snow Machine Make?

Do each exercise below. Find your answer in the answer column and notice the letter next to it. 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 remaining letters in the rectangle at the bottom of the page.

I. Find the percent of the number.

(1) 120% of 70

(2) 200% of 12.5

(3) 0.4% of 980

(4) 0.16% of 600

(5) 180% of 7.5

(6) 350% of 32

(7) 0.9% of 1,600

(8) 0.25% of 400

II. Solve.

(9) A special vitamin capsule provides 250% of the vitamin C needed daily. If 60 mg of vitamin C are needed daily, how many milligrams of vitamin C are in the capsule? _____ mg

(10) The number of calories in a hot fudge sundae is 300% of the number in a dish of plain vanilla ice cream. If the ice cream has 150 calories, how many calories are in the sundae? _____ cal

(11) The value today of a certain rare coin is 140% of its value 2 years ago. If the coin was worth $190 then, what is it worth today? $_____

(12) The money in Laura's savings account is earning interest at the rate of 0.5% per month. If she has $1,450 in the account, how much interest is she earning each month? $_____

(13) An ore is 0.75% pure gold. How many kilograms of gold are in 500 kg of ore? _____ kg

(14) A Boeing 747 weighs about 750,000 lb. The original Wright Brothers' plane weighed 0.1% of this. How much did the Wright Brothers' plane weigh? _____ lb

(15) Six weeks ago, Qwerty could type 20 words per minute. But he has been practicing. Now his speed is 175% of his speed 6 weeks ago. How fast can he type now? _____ wpm

Answers

(K) 132
(Y) 3.92
(P) 450
(R) 35
(H) 14.4
(M) 84
(L) 7.25
(S) 38
(G) 0.96
(N) 4.45
(J) 1
(C) 25
(U) 266
(I) 750
(V) 112
(O) 12.8
(B) 150
(T) 3.75
(F) 620
(D) 13.5
(W) 425

R I B S T G H N Y V P O R T W M J F L I G A T C D K H E R U P S

ANSWER TO PUZZLE:

How Can You Tell a Dogwood Tree?

Decide whether you would choose mental math, estimation, or a tool (paper and pencil or calculator) to solve each problem. CIRCLE the letter in the appropriate column next to the problem.

Then solve the problem. Find the answer at the bottom of the page and write the letter you circled under it.

Choose: M mental math, E estimation, or T tool

		M	E	T
1	In a class of 35 students, 20% of the students play in the school orchestra. How many of the students play in the school orchestra? _____	I	V	H
2	Last year the Midas Middle School cafeteria served pizza on 12% of the school days. If there were 175 school days, how many times was pizza served? _____	U	C	A
3	Krispy Krunch cereal is 49% sugar. About how many ounces of sugar are in a 16-ounce box of Krispy Krunch? _____ oz	O	B	N
4	Karlene paid $129 plus 6% sales tax for a guitar. What was the total cost? $_____	P	L	S
5	Ms. Jackson bought a new car for $9,360. She agreed to pay 10% of the cost as a down payment and finance the rest. How much was the down payment? $_____	K	M	D
6	Jewelry marked 18-karat gold is 75% pure gold. How much pure gold is in an 18-karat gold necklace that weighs 258 grams? _____ g	A	E	Y
7	All the clothes at Unique Boutique are on sale. The discount is $33\frac{1}{3}$% of the regular price. About how much would you save on a jacket with a regular price of $59.50? $_____	S	B	G
8	The school dance committee had a budget of $200 for the Halloween dance. It decided to spend 25% of the budget on decorations. How much can be spent on decorations? $_____	T	P	N
9	A writer earns 8% of total sales dollars as a royalty. If 2,000 copies of his book are sold at $14.95 each, how much money does he make? $_____	L	U	R

137.24	8	193.5	35	7	50	136.74	2,485	20	21	2,392	936	187.5

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How Do You Make a Vegetable Necklace?

Use the information given in the chart to fill in the missing values. In the rectangle below, cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

Article on Sale	Original Price	Percent Discount	Amount of Discount	Sale Price
1. calculator	$12	25%		
2. tent	$90	25%		
3. sweater	$65	25%		
4. dress	$78.00	15%		
5. camera	$129.50	40%		
6. sports jacket	$140	35%		
7. tape deck	$299.95	20%		
8. VCR	$575.00	10%		
9. racing bike	$360	$33\frac{1}{3}\%$		

DO	Y	FI	ST	OU	OP	AR	R
$517.50	$51.80	$67.50	$508.50	$59.99	$240	$11.70	$75.20
ST	IN	TO	BI	GB	A	OX	OF
$9	$43.75	$120	$49	$69.30	$3	$239.96	$16.25
P	EA	T	RY	CA	NS	H	UP
$91	$227.86	$66.30	$48.75	$57.50	$64.50	$22.50	$77.70

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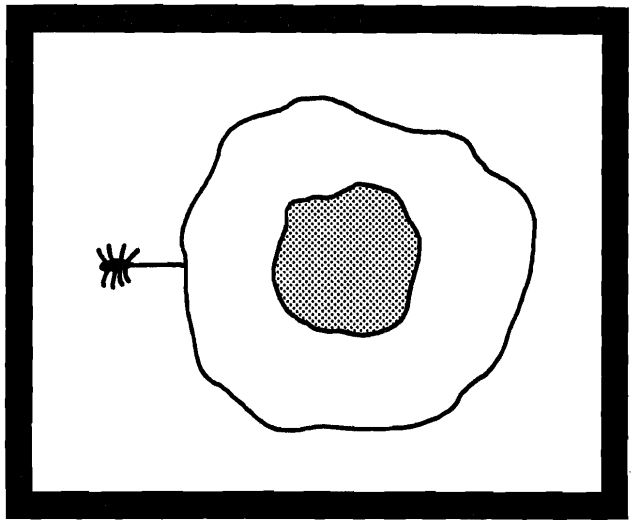
What Is the Title?

TO FIND THE TITLE OF THIS PICTURE:

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



CODED TITLE:

$840	$27	$943	$210	$31.50	$36	$425	$421.60	$1,800	$1,200	$943	$96	$3,780

$938	$225	$3,810	$1,270	$36	$943	$31.50	$210	$1,340	$31.50	$3,780	$3,780

I. Find the interest.

(N) savings account
deposit: $800
rate: 6% per year
time: 2 years

(D) savings account
deposit: $1,400
rate: 5% per year
time: 3 years

(O) auto loan
borrow: $5,000
rate: 12% per year
time: 3 years

(A) personal loan
borrow: $1,250
rate: 9% per year
time: 2 years

(E) checking account
deposit: $700
rate: 4.5% per year
time: 1 year

(P) credit card cash advance
borrow: $300
rate: 18% per year
time: 6 months

(W) money-market fund
invest: $6,000
rate: 8% per year
time: 2.5 years

(R) savings bond
invest: $50
rate: 7.2% per year
time: 10 years

(S) home improvement loan
borrow: $2,000
rate: 10.5% per year
time: 4 years

II. Solve. (Interest-ing problems.)

(T) Aldo put $400 into a savings account that paid an interest rate of 5.4% per year. What was the total amount in his account at the end of 1 year? (Total amount = principal plus interest)

(I) Suzanne borrowed $820 from a bank for one year. If the annual interest rate was 15%, what was the total amount she owed the bank at the end of the year?

(F) Gretchen invested $1,000 in a certificate of deposit (CD) that paid interest at a rate of 9% per year. How much was the CD worth at the end of 3 years?

(G) Rolex borrowed $3,600 from a credit union for 6 months at an interest rate of 10% per year. How much did he owe the credit union at the end of the 6 months?

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Why Did Airhead Bungle Buy a Floodlight for His Sundial?

Do each exercise and find your answer in the adjacent answer column. Write the letter of the exercise in the box containing the number of the answer.

(E)	5 is what percent of 20?	(27)	75%
(H)	12 is what percent of 24?	(16)	10%
(T)	What percent of 35 is 7?	(14)	25%
(L)	What percent of 90 is 9?	(8)	$33\frac{1}{3}\%$
(O)	20 out of 60 is what percent?	(24)	20%
(I)	9 out of 12 is what percent?	(6)	70%
		(4)	50%

(L)	2 is what percent of 25?	(13)	62%
(G)	11 is what percent of 20?	(28)	55%
(E)	What percent of 75 is 18?	(17)	60%
(O)	What percent of 40 is 6?	(21)	24%
(T)	31 out of 50 is what percent?	(19)	4%
(I)	8 out of 200 is what percent?	(10)	8%
		(2)	15%

(T)	What percent of 30 is 9?	(15)	80%
(E)	What percent of 80 is 56?	(7)	2%
(S)	20 is what percent of 50?	(5)	70%
(L)	12 is what percent of 15?	(12)	64%
(A)	What percent is 24 out of 36?	(1)	40%
(C)	What percent is 10 out of 500?	(23)	$66\frac{2}{3}\%$
		(30)	30%

(D)	What percent of 40 is 36?	(22)	30%
(N)	What percent of 45 is 27?	(26)	60%
(M)	25 is what percent of 75?	(29)	50%
(U)	15 is what percent of 60?	(11)	90%
(H)	What percent is 90 out of 180?	(9)	25%
(T)	What percent is 72 out of 100?	(18)	72%
		(20)	$33\frac{1}{3}\%$

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 Policeman Say to His Stomach?

Use estimation to choose Category I, II, or III for each percent. Under each exercise, circle the letter of the best choice. Write this letter in the box containing the number of the exercise.

I less than 50%	II between 50% and 100%	III more than 100%

(1) 39 is what percent of 60?

(K) I (E) II (C) III

(2) 25 is what percent of 97?

(A) I (W) II (B) III

(3) What percent of 81 is 70?

(D) I (T) II (G) III

(4) What percent of 70 is 81?

(N) I (I) II (A) III

(5) 9 out of 24 is what percent?

(O) I (H) II (T) III

(6) 300 out of 405 is what percent?

(P) I (E) II (F) III

(7) What percent of 62 is 92?

(M) I (L) II (N) III

(8) What percent of 110 is 225?

(T) I (R) II (U) III

(9) 7 is what percent of 34?

(E) I (P) II (F) III

(10) 34 is what percent of 7?

(D) I (N) II (R) III

(11) What percent is 25 out of 48?

(L) I (Y) II (B) III

(12) What percent is 23 out of 48?

(U) I (S) II (I) III

(13) Fink's typing speed increased from 20 words per minute to 45 words per minute. His old speed is what percent of his new speed?

(V) I (M) II (G) III

(14) Fink's typing speed increased from 20 words per minute to 45 words per minute. His new speed is what percent of his old speed?

(M) I (L) II (R) III

(15) The regular price of a computer is $980, but it is on sale for $750. The sale price is what percent of the regular price?

(T) I (D) II (P) III

(16) The regular price of a computer is $980, but it is on sale for $750. The regular price is what percent of the sale price?

(R) I (F) II (S) III

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

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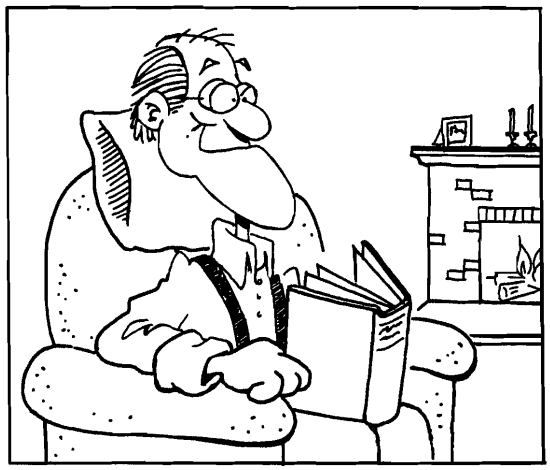
What Happened to the Plastic Surgeon as He Sat by the Fire on a Cold Winter Night?

C	4%
S	63%
T	47%
H	36%
O	58%
T	55%
E	92%
M	45%
A	72%
N	78%
E	56%
A	17%
T	7%
U	42%
L	14%
F	24%
I	18%
T	76%
R	34%
E	65%
A	86%
R	94%
D	26%
N	31%

Find each correct answer and cross out the letter next to it. When you finish, the answer to the title question will remain. (Round each answer to the nearest whole percent.)

1. What percent is 5 out of 12?
2. What percent is 6 out of 7?
3. 19 is what percent of 30?
4. 6 is what percent of 11?
5. What percent of 16 is 5?
6. What percent of 51 is 12?
7. What percent is 3 out of 70?
8. 75 is what percent of 96?
9. What percent of 18 is 17?
10. 1 out of 6 is what percent?



11. Jewelry marked 14-karat gold is $\frac{14}{24}$ pure gold. What percent is this?
12. Julie has read 27 pages out of an 80-page book. What percent of the pages has she read?
13. Kareem shot the basketball 32 times and made 23 baskets. What percent of his shots were baskets?
14. A TV station has 11 minutes of commercials for each 60 minutes of air time. What percent of air time is used for commercials?
15. The Hawks won 7 games, lost 6 games, and tied 2 games. What percent of all the games did they win?
16. The human body is 65% oxygen, 18% carbon, and 10% hydrogen. The rest is other elements. What percent is composed of other elements?

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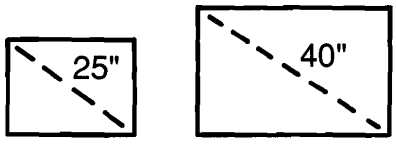
Why Did the Man in the Shower Say, "Soap, Soap, Soap?"

Solve each problem below. (Round percents to the nearest whole percent.) Find your solution and notice the two letters next to it. Write these letters in the two boxes above the exercise number at the bottom of the page.

1. On a math test, Miranda got 17 out of 20 problems correct. What percent of the problems were correct?
2. Last semester, 150 out of the 800 students at Jungle Junior High made the Honor Roll. What percent of the students made the Honor Roll?
3. The width of a singles tennis court is 75% of the width of a doubles court. A doubles court is 36 feet wide. How wide is a singles court?
4. About 60% of the human body is water. At this rate, how many pounds of water are in the body of a 95-pound person?
5. Tapes-R-Us is having a sale on HQ tape players. The regular price is $60. The discount is $18. What percent discount is this?
6. Mr. John Doe was figuring out his federal income tax. His income was $26,800, but he was able to subtract $5,500 in deductions. He paid 15% of the remaining income in tax. How much did he pay?
7. Steve put $500 into a savings account. At the end of one year, he had earned $30 in interest. What interest rate was the bank paying?
8. At Marble Middle School, 35% of the students are 6th graders, 32% are 7th graders, and the rest are 8th graders. What percent are 8th graders?
9. Mr. Spoke is a salesman at Pop's Cycle Shop. Each month he earns $800 plus 7% of his total monthly sales. How much did he earn last month if his sales totaled $9,200?
10. The area of a 25-inch TV screen is 300 square inches. The area of a 40-inch TV screen is 768 square inches. The area of the smaller screen is what percent of the area of the larger screen?



- LM 72%
- EW $3,195
- ED 25 ft
- TA $1,514
- IN 57 lb
- SS 6%
- SO 37%
- NG 85%
- OD $3,275
- GI $1,444
- HE 30%
- RS 27 ft
- AP 59 lb
- BA 39%
- AF 33%
- NT 8%
- WA 19%

5	2	7	4	9	1	8	6	10	3

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Why Can't an Elephant Ride a Bicycle?

Do each exercise and find your answer in the corresponding set of answers. Write the letter of the exercise in the box containing the answer.

I. Find the number. Use a fraction for the percent.

(O) 20% of what number is 8?

(T) 25% of what number is 7?

(A) 24 is 50% of what number?

(B) $33\frac{1}{3}$% of what number is 12?

(I) 10% of what number is 16?

(T) 11 is $12\frac{1}{2}$% of what number?

(S) 1% of what number is 3?

(T) 20% of what number is 15?

(U) 30 is 25% of what number?

(O) 450 is 50% of what number?

(H) $33\frac{1}{3}$% of what number is 32?

(N) 250 is 10% of what number?

(H) 50 is $12\frac{1}{2}$% of what number?

(M) 5% of what number is 9?

160	75	800	96	48	300	60	2,500	40	72	88	400	120	180	**36**	140	28	900

II. Find the number. Use a decimal for the percent.

(H) 40% of what number is 14?

(E) 15% of what number is 9?

(T) 54 is 72% of what number?

(I) 33 is 6% of what number?

(E) 75% of what number is 96?

(L) 32% of what number is 4.8?

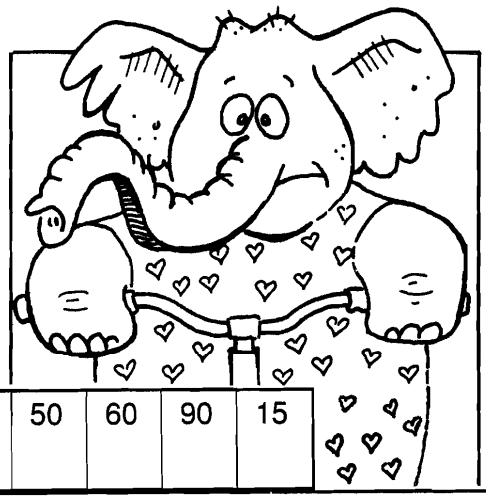
(N) 3.6 is 45% of what number?

(B) 4.5 is 9% of what number?

(G) 24% of what number is 54?

(L) 80% of what number is 72?

(R) 56 is 56% of what number?



100	550	8	225	30	75	35	128	375	50	60	90	15

Books Never Written

'Getting What They Owe You by _____ _____ _____
16 9 2 15 11 7 1

How to Get Into Shape by _____ _____ _____
8 13 16 5 10 2 15 7 13 2

Most Embarrassing Moment by _____ _____
14 9 12 4 14 6 16 3 5 12

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

Do each exercise below. Find your answer and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it.

I. Find the number. Use a fraction or a decimal for the percent.

(1) 25% of what number is 16?

(2) 10% of what number is 80?

(3) 36% of what number is 72?

(4) 4% of what number is 25?

(5) 92% of what number is 69?

(6) 65% of what number is 5.2?

(7) 20% of what number is 3.4?

(8) 44% of what number is 55?

(9) $33\frac{1}{3}\%$ of what number is 21?

(10) 50% of what number is 7.5?

II. Solve.

(11) The fastest speed recorded for a runner is 27 miles per hour. This is 20% of the fastest speed for a water skier. Find the record for a water skier. _____ mph

(12) Bowser's dog food is 60% meat. If Bowser needs 24 oz of meat each week, how many ounces of dog food should he eat? _____ oz

(13) The length of a ship model is 3% of the length of the actual ship. The model is 1.5 m long. How long is the actual ship? _____ m

(14) Students at Lincoln Middle School sell gift wrap to raise money for student activities. The school keeps 40% of sales. How many dollars worth of gift wrap must be sold to make $1,000? $_____

(15) An airline knows that only about 75% of those who make a reservation actually buy a ticket. At this rate, how many reservations should the airline accept to fill a plane with 180 seats? _____

(16) Safe Side Bank pays an interest rate of 8% per year on certificate accounts. How much money must be put into an account to earn $60 in one year? $_____

Answers

(I) 75
(M) 240
(U) 63
(D) 236
(C) 40
(W) 64
(S) 750
(A) 8
(X) 125
(T) 200
(Z) 15
(L) 2,500
(E) 800
(P) 600
(O) 17
(N) 135
(Y) 625
(R) 50
(K) 2,150

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What Is the Best Way to Serve Lion Meat?

Solve each problem and find your answer in the rectangle below. Cross out the box that contains your answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

1. A person standing on the moon would weigh 16% of his weight on Earth. If Astro Knot weighs 150 lb on Earth, how much would he weigh on the moon?
_____ lb

2. There are 7 oz of sugar in a 16-oz box of Honey Hunks Cereal. What percent of Honey Hunks Cereal is sugar? (Round to the nearest percent.)
_____%

3. A salesman keeps 20% of his sales as a commission. How much does he have to sell to earn $1,000? $_____

4. The regular price of an FX-I electronic keyboard at Circuit Circus is $200. It is on sale at a 25% discount. What is the sale price? $_____

5. A baseball player got 10 hits in 39 times at bat. What percent of his times at bat did he get a hit? (Round to the nearest percent.) _____%

6. A math class has studied the first 330 pages of their textbook. If this is 75% of the entire book, how many pages are in the book? _____

7. The tallest man ever recorded was Robert Wadlow, who was 272 cm tall. The tallest woman on record was Zeng Jinlian. Her height was 91% of Wadlow's height. How tall was Zeng Jinlian? (Round to the nearest cm.)
_____ cm

8. A color called "Passion Purple" is made by mixing 5 oz of red paint with 9 oz of blue paint. What percent of Passion Purple is blue paint? (Round to the nearest percent.) _____%

9. The height of a model rocket is 4% of the height of the actual rocket. The model is 1.8 m high. How high is the actual rocket? _____ m

10. Jennifer's new bike cost $180. Her parents paid 40% of the cost and Jennifer paid the rest. How much did Jennifer pay? $_____

11. In a poll two weeks before the Presidential election, 37% of the people said they would vote for the Democrat, 42% said they would vote for the Republican, and the rest were undecided. What percent were undecided? _____%

LI	ON	AS	A	WI	TH	IS	EM	EA
5,000	248	66	24	21	114	26	42	108
AN	T	RY	ED	ST	RO	I	LL	SH
22	45	150	6,500	440	44	475	64	236

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N	102
T	7.2 s
S	24
E	360
W	29
P	25.4 s
U	105
R	97
N	84
I	5.2
A	7.4 s
M	86
T	14
O	38.5
N	41.6 in.
	420
M	103
	7.7 s
S	99
E	8.1 s
B	26
	92
	27.6 s
	94
E	40.8 in.
A	26.5 s
H	89
	5.5

What Do They Call the Guy Who Invented the First Blue Jeans?

Find each answer and cross out the letter next to it. When you finish, the answer to the title question will remain.

1. The scores of 5 golfers on 3 rounds of miniature golf are given in the table. Find each of the following. (Round to the nearest point.)

Name	Round 1	Round 2	Round 3
Ray	87	104	99
Hal	108	107	94
Juli	94	83	100
Jack	116	92	119
Kay	103	96	120

A. The mean of Ray's scores.
B. The mean of Juli's scores
C. The mean of the scores in Round 1.
D. The range of Hal's scores.
E. The range of the scores in Round 1.
F. The range of the scores in Round 3.

2. Find the mean of the first 10 counting numbers (1 through 10).

3. Find the mean of the squares of the first 10 counting numbers.

4. Practice times in the 200-meter dash for 7 runners are given in the table. Find each of the following. (Round to the nearest tenth of a second.)

Name	Trial 1 (s)	Trial 2 (s)
Lewis	24.4	25.1
Raul	27.2	23.6
Edwin	30.6	27.5
Renaldo	24.1	26.3
Chen	26.0	28.4
Steve	31.3	30.9
Hector	29.9	31.0

A. The mean of Raul's times.
B. The mean of the times on Trial 1.
C. The range of the times on Trial 1.
D. The range of the times on Trial 2.
E. The range of all the times given.

5. The mean of 4 test scores is 90. What is the sum of the scores?

6. If the mean rainfall in New York City was 3.4 inches per month, what was the total rainfall for the year?

7. Each student listed in the table has taken 3 math tests. Find the score each student needs on the next test in order to have an 80 average.

Name	Test 1	Test 2	Test 3	Test 4
Bill	78	78	78	_____
Jill	68	79	74	_____
Phil	72	82	82	_____
Will	91	64	76	_____

8. Huck's bowling average over *5* games was 100. He scored 118 on the next game. What was his new average?

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What Happened to the Cat Who Swallowed a Ball of Yarn?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) Find the median for each set of data.

A. 49, 32, 67, 55, 58
B. 3.1, 5.2, 4.4, 5.0, 3.8, 2.6, 4.7
C. 29, 12, 30, 22, 7, 23, 36, 15, 18, 9
D. 81.6, 83.7, 78.5, 82.8, 81.2, 76.3, 83.5, 78.9
E. 110, 115, 109, 110, 116, 113, 112, 116, 110, 106, 113

F.

Price of Zark *VII* game at various software stores		
$41.75	$43.89	$42.50
43.40	42.95	39.95
42.90	40.50	40.69
39.95	45.30	42.95

(2) The weekly salaries for 5 people who work at a Las Vegas hotel are given in the table.

A. What is the mean salary?
B. What is the median salary?

Star of stage show	$45,000
Hotel manager	2,000
Chief chef	1,500
Publicity director	1,100
Lifeguard	400

(3) Find the mode (or modes) for each set of data.

A.

Suit Sizes		
36	39	40
37	39	41
37	39	41
38	40	41
38	40	42
38	40	44
39	40	44

B.

Times in 50-m Dash (s)			
5.7	6.3	6.7	6.9
5.9	6.3	6.7	7.0
6.0	6.4	6.8	7.2
6.0	6.5	6.9	7.3
6.2	6.5	6.9	7.3
6.3	6.7	6.9	7.5

C.

Runs Scored				
3	7	2	8	4
1	4	0	5	7
2	2	4	1	5
7	1	5	6	7
0	5	3	2	2
6	4	9	5	9

(4) The table gives typing speeds for 12 students in words per minute (wpm). Find the following for this set of data.

A. The range
B. The mean
C. The median
D. The mode (or modes)

Name	Speed (wpm)	Name	Speed (wpm)
Danny	31	Allison	30
Celeste	27	Ramon	24
Michael	15	George	18
Kalon	31	Jackie	35
Matt	24	Kim	28
Rachel	13	Robert	24

TH	SH	ON	E	OW	EH	IT	GL	AD	SO	M
25.5 wpm	3	20	22 wpm	$1,500	27 wpm	6.9 s	112	82.1	24 wpm	$11,200
E	KN	IT	IS	CA	TE	AM	YA	NK	NS	RN
2 and 5	$42.70	6.5 s	55	25 wpm	38	81.4	40	4.4	$43.20	$10,000

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According to Math Teachers, What did the Acorn Say When It Grew Up?

Do each exercise and find your answer at the bottom of the page. Write the letter of the exercise in the box above the answer.

I. Use the pictograph at right to answer each question.

(I) How many albums does a whole symbol represent?

(E) How many albums does half a symbol represent?

(A) How many classical albums does Disco Bob own?

(E) How many country albums does Disco Bob own?

(T) How many more soul albums than jazz albums does Disco Bob own?

(E) Disco Bob paid an average of about $8 for each of his rock albums. About how much did he spend altogether for his rock albums?

Disco Bob's Record Collection

Type	Number Owned ● = 20 albums
classical	● ● ●
soul	● ● ● ◖
jazz	● ◖
rock	● ● ● ● ● ● ● ●
country	● ● ● ● ● ◖

II. The table below shows how many computer games were sold by Action Games Software in June. Round each number to the nearest 50 games. Then complete the pictograph, using whole symbols and half symbols, and answer the questions below.

Kong IV	554	Outland	663
Vindicator	387	Bug Attack	319
Stellar 9	246	Megatron	795

(E) How many symbols did you draw for Vindicator?

(M) How many symbols did you draw for Outland?

(G) How many symbols did you draw for Megatron?

(R) For each game sold, Action Games made a profit of about $10. Give an estimate of their total profits on these games in June.

Action Games Software
June Sales

Game	Number Sold ■ = 100 games
Kong IV	■ □ ■ □ □ ◧
Vindicator	
Stellar 9	
Outland	
Bug Attack	
Megatron	

140	8	110	$1,280	50	20	$6\frac{1}{2}$	$24,000	60	7	40	$30,000	10	4	$1,360

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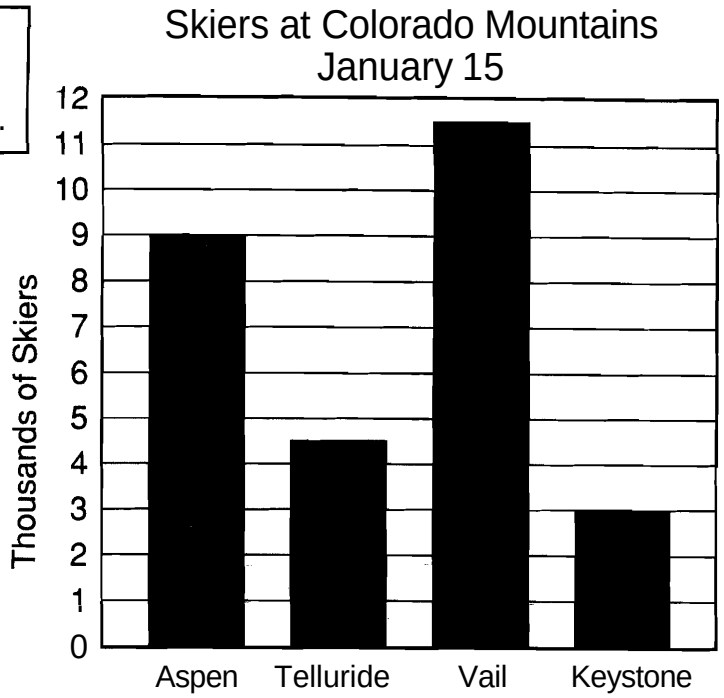
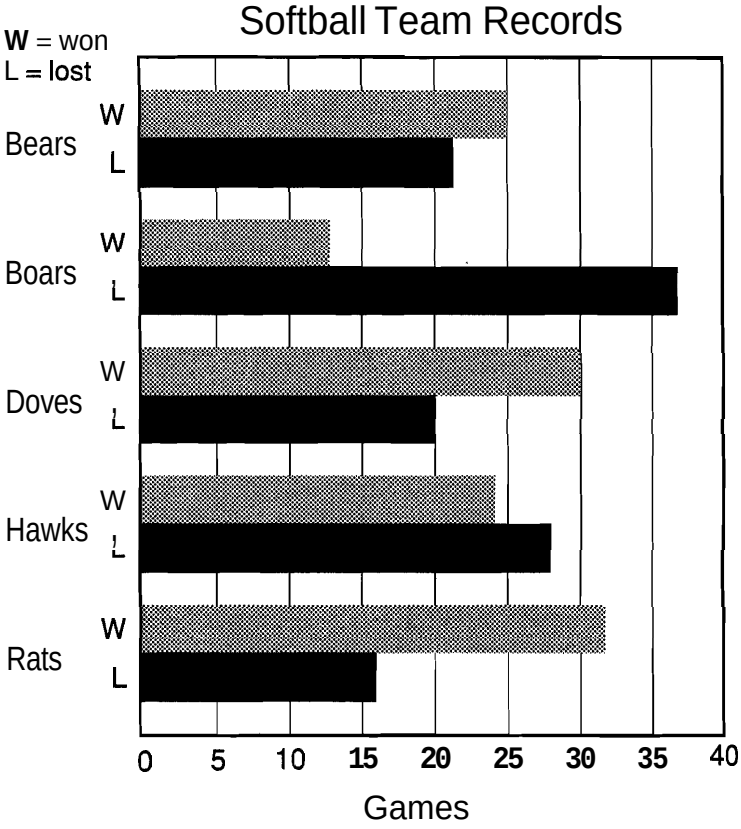
What Do You Call a Fake Chart?

Circle the letter of the better answer for each exercise. Write the letter in the box containing the exercise number.



1. How many skiers were at Aspen?
   (C) 9 (A) 9,000
2. How many skiers were at Telluride?
   (Y) 4,500 (V) 5,000
3. How many more skiers were at Vail than at Keystone?
   (K) 7,000 (P) 8,500
4. How many skiers were at the four mountains altogether?
   (M) 30,000 (H) 28,000
5. What was the mean number of skiers at the four mountains?
   (O) 7,000 (B) 6,500



6. How many games did the Bears win?
   (S) 30 (A) 25
7. How many games did the Boars lose?
   (F) 39 (G) 37
8. How many more games did the Hawks lose than win?
   (L) 6 (N) 4
9. How many more games did the Rats win than the Boars won?
   (P) 19 (T) 16
10. Which team won twice as many games as it lost?
    (E) Doves (R) Rats
11. What fraction of its games did the Doves win?
    (H) $\frac{3}{5}$ (W) $\frac{2}{3}$

6	3	11	5	8	2	7	10	1	9	4

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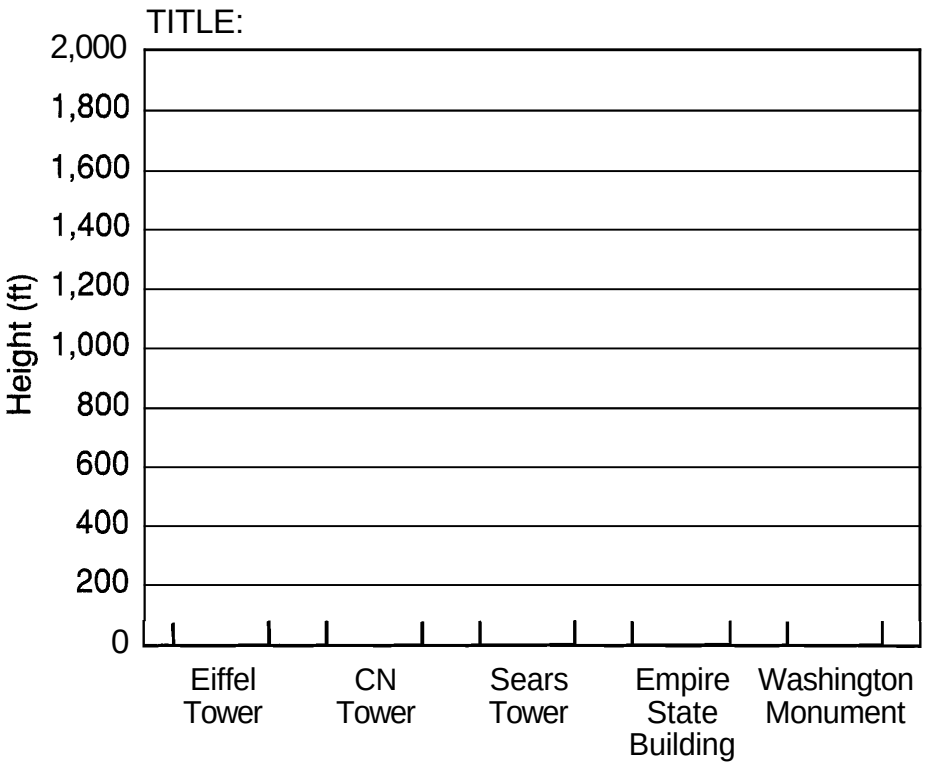
Bar GraFun

1. Use the data below to make a bar graph showing the heights of five famous towers.

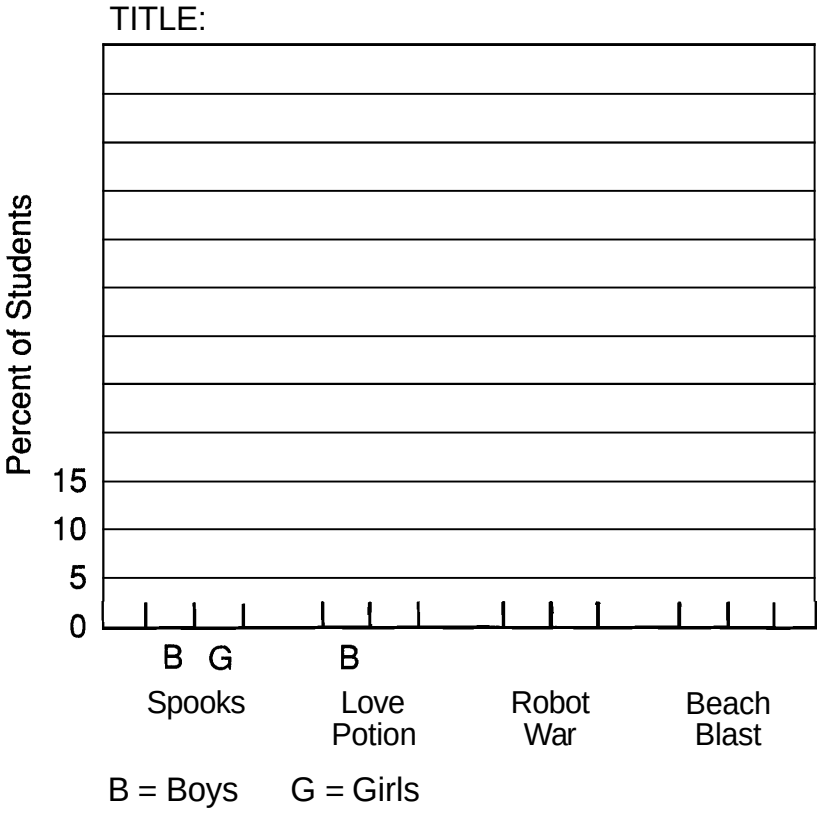
Famous Towers	
Tower	Height (ft)
Eiffel Tower	986
CN Tower	1,822
Sears Tower	1,454
Empire State Building	1,250
Washington Monument	555



2. The Student Council took a survey to find what percent of the students had seen four recent movies. Use the data below to make a double-bar graph showing the percent of boys and girls who had seen each movie.

   Begin by completing the horizontal and vertical scales.

Movie Attendance		
Movie	Boys	Girls
Spooks	55%	30%
Love Potion	23%	29%
Robot War	42%	16%
Beach Blast	38%	47%



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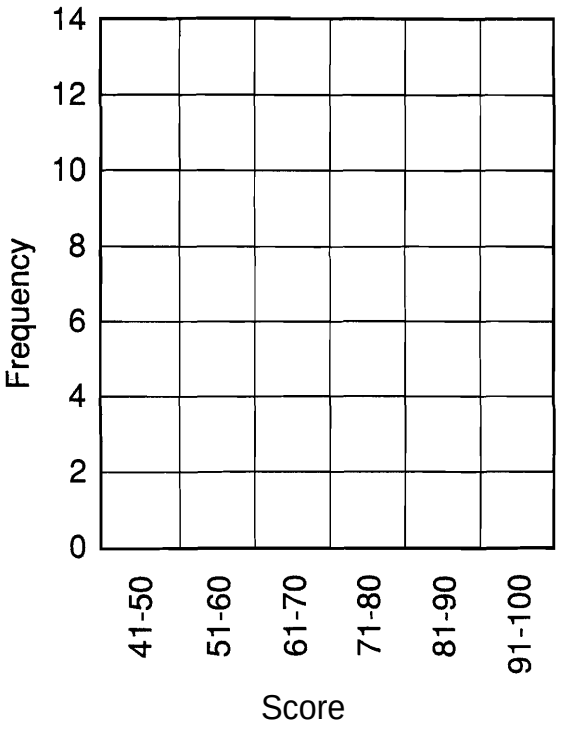
How Do You **Repair a Broken Tuba?**

Complete each table. Write the letter for each frequency in the box above the corresponding value at the bottom of the page. Make a histogram for each set of data.

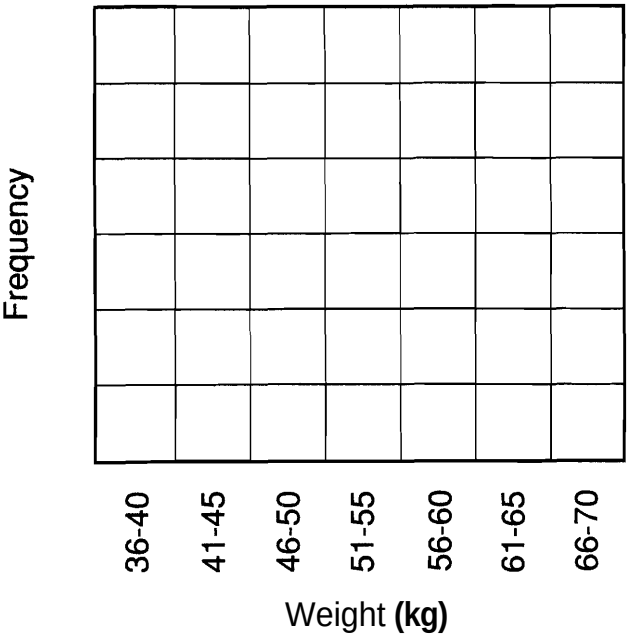
Test Scores for 40 Students									
80	89	66	73	60	97	53	79	70	58
71	99	44	88	80	69	72	83	86	76
91	77	61	83	57	88	49	77	75	95
64	85	75	72	94	66	84	77	86	82

Score	Tally	Frequency
41-50		**U**
51-60		**T**
61-70		**E**
71-80		**A**
81-90		**W**
91-100		**G**



Weights for 100 Students (kg)									
53	61	55	48	64	58	45	63	55	44
56	44	38	48	52	54	45	41	53	58
46	50	50	52	43	56	36	51	42	47
68	42	50	46	55	62	59	51	52	47
53	63	52	60	54	49	65	58	54	38
48	53	66	49	56	63	48	48	62	54
64	44	56	39	68	52	44	59	54	46
54	47	56	53	53	41	59	50	38	55
58	61	46	36	57	48	54	45	60	52
40	48	62	51	63	42	57	55	43	52

Weight	Tally	Frequency
36-40		**A**
41-45		**H**
46-50		**U**
51-55		**I**
56-60		**T**
61-65		**L**
66-70		**B**



10	28	4	14	13	16	2	3	7	5	12	20	6

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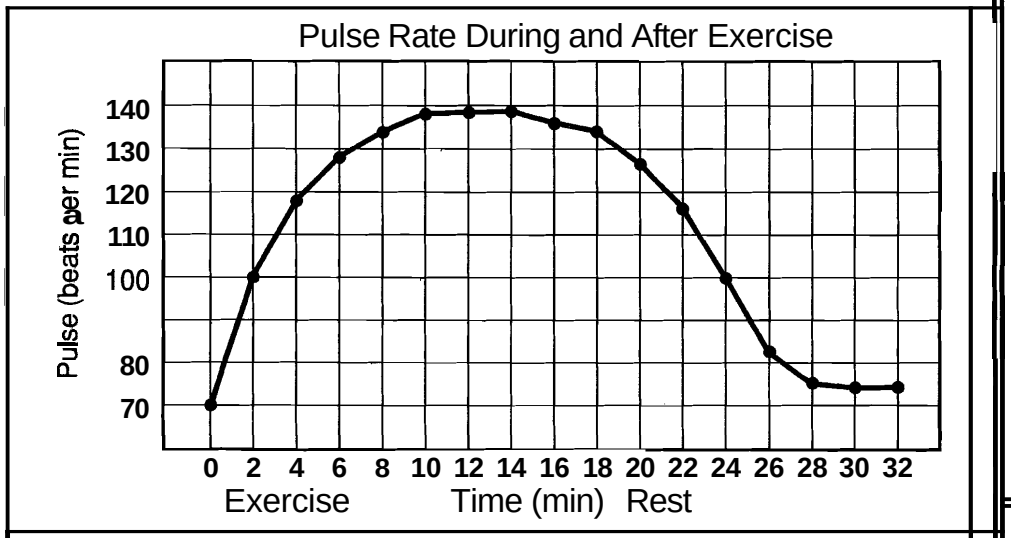
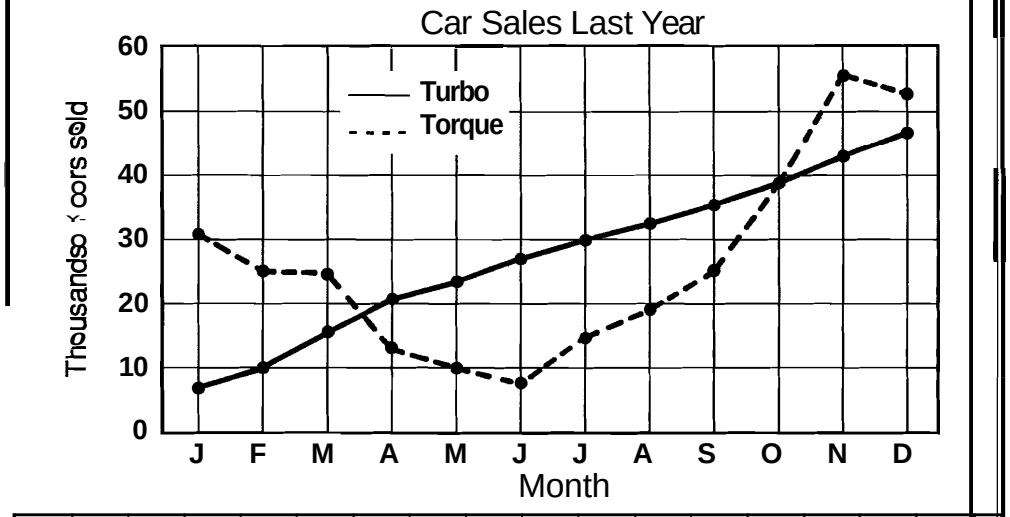
What Happens to a Man Who Carries an Ax in His Teeth?

Circle the letter of the better answer for each exercise.
Write the letter in each box containing the exercise number.





1	0	3	8	3	2	5	7	1	0	1	1	1	1	1	3	6	9	4	1	1	5		

1 What was the pulse rate when exercise started?
(O) 70 (V) 73

2 How much did the pulse rate increase by the end of the first **4** min of exercise?
(T) 48 (B) 54

3 Estimate the highest pulse rate on the graph.
(S) 133 (E) 139

4 What is the range of the pulse rates?
(I) 69 (W) 72

5 The pulse rate at the start was about what fraction of the highest pulse rate?
(S) $\frac{1}{2}$ (A) $\frac{1}{3}$

6 About how many Torques were sold in February?
(N) 22,000 (D) 26,000

7 About how many more Turbos were sold in December than in January?
(L) 36,000 (C) 40,000

8 In what month were about 19,000 Torques sold?
(G) August (R) September

9 About how many more Turbos than Torques were sold in July?
(M) 12,000 (L) 16,000

10 In what month were about the same number of Turbos and Torques sold?
(H) October (U) November

11 What is a reasonable estimate for sales of Turbo cars in January of ***this*** year?
(P) 50,000 (N) 60,000

MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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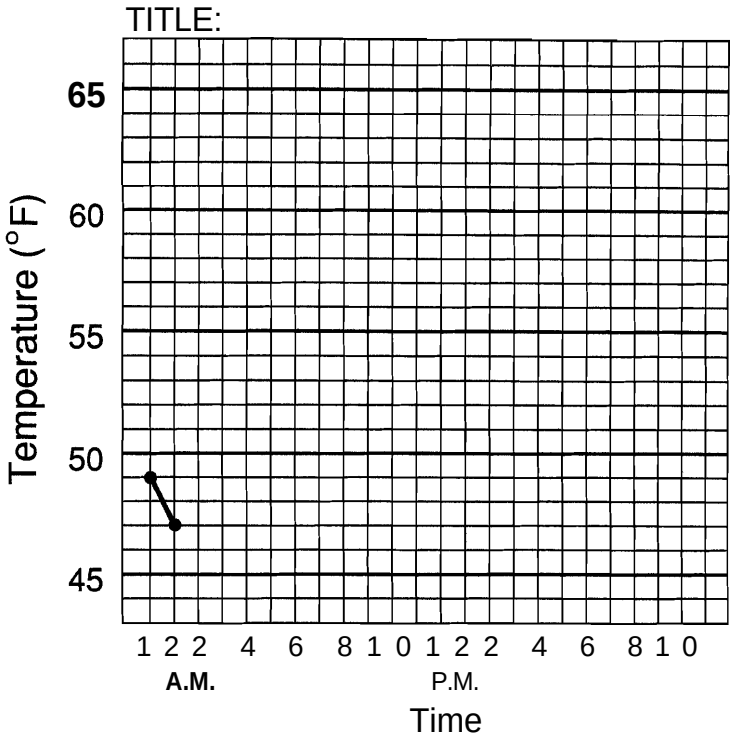
Line GraFun

1. Use the data below to make a line graph showing the temperature each hour for a day.

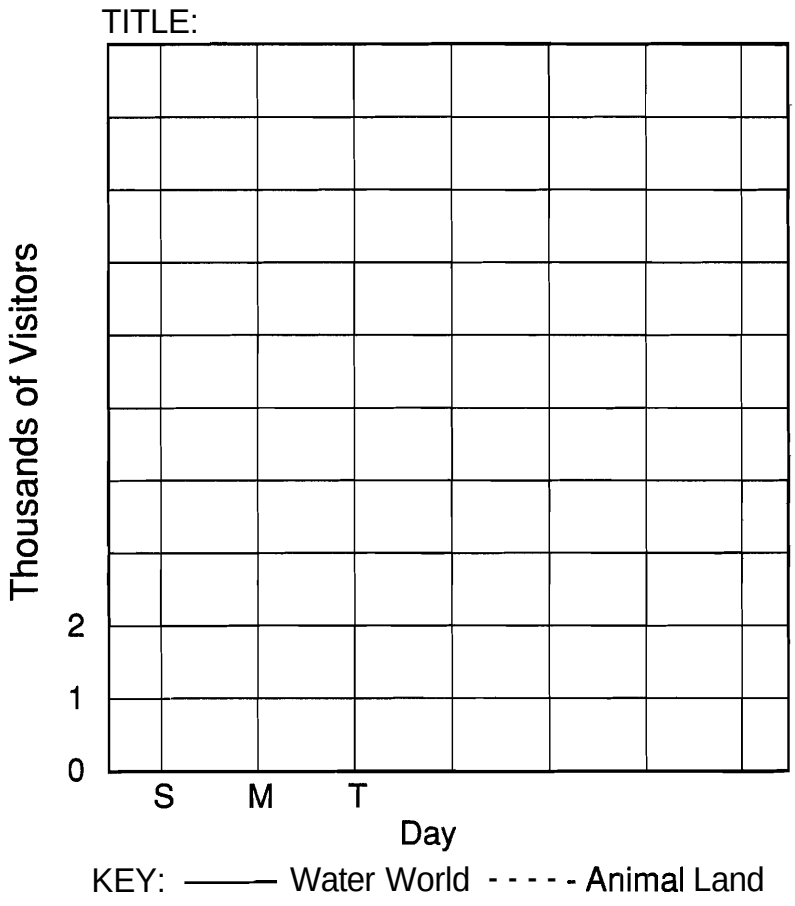
Hourly Temperatures			
A.M.		P.M.	
12:00	49°F	12:00	61°F
1:00	47	1:00	62
2:00	46	2:00	63
3:00	46	3:00	65
4:00	45	4:00	65
5:00	46	5:00	64
6:00	48	6:00	60
7:00	51	7:00	58
8:00	53	8:00	56
9:00	54	9:00	52
10:00	57	10:00	51
11:00	59	11:00	48



2. Use the data below to make a double-line graph showing the number of visitors at two amusement parks each day for a week.

   Begin by completing the horizontal and vertical scales.

Dally Attendance		
Day	Water World	Animal Land
	7,967	5,140
Mon	3,512	1,864
Tues	3,833	1,328
Wed	4,760	2,465
Thur	4,184	5,730
Fri	5,675	3,291
Sat	9,326	4,622



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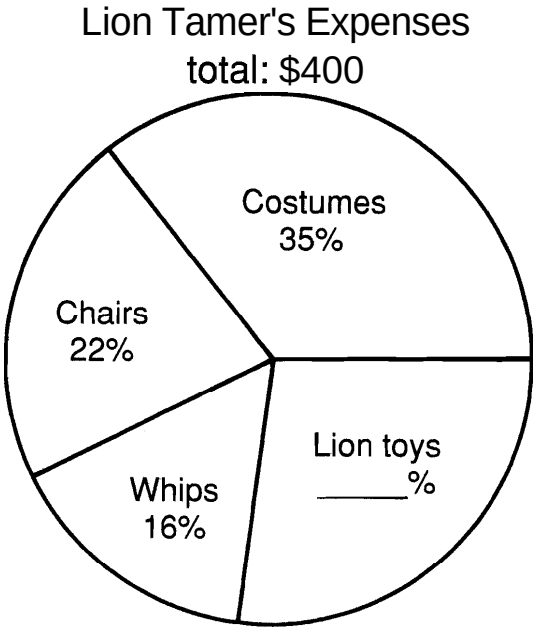
WHO MAKES RAINWATER MIX WITH DIRT?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.



(1) A lion tamer spent a total of $400. The circle graph shows what percent was spent on each item. Find the amount spent on:

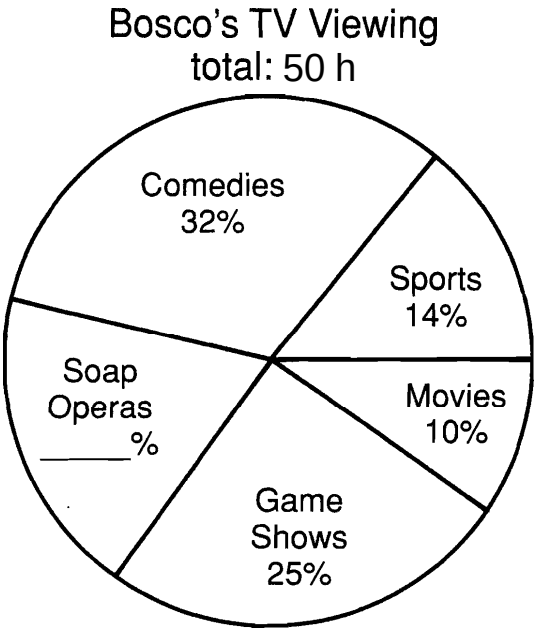
A. costumes; B. chairs; C. whips.

(2) What percent of the total was spent on lion toys?

(3) How much money was spent on lion toys?

(4) What percent was spent for chairs and whips combined?

(5) How much money was spent for chairs and whips combined?



(6) During the first week of summer vacation, Bosco spent 50 hours watching TV. Use the circle graph to find the amount of time he spent watching:

A. comedies; B. game shows; C. movies.

(7) What percent of the total time was spent watching soap operas?

(8) How much time did Bosco spend watching soap operas?

(9) How much more time was spent watching sports than movies?

(10) What is always the sum of the percents in a circle graph?

TH 19%	AT 27%	MU 3.5 h	CH 100%	ST $140	KI 12.5 h	DD 23%	AL $152	OV 9.5 h	ER $112
NA $144	ME 16 h	AL $88	TU 11 h	RN 2 h	ON $108	CA 5 h	RE 50%	ST $64	UP 38%

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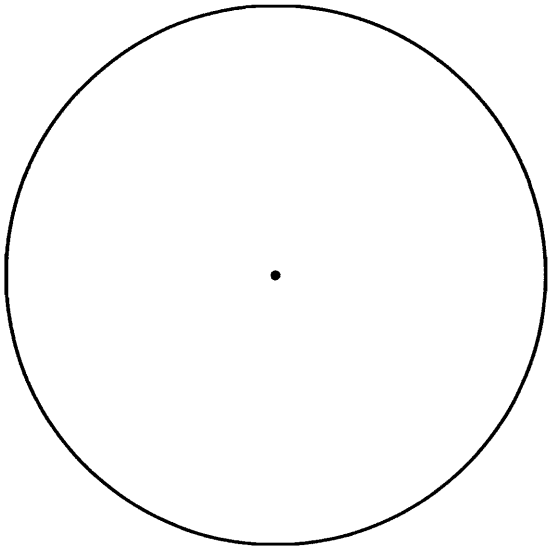
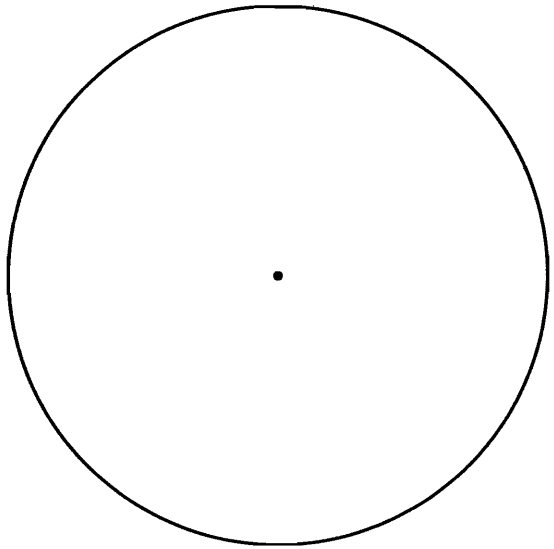
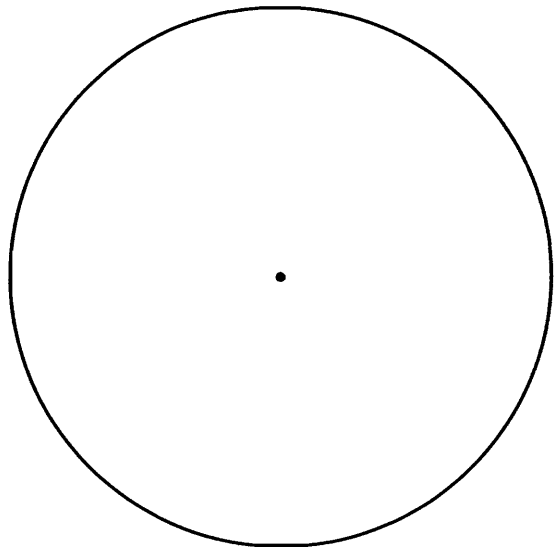
What Do You Call a Person Who Buys and Sells Bugs?

Find the measure of each central angle (rounded to the nearest degree). Write the letter for each answer in the box containing the answer at the bottom of the page. Construct a circle graph for each set of data.







Favorite Kind of Pie
(results of a survey)

Kind	% of total	Central angle
Apple	30%	(C)
Cherry	16%	(A)
Lemon meringue	21%	(E)
Other	33%	(R)

Land Use in a National Park

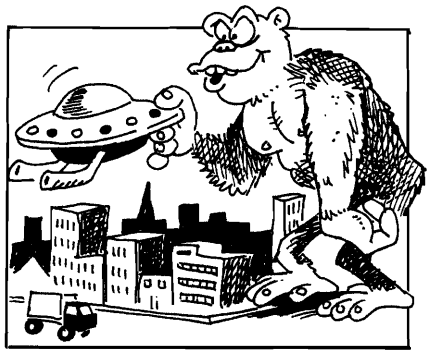
Land Use	% of total	Central angle
Forests	18%	(I)
Mountains	27%	(N)
Campgrounds	5%	(A)
Grasslands	41%	(T)
Lakes/Streams	9%	(E)

Advertising Budget

Medium	% of total	Central angle
Newspapers	25%	(K)
Magazines	20%	(A)
Television	29%	(D)
Radio	8%	(N)
Direct mail	15%	(L)
Outdoor		(T)

72°	97°	101°	58°	29°	148°	62°	11°	65°	108°	90°	16°	104°	76°	18°	54°	32°	119°

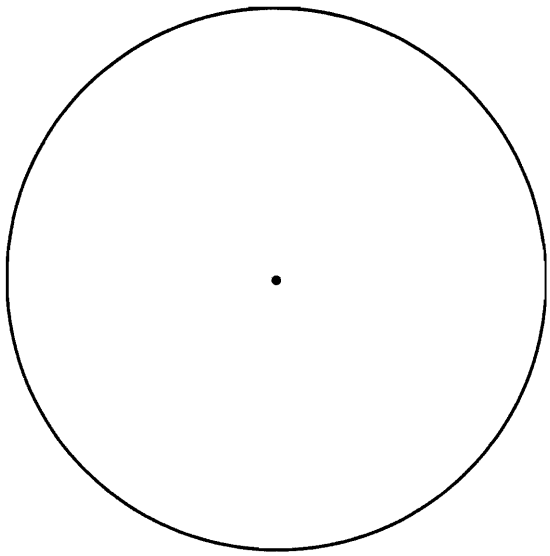
Why Did King Kong Play with the Flying Saucer?



Complete each table. (Round each answer to the nearest whole number, if necessary.) Write the letter for each answer in the circle at the bottom of the page that contains the answer. Construct a circle graph for each set of data.

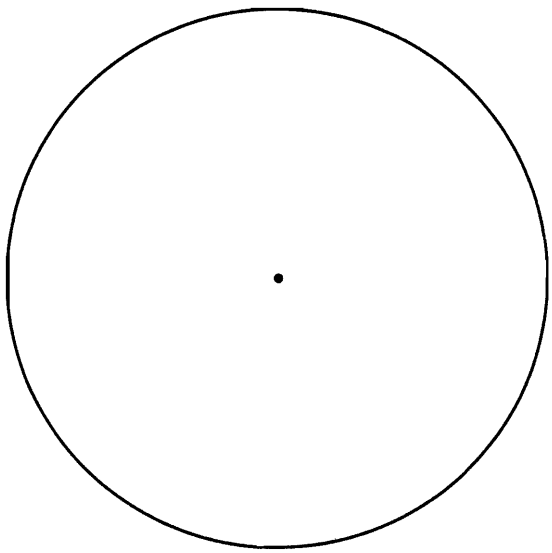
Instruments in the *Arithmics* Rock Band

Family of Instruments	Number of Players	Percent of total	Central angle
Brass	7	(H)	(T)
Woodwind	4	(E)	(G)
Strings	5	(A)	(O)
Percussion	3	(S)	(E)
Keyboard	1	(T)	(I)
TOTAL	20	100%	360°



Clubs at Jaws Junior High

Club	Number of Members	Percent of total	Central angle
Drama	22	(A)	(H)
Crafts	27	(U)	(S)
Computer	16	(E)	(I)
Magic	10	(F)	(T)
Games	15	(H)	(B)
TOTAL		(W)	(R)



86°	54°	22%	40°	35%	90°	30%	72°	17%	5%	80°	65°	126°
100%	25%	108°	13%	24%	46°	11%	360°	18°	15%	61°	20%	18%

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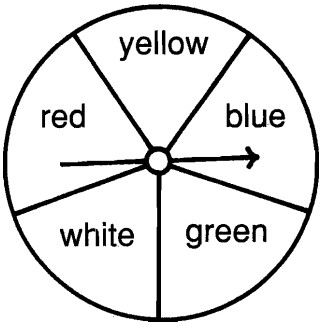
Why Did the King's Birthday Celebration Last So Long?

Do each exercise and find your answer in the Code Key. Notice the letter under it. Write this letter in the box containing the exercise number.

Code Key	$\frac{1}{100}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	1	$\frac{4}{13}$	$\frac{5}{13}$	$\frac{2}{7}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{7}{8}$
	R	T	S	N	I	K	P	E	W	Y	H	A	L	G

I. Find each probability if you spin the spinner once.



(1) P(red)

(2) P(green)

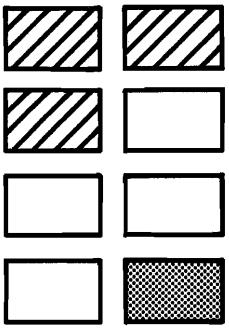
(3) P(blue or white)

(4) P(not yellow)

(5) P(not red)

(6) P(blue or red or yellow)

II. Find each probability if you choose one card at random.



(7) P(striped)

(8) P(white)

(9) P(shaded)

(10) P(white or shaded)

(11) P(striped or white)

(12) P(striped or shaded)

(13) P(not striped)

(14) P(not white)

(15) P(striped or white or shaded)

III. Solve.

(16) What is the probability of guessing the correct answer to a multiple choice question if there are 5 choices?

(17) What is the probability of guessing the correct answer to a true-false question?

(18) What is the probability that your birthday will fall on Saturday or Sunday?

(19) What is the probability of winning a raffle if 500 tickets are sold and you buy 5 of them?

(20) A class of 25 students has 15 girls and 10 boys. If one student is chosen at random, what is the probability it is a girl?

(21) There are 26 letters in the alphabet. What is the probability that a letter chosen at random is in the word MATHEMATICS?

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

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When the Boy Tire Maker Married the Girl Tire Maker, What Did Everyone Say?

Do each exercise and find your answer at the bottom of the page. Write the letter of the exercise in the box above the answer.

1. Suppose you roll a regular 6-faced die.

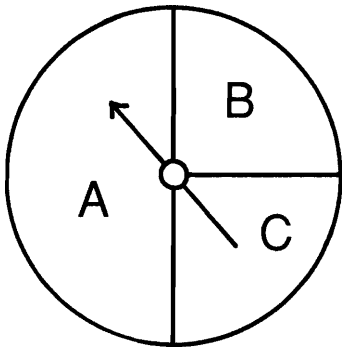
(A) How many equally likely outcomes are there?

(E) If you roll the die once, what is the probability of rolling a 3?

(H) If you roll the die 60 times, about how many times would you expect to get a 1?

(I) If you roll the die 300 times, about how many times would you expect to get a 5?

2. A spinner is shown at the right for which each outcome is **not** equally likely.



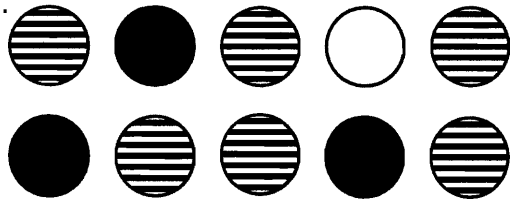
(E) If you spin the spinner once, what is the probability that it will stop on A?

(A) If you spin the spinner once, what is the probability that it will stop on B?

(T) If you spin the spinner 50 times, about how many times would you expect it to stop on A?

(Y) If you spin the spinner 80 times, about how many times would you expect it to stop on C?

3. Find each probability if you choose one marble at random.



(E) P(black)

(A) P(not black)

(R) P(black or white)

(S) P(striped)

(E) P(not white)

(M) P(yellow)

4. Solve.

(N) If you flip a coin 150 times, about how many times would you expect to get heads?

(C) The letters a, e, *i*, o, *u*, and y are vowels. If one letter of the alphabet is chosen at random, what is the probability it is a vowel?

(K) If you randomly pick a date in April, how many equally likely outcomes are there?

(P) A magician asks you to pick a card, any card, from a standard deck of 52 cards. What is the probability of picking an ace?

25	10	$\frac{9}{10}$	20	$\frac{1}{8}$	0	6	30	$\frac{1}{2}$	$\frac{2}{13}$	$\frac{7}{10}$	$\frac{1}{5}$	75	50	$\frac{3}{13}$	$\frac{1}{6}$	32	$\frac{3}{5}$	$\frac{1}{13}$	$\frac{1}{4}$	$\frac{2}{5}$	$\frac{3}{10}$

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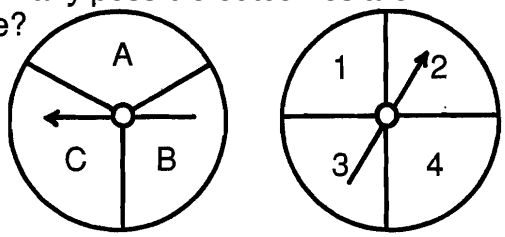
Why Was Jesse James In the Hospital?

Find each answer in the code at the bottom of the page. Write the letter of the problem above the answer each time it appears.

(I) If you spin each of these spinners once, how many possible outcomes are there?



(E) The students at Melmac Middle School are trying to choose a school mascot and a school color. The suggestions for mascot are lion, bear, and porpoise. The suggestions for color are red, blue, and gold. How many different combinations are there?

(R) Mr. and Mrs. Quagmire are trying to decide on a name for their new baby girl. For a first name, they like either Melissa, Jennifer, Karen, Lisa, or Susan. For a middle name, they like either Anne or Jean. How many different choices do they have?

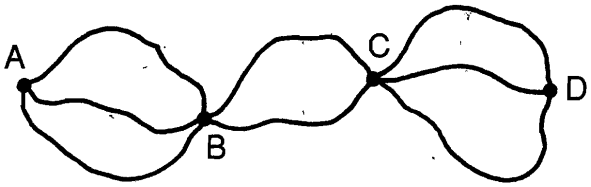
(A) Elmo decided to take two classes during summer school. For first period, he can choose either math or English. For second period, he can choose either art, music, drama, or cooking. How many different schedules of two classes are possible?

(C) If a baseball team has 5 pitchers and 3 catchers, how many different pitcher-catcher combinations can be used?

(H) Glitzy just bought 4 blouses, 5 skirts, and 2 blazers. If all the patterns and colors match, how many outfits can she make?

(T) Pizza Mind Pizza Parlor has 8 kinds of pizza, 3 kinds of salad, and 4 kinds of beverage. If you order one item from each category, how many different meals can be ordered?

(W) According to the map, how many different routes are there from A to D?



(O) Shoe World sells shoes in 20 different styles. Each style comes in 4 colors and 9 sizes. If the store manager wants to have every possible combination, how many pairs must he keep in stock?

(K) In Cornville, bicycle license plates have 2 letters followed by a 1-digit number. How many different license plates are possible?

(S) When you order a sandwich at Nelly's Deli, you can choose from 4 kinds of bread and 7 kinds of meat. On any sandwich, you can have mayonnaise or mustard or both or neither. How many different sandwiches can be ordered?

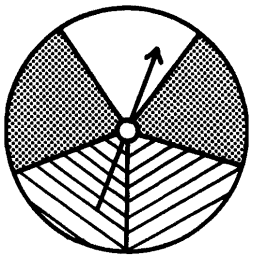
CODED ANSWER

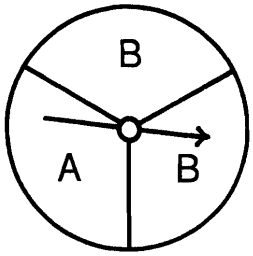
40	9	92	18	8	112	880	8	24	112	12	15	6,760	6	112	40	720	720	96	9	10

What Do the Police Put On a Bad Pig?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

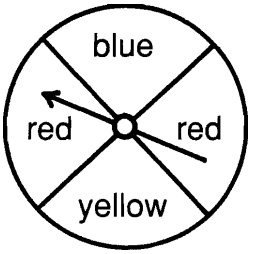
I. Find each probability if you spin both spinners.

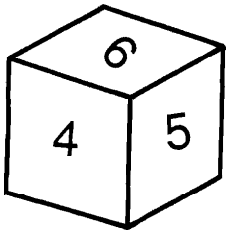




(1) P(white, A)
(2) P(white, B)
(3) P(striped, A)
(4) P(striped, B)
(5) P(not striped, A)
(6) P(not striped, B)
(7) P(not white, A)
(8) P(not white, B)

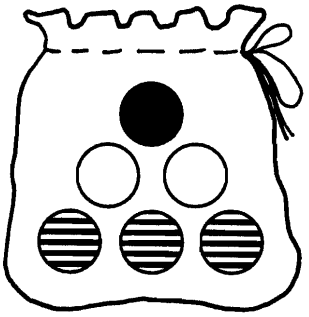
II. Find each probability if you spin the spinner and roll the number cube.





(9) P(blue, 2)
(10) P(blue, not 2)
(11) P(yellow, even)
(12) P(red, even)
(13) P(not blue, 5)
(14) P(not blue, odd)
(15) P(red, 4)
(16) P(red, not 4)

III. Find each probability if you pick one marble, replace it, then pick a second marble.



(17) P(black, white)
(18) P(black, striped)
(19) P(white, striped)
(20) P(not white, striped)
(21) P(black, black)
(22) P(striped, striped)
(23) P(white, not white)
(24) P(not white, not white)

IV. Solve.

(25) A test has two multiple choice questions, each with five choices. What is the probability of guessing the correct answer to both questions?

(26) One letter is randomly selected from the word MATH, and a second letter is randomly selected from the word JOKES. What is the probability that both letters are vowels?

A	T	T	N	O	H	E	E	A	T	P	P	I	M	G	C	O
$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{15}$	$\frac{1}{16}$	$\frac{1}{18}$	$\frac{1}{20}$	$\frac{1}{24}$
T	H	O	U	G	S	S	L	F	A	E	E	F	A	T	S	E
$\frac{1}{25}$	$\frac{1}{36}$	$\frac{2}{5}$	$\frac{2}{7}$	$\frac{2}{9}$	$\frac{2}{15}$	$\frac{2}{15}$	$\frac{3}{8}$	$\frac{3}{10}$	$\frac{4}{9}$	$\frac{4}{15}$	$\frac{4}{15}$	$\frac{5}{8}$	$\frac{5}{12}$	$\frac{5}{24}$	$\frac{7}{15}$	$\frac{8}{15}$

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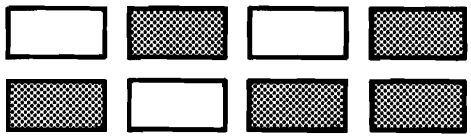
What Do You Get if a Bunch of Bad Guys Fall in the Ocean?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

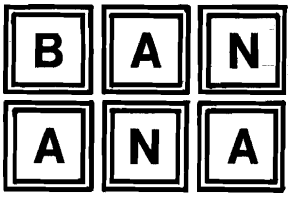
I. Find each probability if you pick a card, do *not* replace it, then pick a second card.



(1) P(black, then white) (2) P(black, then black)

(3) P(white, then black) (4) P(white, then white)

II. Each letter of the word ***BANANA*** is written on a card. Find each probability if you pick two cards without replacing the first.

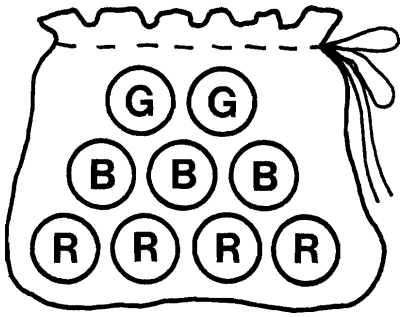


(5) P(B, then N) (6) P(B, then A) (7) P(N, then B)

(8) P(N, then A) (9) P(A, then B) (10) P(A, then N)

(11) P(N, then N) (12) P(A, then A) (13) P(B, then B)

III. Find each probability if you pick a marble, do not replace it, then pick a second marble. (R = red; B = blue; G = green)



(14) P(blue, then green) (15) P(green, then red)

(16) P(green, then green) (17) P(green, then not green)

(18) P(red, then blue) (19) P(red, then not blue)

(20) P(blue, then blue) (21) P(not blue, then not blue)

IV. Solve.

(22) There were 6 purple socks and 4 orange socks in a drawer. Zucky picked one sock without looking and then another without looking (or replacing the first). What is the probability that he picked 2 purple socks?

(23) There are 10 boxes in a grab bag. The boxes are identical except that 7 of them contain $20 bills. A contest winner gets to pick two boxes from the grab bag. What is the probability of getting two $20 bills?

TH	AN	IT	IT	IT	PL	AC	ES	EY	EY	ON	ON	RI	DE
0	$\frac{1}{3}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{14}$	$\frac{1}{15}$
DE	DE	SO	ME	ET	WA	TE	AM	LL	RS	VE	RY	ST	ST
$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{36}$	$\frac{2}{5}$	$\frac{3}{28}$	$\frac{4}{9}$	$\frac{5}{12}$	$\frac{5}{14}$	$\frac{5}{18}$	$\frac{7}{15}$	$\frac{7}{18}$	$\frac{7}{36}$	$\frac{15}{56}$	$\frac{15}{56}$

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Why Couldn't the Church Steeple Keep a Secret?

Solve each problem below and find your solution in the answer column. Write the letter of the answer in each box containing the number of the problem.

(1) In how many ways can you arrange 6 things?

(2) In how many ways can you arrange 6 things, 3 at a time?

(3) Maria keeps her 4 stuffed bears lined up on a shelf over her bed. How many arrangements of the bears are possible?

(4) How many different 2-letter arrangements can be selected from the 5 letters in the word CANDY?

(5) Eleven people are competing in a sack race. There is a blue ribbon for first, a red ribbon for second, and a white ribbon for third. How many different first-second-third place finishes are possible?

(6) David has decided he wants to call Jessica, Martha, and Eileen, but he hasn't decided in what order to call them. How many choices does he have?

(7) The teacher plans to assign 8 students to 8 desks for a debate. How many different seating arrangements are possible?

(8) In how many different ways can a president, vice-president, and secretary be elected from a class of 32 students?

(9) If a school offers 9 different subjects, how many different schedules of 5 classes are possible?

(10) Tak-Kee Plastic Company prints a 2-letter code on each of its products. How many different 2-letter codes can be formed using the 26 letters of the alphabet if the two letters must be different?

(11) SureLock Lock Company makes combination locks with 50 numbers printed on the dial. Each lock combination is an arrangement of 3 different numbers. How many locks can the companymake without repeating a combination?

(F) 690
(Y) 15,120
(H) 20
(K) 8
(W) 40,320
(N) 110,200
(S) 720
(R) 14,830
(T) 29,760
(O) 24
(L) 117,600
(G) 36
(A) 990
(E) 120
(B) 650
(P) 41,150
(D) 6
(C) 27,360

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

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MIDDLE SCHOOL MATH WITH PIZZAZZ! BOOK E
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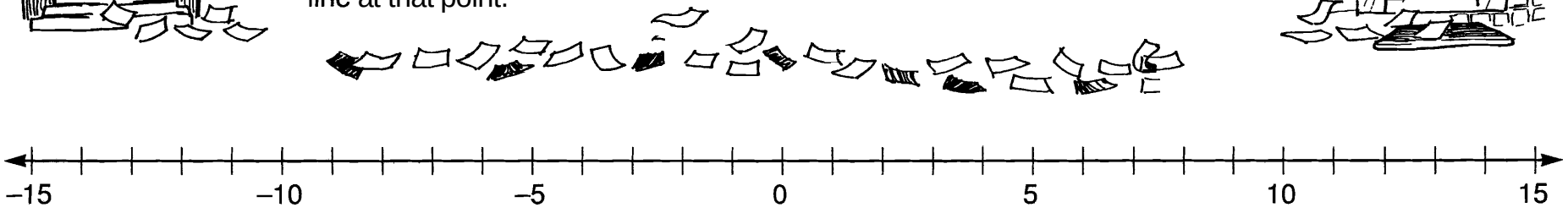
Why Did the Bank Robber Run Home and Jump in the Shower?.

Write an integer for each situation. Find the point on the number line that corresponds to the integer. Write the letter of the exercise above the number line at that point.



(H) 3 units to the left of 0

( ) the opposite of 13

(D) 2 units to the right of 0

(E) the opposite of –11

(H) 8° below zero

(S) a gain of 6 lb

(T) a deposit of $15

(R) 6 ft below sea level

(I) a gain of 9 yd

(A) 1 point higher

(H) a loss of $14

(S) 11 fewer members

(I) an increase of 5 miles per hour

(E) 2 km below the surface

(T) 15 s before blastoff

(W) a withdrawal of $9

(H) up 4 flights

(U) put in 14 gal

(E) 5 years ago

(T) a debt of $12

(D) score 10 points

(H) 8 steps forward

(E) the opposite of 7

(O) the opposite of –13

(H) not positive or negative

Why Shouldn't You Let a Doctor Put One of Those Sticks in Your Mouth?

Circle the appropriate number-letter next to each exercise. Write the letter in the matching numbered box at the bottom of the page.

I. For each exercise, write > or < in the ◯.

		>	<
(1)	8 ◯ −3	6-O	17-L
(2)	4 ◯ −9	28-E	20-G
(3)	−6 ◯ 1	32-S	15-W
(4)	−2 ◯ −3	3-U	8-B
(5)	−8 ◯ −7	33-V	23-H
(6)	−12 ◯ −5	26-P	10-K
(7)	4 ◯ 11	24-J	17-O
(8)	1 ◯ −10	20-E	12-I

		>	<
(9)	−5 ◯ 20	29-M	8-T
(10)	−7 ◯ 0	1-S	33-A
(11)	−13 ◯ −14	26-I	13-D
(12)	−75 ◯ −50	30-F	12-O
(13)	−25 ◯ 18	7-R	22-T
(14)	99 ◯ −100	32-E	18-S
(15)	−99 ◯ −100	1-Y	8-X
(16)	0 ◯ −100	13-W	34-L

II. For each exercise, decide whether the integers are in order from the least to the greatest.

		yes	no
(17)	−9, −2, 5	18-A	25-M
(18)	−8, 0, −1, 9	16-R	24-E
(19)	−12, −7, −5, 6, 15	2-0	19-F

		yes	no
(20)	−38, −24, 19, −10, 3	5-G	30-C
(21)	−44, −40, 0, 16, 45	7-N	27-P
(22)	−58, −60, 4, 59, 61	31-L	16-H

III. For each exercise, decide whether the integers are in order from the greatest to the least.

		yes	no
(23)	12, −1, 1, −17	4-R	34-M
(24)	14, 6, 0, −13, −15	5-D	21-S
(25)	32, −30, 29, −5, −85	9-A	11-N

		yes	no
(26)	90, 9, 0, −90, −9	31-H	19-T
(27)	25, 11, −8, −7, −15	14-B	27-C
(28)	4, 2, 0, −2, −4, −42	31-R	23-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

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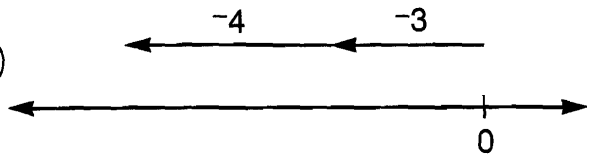
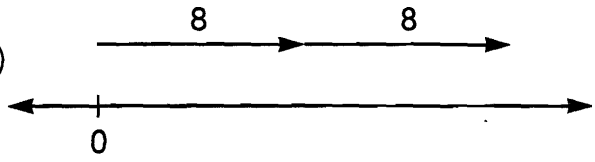
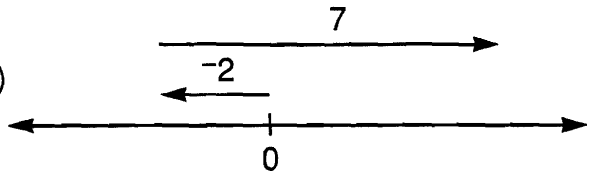
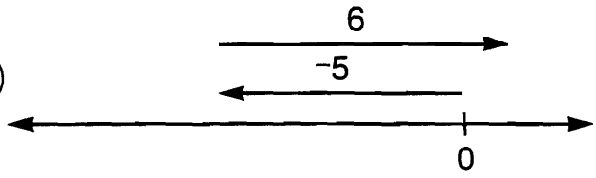
How Is a Mouse Like Grass in a Meadow?

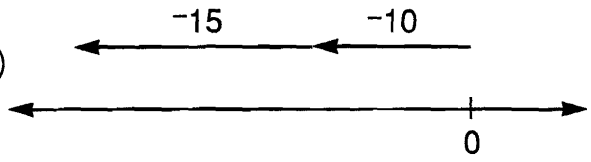
For each exercise, identify the integer that results from combining the two arrows. Write the letter of the exercise in the box containing the answer.

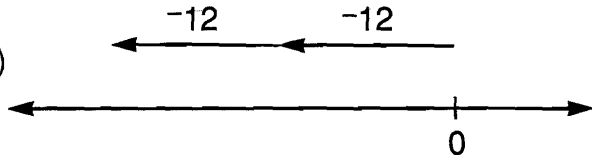
(E) 

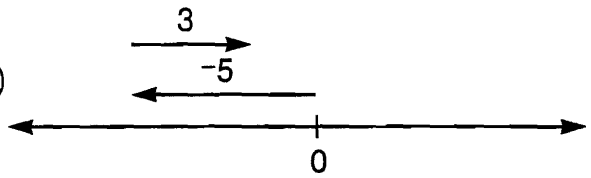
(T) 

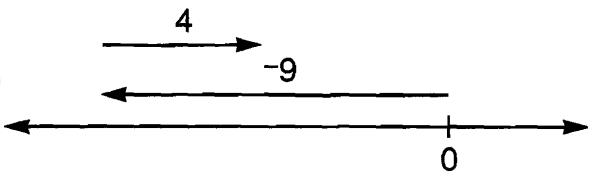
(A) 

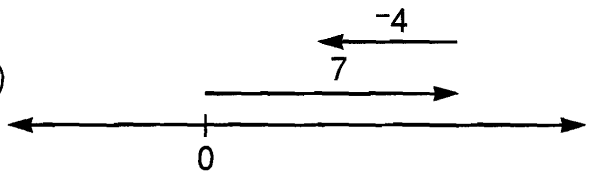
(I) 

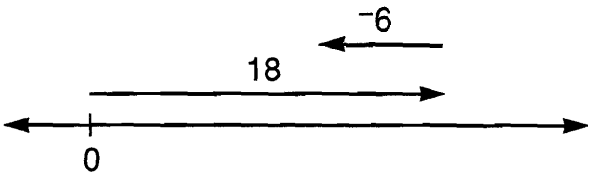
(T) 

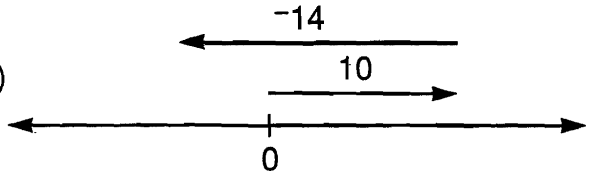
(E) 

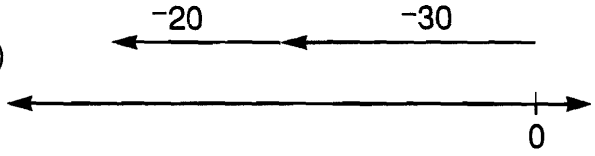
(A) 

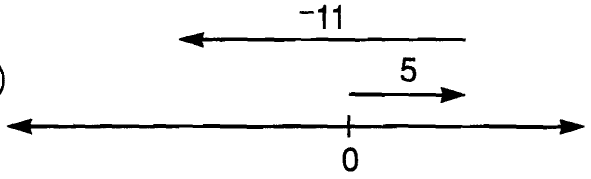
(T) 

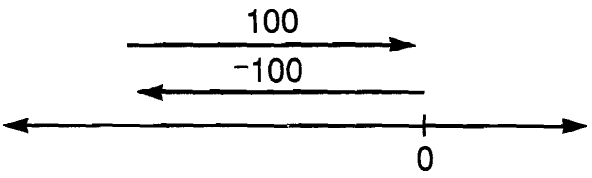
(H) 

(E) 

(C) 

(T) 

(T) 

(L) 

16	3	−24	−4	5	−6	−25	0	−7	12	−2	−50	1	−5

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When Do a Bunch of Cold Germs Celebrate a Victory?

Do each exercise and find your answer in the corresponding set of answer boxes. Write the letter of the exercise in the box containing the answer.

(E) $-3 + -4$

(I) $-20 + -30$

(Y) $-6 + -1 + -3$

(N) $-8 + -5$

(A) $7 + 8$

(W) $-4 + -7 + -11$

(H) $-7 + -7$

(B) $-9 + -2$

(G) $-9 + -9 + -9$

(T) $-1 + -16$

(N) $-4 + -40$

(H) $13 + 2 + 6$

(E) On first down, the Vultures lost 6 yd. On second down, they lost 5 yd. On third down, they lost 8 yd. Use an integer to express their overall change in position as a result of the three plays. _____ yd

(R) A scuba diver dove 18 ft below the surface to observe a school of fish. Then he dove another 24 ft to the bottom. If he started at sea level, what was his elevation when he reached the bottom? _____ ft

–22	–14	–19	–44	18	–17	21	–7	–10	–36	–11	–42	–50	–13	–27	–18	15

(S) $-33 + -15$

(O) $-47 + -20$

(E) $-7 + -13 + -6$

(E) $-29 + -64$

(E) $-8 + -75$

(T) $-19 + -48 + -5$

(A) $-41 + -58$

(S) $35 + 39$

(H) $-25 + -25 + -25$

(I) $72 + 16$

(N) $-87 + -24$

(Z) $-8 + -8 + -8 + -8$

(M) The temperature at 10 A.M. was $-7°$F. By noon, the temperature had dropped 12°F. By 2 P.M., it had dropped another 5°F. What was the temperature at 2 P.M.? _____ °F

(N) Rolex wrote a check for $45. The next day, he wrote a check for $32. Use an integer to express the change in his bank balance when the two checks were cashed. $_____

–24	**–99**	–111	–76	–72	–67	82	–75	88	74	–27	–48	–77	**–26**	**–93**	–32	**–83**

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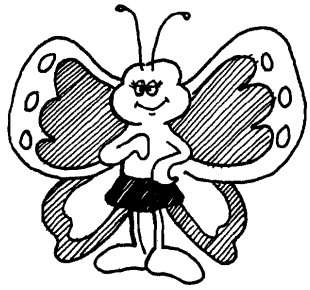
Why Didn't the Butterfly *Go* to the Dance?



Write each answer, then mark it in the answer column. For each set of exercises, there is one extra answer. Write the letter of this answer in the corresponding box at the bottom of the page.

1	$-5 + 2$	Answers:		**8**	$9 + -4$	Answers:	
	$7 + -3$	(V) 4	(C) -3		$3 + -7$	(S) 9	(A) -4
	$-4 + -6$	(A) -8	(K) -10		$-6 + 15$	(I) 12	(U) 5
2	$1 + -8$			**9**	$-7 + 1$		
	$-6 + -12$	(F) 7	(L) 13		$-5 + -12$	(A) 8	(T) -11
	$-2 + 9$	(U) -7	(J) -18		$9 + -20$	(P) -6	(E) -17
3	$-7 + 6$			**10**	$-4 + -3$		
	$5 + -8$	(G) -1	(N) -3		$-4 + 3$	(C) -7	(R) 1
	$12 + 13$	(Y) 25	(H) 18		$4 + -3$	(T) 7	(O) -1
4	$-10 + -10$			**11**	$-8 + 18$		
	$17 + -1$	(D) 16	(T) -8		$6 + -19$	(N) 10	(W) -16
	$-11 + 5$	(R) -20	(B) -6		$13 + 5$	(F) 18	(S) -13
5	$4 + -9$			**12**	$11 + -2$		
	$-7 + -15$	(A) 14	(O) 9		$-7 + -4$	(L) 12	(E) 9
	$-3 + 12$	(P) -22	(C) -5		$-15 + 8$	(D) -7	(T) -11
6	$16 + -8$			**13**	$-6 + 12$		
	$-5 + 20$	(M) 8	(T) 15		$99 + -99$	(P) -2	(G) 6
	$-6 + 6$	(S) -4	(W) 0		$3 + -5$	(R) 0	(B) -4
7	$-13 + -4$			**14**	$-20 + -30$		
	$-7 + 2$	(F) -5	(Z) -17		$70 - 40$	(Y) -50	(M) 50
	$14 + -16$	(E) -2	(O) 10		$-70 + 40$	(N) 30	(T) -30

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

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Who Saw the Brontosaurus Enter the Restaurant?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) $-6 + -4 + 3$

(2) $9 + -15 + 8$

(3) $-7 + -12 + -10$

(4) $-5 + 16 + -2$

(5) $-70 + 20 + 30$

(6) $33 + -24 + -9$

(7) $-4 + -5 + 2 + 6$

(8) $-11 + 8 + -1 + 7$

(9) $-14 + -9 + 20 + -2$

(10) $29 + -4 + 25 + 3$

(11) $18 + -12 + 5 + -6$

(12) $45 + -10 + -20 + -30$

(13) On Monday, the high temperature in Frostbite, Alaska, was $-5°$F. On Tuesday, it rose $14°$. On Wednesday, it dropped $20°$. What was the temperature on Wednesday?

(14) At its first stop a bus picked up 10 people. At the next stop, 8 people got on and 3 people got off. At the third stop, 5 people got on and 12 people got off. How many passengers were then on the bus?

A nutrition expert rated the relative nutritional values of many foods. A few ratings are shown in the table. Ratings of different items can be added to get an overall score for a meal. Find the overall score for each of the following meals.

(15) Peanut butter (2 tbsp), jelly (1 tbsp), white bread (2 slices), apple.

(16) Hamburger (3 oz), American cheese (1 oz), hamburger bun, whole milk (8 oz).

(17) Potato chips (1 oz), Hostess Twinkies (1 pack), Coca-Cola (12 oz).

(18) 2 large eggs, 1 slice of white bread, butter (1 pat), orange juice (6 oz).

Nutrition Scoreboard	
potato (medium, baked)	71
orange juice (6 oz)	47
white bread (2 slices)	44
hamburger bun	36
whole milk (8 oz)	28
apple (1 medium)	23
potato chips (1 oz)	15
peanut butter (2 tbsp)	5
hamburger, regular (3 oz)	-4
jelly (1 tbsp)	-6
egg (1 large)	-7
American cheese (1 oz)	-9
butter (1 pat)	-13
Hostess Twinkies (1 pack)	-34
Coca-Cola (12 oz)	-55

AF	IT	AT	TH	EY	FO	OO	EF	ED	AT	CH	IN
0	51	2	−13	8	−5	5	42	57	−29	66	6
EE	NT	ER	HO	LE	SS	OM	EA	TS	ON	AW	AR
−15	3	14	9	−74	−3°F	−7	−1	−11°F	−20	−62	53

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Why Do Some People Say That Captain Kirk Has Three Ears?

Do each exercise 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 each answer, the answers are arranged in order from smallest to largest.)

(E) $4 - 6$

(R) $3 - -1$

(F) $4 - -8$

(A) $-14 - 10$

(N) $30 - 9$

(I) $2 - 16$

(E) $35 - -7$

(A) $-3 - -13$

(S) $-15 - 5$

(R) $-1 - -20$

(T) $-8 - -8$

(A) $6 - 24$

(D) $-7 - -15$

(H) $-13 - -1$

(R) $-10 - -60$

(A) $9 - -6$

(E) $-11 - -2$

(H) $-20 - 30$

(N) $-5 - -12$

(I) $18 - -18$

(A) $4 - 9$

(G) $-4 - 9$

(L) $13 - -3$

(E) $-80 - -50$

(A) $-7 - -10$

(R) $13 - 20$

(H) $-14 - 11$

(A) $24 - 18$

(L) $-5 - -2$

(O) $-6 - -26$

(T) $-12 - -1$

(I) $12 - -1$

(F) $99 - 100$

(E) $-6 - -8$

(A) $-10 - -2$

(F) $3 - -15$

(R) $-11 - 4$

(N) $50 - 36$

(T) $0 - -28$

−50	−30	−27	−25	−24	−20	−19	−18	−16	−15	−14	−13	−12	−11	−10	−9	−8	−7	−6	−5	−4	−3	−2	−1	0
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	28	36	42	50

What Did Cupid Say When Asked: "Where Is There Honey Underground?"

Do each exercise and find your answer in the answer column. Cross out the letter next to it. When you finish, the answer to the title question will remain.

(1) $6 + (4 - 7)$

(2) $9 + (^{-}2 - 8)$

(3) $^{-}12 + (^{-}1 + 5)$

(4) $^{-}3 - (3 - 10)$

(5) $(^{-}2 + 15) - ^{-}4$

(6) $(^{-}5 - ^{-}1) + ^{-}8$

(7) $(9 - 16) + 2$

(8) $(4 + ^{-}7) - ^{-}12$

(9) $(^{-}3 + 8) + (10 - 1)$

(10) $(6 - 7) + (^{-}11 + ^{-}2)$

(11) $(5 - ^{-}4) + (^{-}5 - 4)$

(12) $(^{-}2 + ^{-}6) + (20 + ^{-}18)$

(13) $(^{-}7 - 1) - (3 + 7)$

(14) $(^{-}11 + 6) - (9 - 10)$

(15) $(6 + ^{-}8) - (^{-}3 - 4)$

(16) $(1 - ^{-}99) - (^{-}1 + 99)$

(17) A scuba diver was swimming at an elevation of –8 meters. A shark was swimming at an elevation of –29 meters. Find the difference between these two elevations. _____ m

(18) Gizmo had a balance of $100 in his checking account. One day he wrote checks for $33 and $20. He also made a deposit of $41. What was his new balance? $_____

(19) WORLD RECORD: The greatest temperature change ever recorded in a single day occurred in Browning, Montana, in 1916. The temperature dropped from 44°F to $^{-}56$°F. What was the change in temperature? _____°F

(20) WORLD RECORD: The world's tallest mountain, if measured from base to peak, is Mauna Kea in Hawaii. The base has an elevation of –19,680 feet. The peak has an elevation of 13,796 feet. How tall is Mauna Kea? _____ ft

N	9
E	13
P	21
W	4
O	0
N	20
S	$^{-}12$
T	5
I	$^{-}15$
S	3
E	100
Y	$^{-}14$
M	96
D	$^{-}4$
E	7
R	14
G	33,476
A	$^{-}1$
E	$^{-}7$
V	$^{-}18$
O	17
R	88
B	31,916
S	$^{-}5$
L	2
H	$^{-}8$
T	$^{-}6$

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Why Is Your Nose in the Middle of Your Face?

Write each answer, then mark it in the answer column. For each set of exercises, there is one extra answer. Write the letter of this answer in the corresponding box at the bottom of the page.

1	$-4 \cdot 5$	Answers:			**8**	$-2 \cdot 3 \cdot -5$	Answers:		
	$6 \cdot -8$	(G) -48	(K) -20			$4 \cdot -1 \cdot 9$	(P) -36	(W) 30	
	$-9 \cdot -2$	(E) -18	(R) 18			$-8 \cdot -5 \cdot 2$	(S) 36	(V) 80	
2	$-3 \cdot 8$				**9**	$6 \cdot -2 \cdot -4$			
	$-4 \cdot -6$	(B) 24	(T) -49			$-7 \cdot 5 \cdot 2$	(L) 48	(T) -50	
	$7 \cdot 7$	(U) -24	(F) 49			$-3 \cdot -8 \cdot -2$	(N) -70	(D) -48	
3	$-5 \cdot -9$				**10**	$4 \cdot 3 \cdot -5$			
	$20 \cdot -4$	(S) -48	(V) -80			$-9 \cdot -8 \cdot -1$	(H) -72	(U) -60	
	$-16 \cdot 2$	(M) -32	(D) 45			$-2 \cdot 2 \cdot -6$	(R) 24	(E) -24	
4	$6 \cdot -6$				**11**	$-7 \cdot -3 \cdot -4$			
	$-10 \cdot -18$	(L) -36	(W) 36			$5 \cdot -9 \cdot 2$	(O) -90	(H) 84	
	$-12 \cdot -3$	(I) -180	(Y) 180			$-6 \cdot -5 \cdot 3$	(T) -84	(W) 90	
5	$-1 \cdot 24$				**12**	$-8 \cdot 2 \cdot 10$			
	$2 \cdot -24$	(H) -24	(P) -48			$4 \cdot -5 \cdot -5$	(C) -100	(P) -160	
	$-3 \cdot -24$	(O) 72	(T) 84			$-6 \cdot -8 \cdot -2$	(A) 100	(L) -96	
6	$-7 \cdot -11$				**13**	$-7 \cdot 9 \cdot -1$			
	$15 \cdot -4$	(G) -60	(E) 75			$-3 \cdot -5 \cdot -3$	(O) 63	(E) -45	
	$-12 \cdot -5$	(J) 77	(C) 60			$4 \cdot 8 \cdot -2$	(I) -48	(B) -64	
7	$4 \cdot 50$				**14**	$-2 \cdot -15 \cdot -5$			
	$-25 \cdot 8$	(R) -100	(B) 200			$-6 \cdot -1 \cdot 25$	(A) 150	(N) 27	
	$-90 \cdot 0$	(F) 0	(M) -200			$3 \cdot -3 \cdot 3$	(M) -27	(Y) -150	

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

Why Did the Cow Give Only Buttermilk?

Do each exercise and find your answer in the corresponding answer column. Write the letter of the exercise in the box containing the number of the answer.

(S) $-2(-1 + 6)$

(H) $9(-4 - 3)$

(E) $(-8 \cdot -3) - -5$

(L) $(-9 + -2) \cdot 4$

(I) $20 + (5 - 12)$

(A) $-3(-7 + 1)$

(N) $(-6 \cdot 2) + (2 \cdot -6)$

Answers:

(33) -44
(13) -24
(15) -10
(19) 13
(6) 29
(24) 15
(3) 18
(27) -63

(U) $(-1 - -8) + 4$

(E) $(7 + -12) \cdot 9$

(W) $6(-3 - 7)$

(S) $-2(-11 + -4)$

(I) $(-15 + 9) - -1$

(A) $-4 \cdot -2 \cdot -4$

(E) $(-3 \cdot -6) - (5 \cdot -2)$

Answers:

(1) -60
(12) -32
(17) -45
(4) 36
(8) 30
(24) 11
(21) 28
(32) -5

(G) $8(16 + -7)$

(T) $9(20 - 30)$

(R) $(-14 - 6) + 35$

(H) $(-5 + 1) \cdot -12$

(E) $4 - (2 - 15)$

(T) $-11\ (-7 - -10)$

(K) $(-5 \cdot -4) + (-6 \cdot 6)$

Answers:

(25) -33
(29) 15
(34) -16
(18) 72
(9) 17
(4) -90
(30) -30
(16) 48

(H) $(-4 + 9) \cdot -3$

(M) $-5 \cdot 8 \cdot -2$

(C) $-10 - (99 - 100)$

(V) $-6(-6 + -6)$

(E) $(7 + -15) - 20$

(L) $2 \cdot -3 \cdot 9$

(B) $(-1 + -1) \cdot (-1 - -1)$

Answers:

(28) -28
(23) 0
(26) 4
(20) 72
(31) 80
(7) -54
(2) -15
(11) -9

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

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What Should a Boy Do If He Loses a Knee?

Do each exercise and find your answer in the corresponding set of answer boxes.
Write the letter of the exercise in the box containing the answer.

(E) $-15 \div 3$

(O) $24 \div -2$

(U) $\frac{72}{9}$

(S) $\frac{-40}{-4}$

(A) $-88 \div -8$

(H) $49 \div -7$

(P) $\frac{-13}{13}$

(O) $\frac{300}{-5}$

(T) $120 \div 10$

(R) $-48 \div 6$

(O) $\frac{-100}{-25}$

(G) $\frac{45}{3}$

(B) $(-18 \div -2) + (28 \div 7)$

(H) $(12 \div -4) + (-64 \div 8)$

(T) $\frac{-42}{7} + \frac{-21}{-3}$

(C) $\frac{36}{9} + \frac{40}{-5}$

15	−12	18	1	−60	60	11	−15	13	8	12	−4	−7	−5	−8	7	10	−11	4	−1

(A) $54 \div -9$

(D) $-28 \div -4$

(E) $\frac{100}{5}$

(O) $\frac{-32}{8}$

(I) $-60 \div -12$

(A) $99 \div -1$

(K) $\frac{-75}{25}$

(Y) $\frac{-36}{-18}$

(R) $-120 \div 6$

(N) $-200 \div -5$

(D) $\frac{180}{18}$

(A) $\frac{77}{-11}$

(F) $(25 \div -5) + (16 \div 2)$

(S) $(-63 \div -7) + (-15 \div 15)$

(K) $\frac{42}{-6} + \frac{-150}{3}$

(N) $\frac{-990}{-10} + \frac{0}{-9}$

−99	40	7	−5	−7	8	−3	4	3	−4	−20	−2	−6	−10	−57	5	10	99	20	2

Moving Words

Do each exercise in the top block and find your answer in the bottom block. Transfer the word from the top box to the corresponding bottom box. Keep working and you will get another story.

$9 + (7 - 12)$ (1) WHO	$-4(-1 + 8)$ (2) SEEM	$(-56 \div -7) - -3$ (3) THAT	$5 \cdot -6 \cdot -10$ (4) ON
$3 + (-8 - 2)$ (5) IN	$20(-9 + 4)$ (6) TO	$(-15 + -45) \div 6$ (7) ONE	$(-1 - -8) + -5$ (8) ARE
$\frac{12 + 18}{-2}$ (9) PEOPLE	$\frac{-35}{7} + \frac{-36}{-3}$ (10) IS	$(-9 \cdot -4) + (-4 \cdot 5)$ (11) NEVER	$\frac{48}{-6} - 10$ (12) EVERY
$7 \cdot -7 \cdot 2$ (13) THE	$(8 - 30) + 25$ (14) TO	$9(-11 - -4)$ (15) MAYBE	$(-32 \div 2) \div -2$ (16) THERE
$-5(-9 + -6)$ (17) SIDES	$(-12 \cdot 10) \div 4$ (18) REASON	$-3 \cdot -8 \cdot -2$ (19) ANYTHING	$16 - (7 + -15)$ (20) WORK
$\frac{-21 - 9}{-5}$ (21) AGREE	$\frac{60}{-3} + \frac{-7}{-7}$ (22) PENTAGON	$(-4 \cdot 4) - (5 \cdot -5)$ (23) STORY	$\frac{-8 \cdot -8}{-8 + -8}$ (24) FIVE

-63	-10	-30	-15	4	24	-7	-98
-19	16	-28	3	6	300	-48	7
11	8	2	-4	75	-100	-18	9

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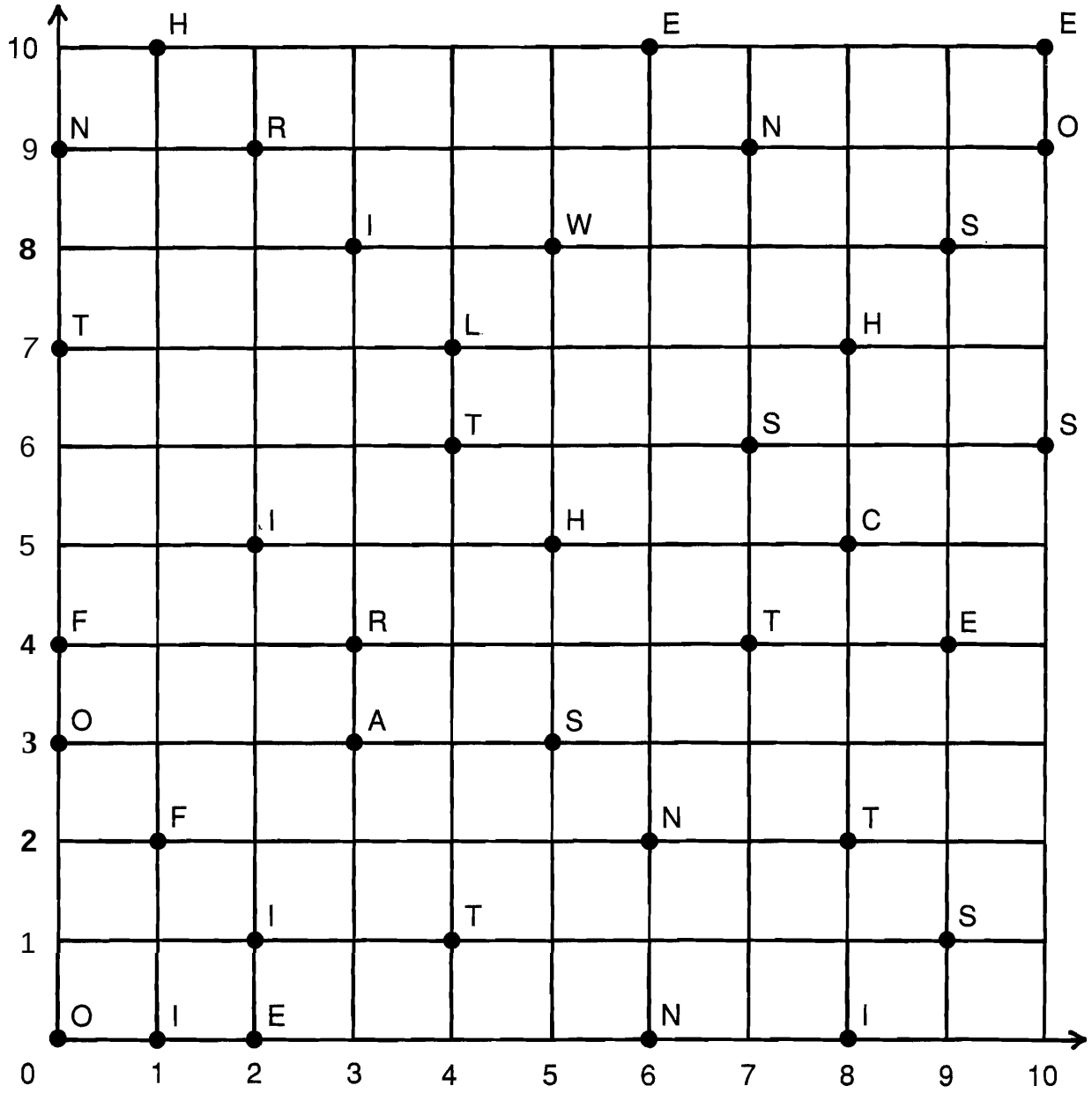
Which Skier Won the Norway-to-Finland Cross-Country Ski Race?

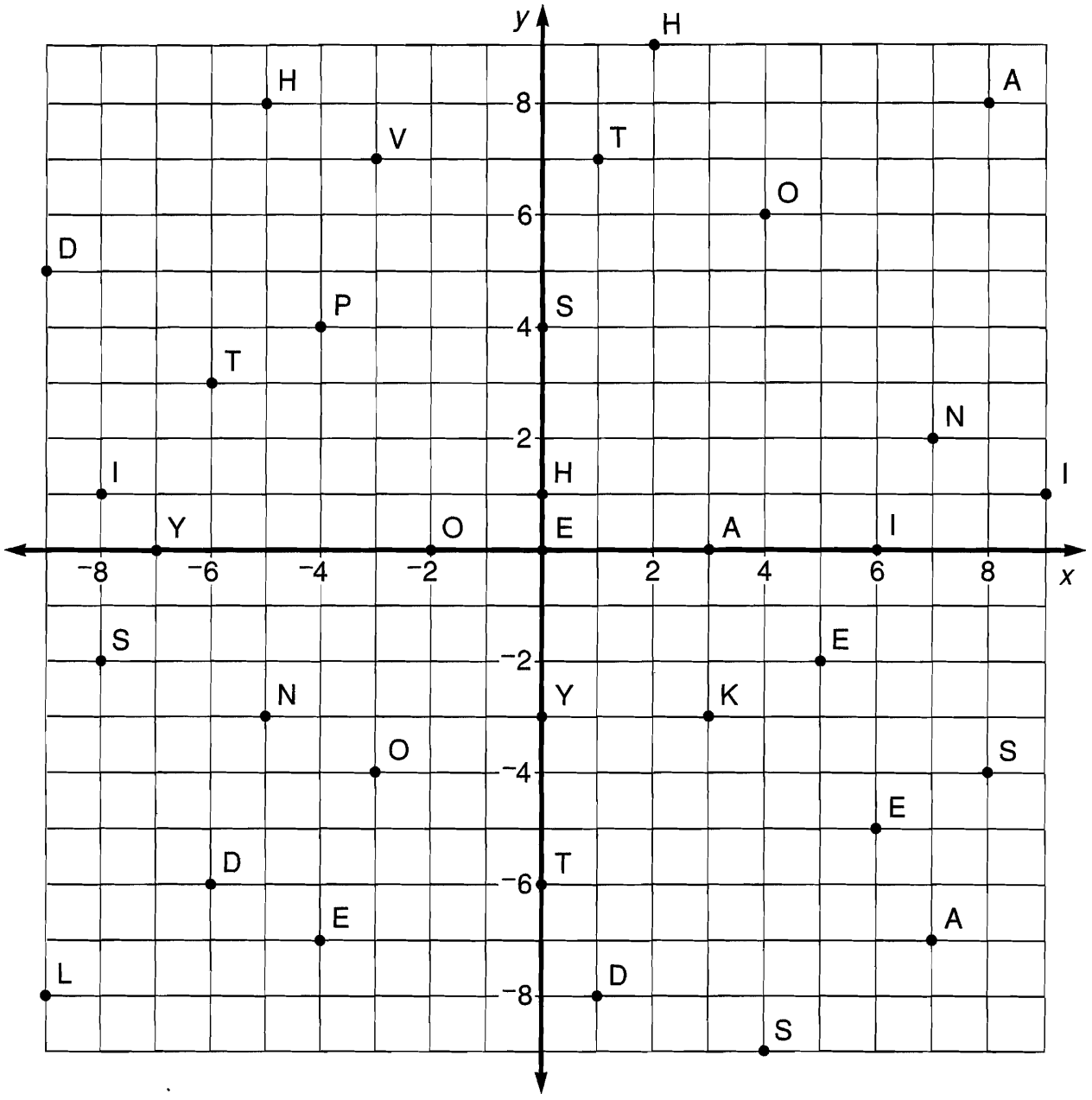
Each ordered pair at the bottom of the page represents a point on the coordinates below. Above each ordered pair, write the letter that appears at that point.



(2,5)	(7,4)	(5,8)	(3,3)	(9,1)	(4,6)	(8,7)	(6,10)	(1,2)	(3,8)	(2,9)	(10,6)	(4,1)
(0,0)	(6,0)	(2,0)	(0,7)	(0,3)	(8,5)	(3,4)	(10,9)	(5,3)	(7,6)	(8,2)	(1,10)	(9,4)
(0,4)	(8,0)	(6,2)	(7,9)	(2,1)	(9,8)	(5,5)	(4,7)	(1,0)	(0,9)	(10,10)		

Why Is a Mother Kangaroo Unhappy When It Rains?

Each ordered pair at the bottom of the page represents a point on the coordinates below. Above each ordered pair, write the letter that appears at that point.



(4,6)	(7,2)	(−6,3)	(−5,8)	(−3,−4)	(−8,−2)	**(6, -5)**	**(I ,)**	(3,0)	(−7,0)	(0,4)
(0,−6)	(2,9)	(−4,−7)	(3,−3)	**(I)**	(−6,−6)	(4,−9)	(0,1)	(8,8)	(−3,7)	**(5, -2)**
(1,7)	(−2,0)	(−4,4)	(−9,−8)	(7,−7)	(0,−3)	(9,1)	(−5,−3)	(8,−4)	(6,0)	(−9,5)	(0,0)

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Get the Point

Connect the points in order. Do not connect points separated by "Lift Pencil." Shade in a as formed by points inside a box.

(−2,−10)
(−1,−9)
(−7,−7)
(−9,−5)
(−10,−5)
(−9,−4)
(−10,−4)
(−8,−2)
(−10,−2)
(−7,0)
(−5,4)
(−6,6)
(−10,10)
(−11,16)
(−11,18)
(−9,18)
(−5,13)
(−3,6)
(−1,6)
(2,13)
(7,16)
(10,17)
(10,16)
(8,12)
(1,5)
(2,4)
(4,0)
(6,0)
(8,−1)
(7,−1)
(8,−3)
(7,−2)
(8,−4)
(7,−4)
(5,−7)

(2,−9)
(3,−10)

Lift Pencil

(−5,7)
(−9,11)
(−10,17)
(−6,12)
(−5,7)

Lift Pencil

(1,7)
(2,11)
(4,13)
(9,16)
(6,12)
(1,7)

Lift Pencil

(0,2)
(−1,4)
(−3,2)
(−2,0)

(−1,0)
(0,2)
(−1,2)
(−2,1)
(−1,0)

Lift Pencil

(3,2)
(1,4)
(1,0)
(3,0)

(3,1)
(2,0)
(2,2)
(3,2)
(3,1)

Lift Pencil

(−7,0)
(1,−1)
(3,−1)
(2,−2)
(1,−1)

Lift Pencil

(0,−3)
(4,−3)
(3,−6)

(1,−6)
(0,−5)
(−2,−5)
(−3,−4)
(−1,−3)
(0,−3)
(1,−6)

Lift Pencil

(2,−6
(1,−7
(0,−7
(−2,−

Lift Pencil

(2,−3)
(2,−5)

Lift Pencil

(−1,−5)
(0,−6)

Lift Pencil

(4,−2)
(11,1)

Lift Pencil

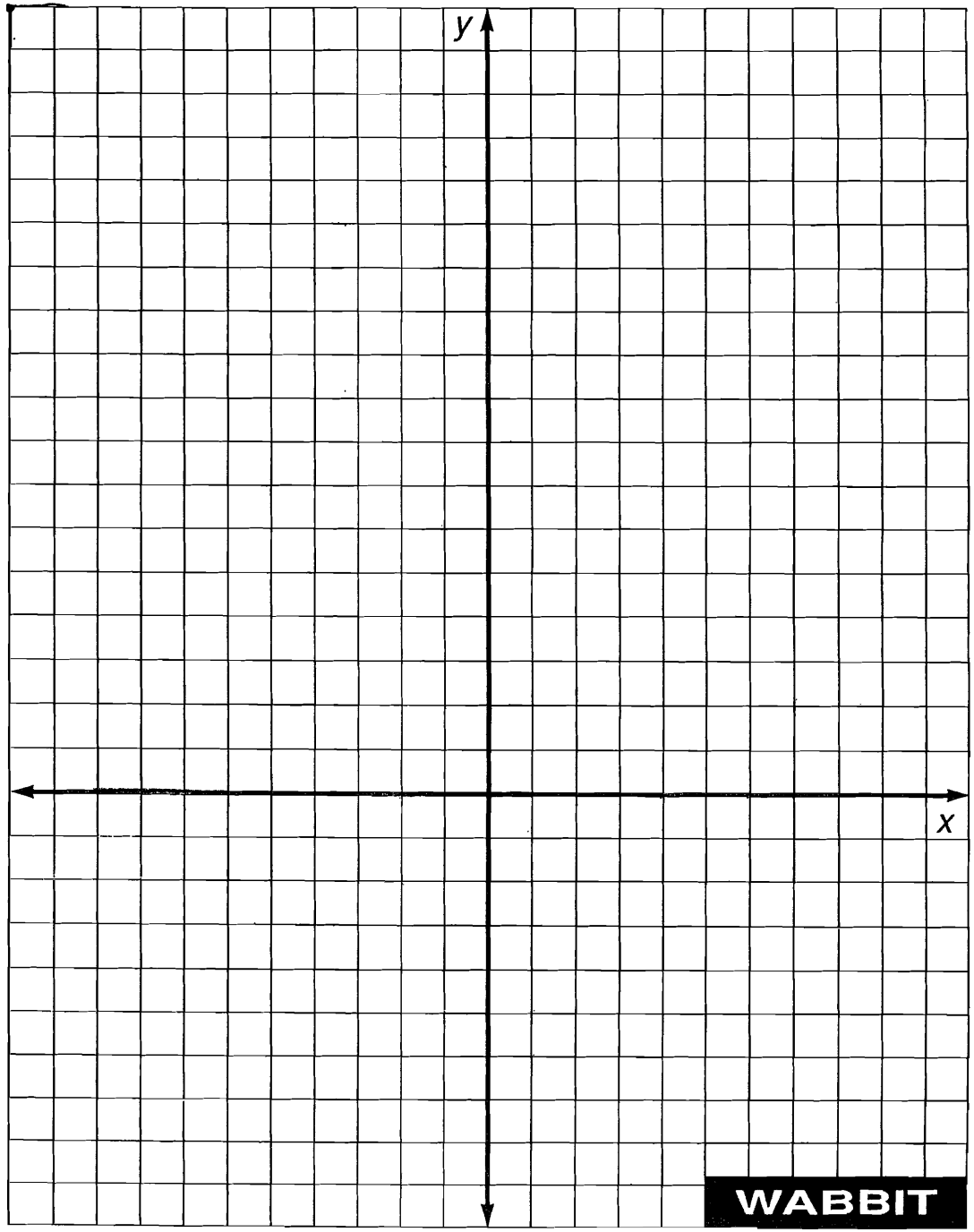
(4,−2)
(11,−2)

Lift Pencil

(02)
(− 1)

Lift Pencil

(0,−2
(−3,−



What Did The Farmer Do When.His Chicken Wouldn't Lay Any Eggs?

DIRECTIONS:

For each exercise, determine whether or not the number in braces is a solution of the given equation.

Indicate "yes" or "no" by circling the number-letter in the appropriate column next to the exercise. Then write the letter in the matching numbered box at the bottom of the page.

		Yes	No
(1) $2x + 5 = 13$	{4}	9-D	26-U
(2) $3y - 1 = 26$	{9}	2-E	12-K
(3) $6 + 5x = 44$	{8}	19-1	23-A
(4) $12 - x = 7$	{5}	16-N	4-B
(5) $5n - 4 = 92$	{20}	24-Y	6-0
(6) $52 = 6x + 10$	(7)	12-E	3-P
(7) $27 = 15a - 1$	{2}	8-I	26-L
(8) $2x + 1 = 3x - 3$	{4]	19-G	27-K
(9) $7x - 2 = 4x + 9$	{1}	11-D	4-S
(10) $m + 20 = 11m - 6$	{3}	15-U	13-R
(11) $18 + 5x = 8x$	(6)	24-M	10-0
(12) $3x + 10 = 4$	1–21	8-E	20-1
(13) $4y - 1 = -21$	{−5}	1-H	22-F
(14) $6 + 2u = -7$	{−8}	25-T	15-A
(15) $30 - x = 31$	{−1}	27-E	14-0
(16) $9 - 5x = -40$	{10}	3-L	7-W
(17) $-12 = 6w + 6$	{−3}	11-H	18-A
(18) $x + 8 = -3x$	{−2}	20-G	25-D
(19) $4y = y - 20$	7	22-G	5-H
(20) $-7d = 50 + 2d$	{8}	17-1	25-P
(21) $6x + 1 = 3x - 11$	{−4}	18-E	21-0
(22) $10k - 9 = 9k + 10$	{0}	10-C	22-S

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

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MIDDLE **SCHOOL** MATH WITH PIZZAZZ! BOOK E
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Daffynition Decoder

Information:

−11	−21	−5	−8	−28	−19	25	11	−15	32	48	−19	−28	6	−12	4	10	48	11

Buccaneer:

−11	−29	7	−11	18	32	13	−29	−31	6	−30	10	−21	13	9	−31	−21	13	−28

TO DECODE THESE TWO DAFFYNITIONS:

Solve each equation below and find your solution in the code. Each time the solution appears, write the letter of that exercise above it. Enjoy the de-fun-itions!

(E) $x + 5 = 11$ (V) $x + 20 = 45$ (R) $y + -4 = 9$ (L) $n + -36 = 12$

(W) $u + 7 = 2$ (I) $x + 30 = 1$ (S) $b + 8 = -4$ (O) $5 + m = -16$

(G) $y + -10 = -3$ (A) $t + -1 = -20$ (Y) $6 + n = 17$ (H) $15 + x = 4$

(F) $-18 + a = -8$ (C) $-2 + x = -33$ (N) $y + 14 = -14$ (P) $-7 + d = 25$

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 ?

Solve each equation and find your solution in the appropriate answer column. Notice the word next to the solution. Write this word in the box containing the letter of the exercise.

Ⓐ $x + 9 = 2$ Ⓑ $-15 + y = 8$ Ⓒ $x - 11 = 4$

Ⓓ $-30 + n = 17$ Ⓔ $a - 10 = -6$ Ⓕ $x - 1 = -14$

Ⓖ $-3 + u = -20$ Ⓗ $m - -5 = 12$ Ⓘ $y - -8 = 40$

Ⓙ $w - -7 = 2$ Ⓚ $x - -16 = -16$ Ⓛ $-15 + t = -9$

Ⓜ $a - 6 = -30$ Ⓝ $-22 + x = 50$ Ⓞ $37 = n + 3$

Ⓟ $-5 = d - 18$ Ⓠ $-29 = y - 7$ Ⓡ $-4 = v - -31$

Ⓢ $x - 12 = 56$ Ⓣ $30 = k - -9$ Ⓤ $y - -10 = 10$

Answers: A - K:

7	TO
36	JUMP
−13	KEPT
−7	THE
−32	TWO
27	HOLDING
4	WHO
32	FEED
15	LITTLE
−11	MONKEY
−17	TRYING
23	SILLY
−8	BIG
−5	HER
47	GIRL

Answers: L - U:

68	WERE
13	FOUND
−3	DOGS
−24	BEARS
21	ALREADY
−39	FULL
−35	THEY
34	SHE
6	TEDDY
−26	THAT
0	STUFFED
38	WHEN
−22	OUT
28	HEARD
72	UNTIL

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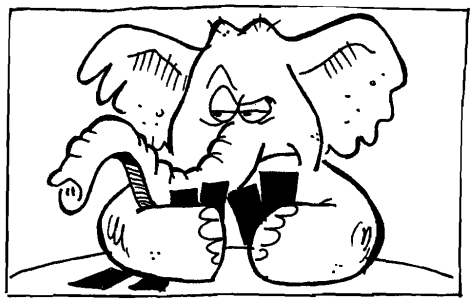
Why Didn't the Elephant Like to Play Cards in the Jungle?



Solve each equation and find your solution in the corresponding set of answer boxes. Write the letter of the exercise in the box containing the solution.

(E) $4x = 28$ (R) $9n = 45$ (H) $24 = 2k$

(T) $-3y = 24$ (E) $-7x = 49$ (O) $80 = -8a$

(R) $6m = -18$ (E) $5q = -60$ (T) $-32 = 16d$

(O) $-9x = -72$ (E) $-18u = -180$ (W) $-100 = -4y$

−2	12	10	−3	7	−25	25	−7	5	−12	2	−8	8	−10

(H) $-6t = 66$ (A) $15x = -30$ (S) $7n = 42$

(E) $-3p = -39$ (Y) $48 = -8a$ (H) $-90 = 30x$

(E) $400 = 4m$ (M) $-200 = -50y$ (A) $-17p = 17$

(N) $-x = 30$ (C) $10w = 720$ (T) $-y = -10$

−4	4	−2	−30	−6	−13	72	−11	100	13	10	−1	−3	6

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What Do You Call A Slow Skier?

Solve each equation and find the solution in the rectangle below. Cross out the box containing the solution. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

① $\frac{x}{6} = 5$

② $\frac{n}{9} = 4$

③ $\frac{1}{2}y = 25$

④ $\frac{w}{7} = -3$

⑤ $\frac{1}{4}q = -20$

⑥ $-8 = \frac{x}{5}$

⑦ $\frac{-1}{3}u = 10$

⑧ $\frac{-t}{8} = 12$

⑨ $2 = \frac{-1}{13}a$

⑩ $\frac{-k}{4} = -11$

⑪ $\frac{-1}{5}p = -16$

⑫ $-3 = \frac{-x}{21}$

⑬ $17 = \frac{x}{10}$

⑭ $-6 = \frac{1}{9}y$

⑮ $\frac{-d}{2} = -48$

⑯ $3 = \frac{-f}{15}$

⑰ $\frac{1}{7}m = 20$

⑱ $\frac{v}{60} = -1$

⑲ $\frac{-1}{4}x = 8$

⑳ $-24 = \frac{-h}{3}$

㉑ $12 = \frac{n}{12}$

TH	ES	AB	IN	AS	KI	IG	HI	SN	LL	OW	LO	WS
80	50	−60	−96	−42	144	44	−40	−45	30	170	−64	−32
AF	AS	PE	AK	ED	PO	OR	TP	FA	ST	KE	YS	EP
−80	−54	−15	36	72	180	140	63	−21	−26	75	−30	96

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What Did the Butcher Say to the Tough Piece of Meat?

Solve each equation and find your solution below. Notice the letter next to the solution. Write this letter in the box containing the exercise number. If the solution has a ●, shade in the box instead of writing a letter in it.

(1) $y + 10 = 4$

(2) $n + {}^{-}6 = 11$

(3) $x - 15 = {}^{-}2$

(4) $w - {}^{-}3 = 18$

(5) $9a = 36$

(6) $-7q = 21$

(7) $\frac{m}{5} = 14$

(8) $\frac{-1}{3}d = 12$

(9) $-4 + u = -16$

(10) $-88 = -8y$

(11) $-36 = \frac{x}{2}$

(12) $20 = v - 13$

(13) $15 = x + 7$

(14) $-75 = 3e$

(15) $p - {}^{-}2 = -9$

(16) $-4y = -28$

(17) $\frac{-1}{6}t = -6$

(18) $50 = \frac{-k}{10}$

(19) $n + 11 = -80$

(20) $-32 = w - 12$

(21) $70 = 2a$

(22) $-24 + x = -3$

(23) $\frac{c}{16} = -1$

(24) $-5y = 0$

Answers 1 - 12:

(A) −3	(O) −72	(N) −12	(A) 33
● 15	(L) −6	(R) 17	(E) 11
(P) −64	(T) 38	(E) 4	(I) 70
		● −36	(S) 13

Answers 13 - 24:

(L) −16	(Y) −20	(E) 8	(U) 36
(T) −500	(L) 7	(D) 0	● −91
(T) 21	● −25	(N) −10	(R) −11
		(H) 35	(A) 24

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

Vive la France!

1. Why did Pierre Jacques Marseille feel at home in a bakery?

11	7	1	–1	9	8	15	10	–20	7	2	–2	11	–16	–9	–20	7	–8

2. What do they call the famous French general who kept dynamite in his kitchen?

–3	5	2	3	–3	7	–6	–12	30	–9	–3	3	–1	2	14	9	–13	9	–20	–4

You've probably heard about the guy who fell off a bridge in Paris. He went in Seine. To find out about two other French citizens:

Solve each equation below and find your solution in the code. Each time the solution appears, write the letter of the exercise above it.

(S) $3n - 5 = 19$	(A) $11 + 6k = 65$	(F) $44 = 5x - 6$
(O) $4x + 2 = 14$	(M) $7 + 3m = -29$	(P) $-7 = 2n + 19$
(C) $9y + 10 = -8$	(D) $1 - 10x = 81$	(L) $31 = 4 - 9y$
(E) $2a - 15 = -1$	(H) $2 - 7d = -75$	(R) $-52 - 3u = 8$
(T) $-5x + 7 = 27$	(U) $-4y - 9 = 15$	(N) $-11r - 2 = -24$
(I) $-8w + 4 = -36$	(W) $-8 + 12e = -20$	(B) $6 - x = 15$

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What Did Olga Say After She Had Angina, Arteriosclerosis, Tuberculosis, Pneumonia, Aphasia, Hypertrophic Cirrhosis, and Eczema?

For each equation, only three of the given ordered pairs are solutions. CIRCLE the three solutions and notice the number-letter above each. Write the letter in the matching numbered box at the bottom of the page.

① $x + y = 8$	10-A (3,5)	18-K (5,2)	4-T (7,1)	24-D (−3,6)	22-E (−1,9)
② $x - y = -5$	11-M (2,8)	13-S (1,6)	2-H (4,9)	7-F (−1,3)	18-I (−3,2)
③ $2x + y = 4$	6-A (1,2)	24-T (−2,8)	8-U (2,−5)	11-R (3,−2)	15-B (−4,3)
④ $x - 3y = -6$	1-C (−1,5)	15-E (3,3)	23-R (2,−3)	20-G (6,4)	7-S (0,2)
⑤ $x - y = 3$	16-L (8,5)	12-N (−3,7)	1-T (1,−2)	19-F (4,0)	8-A (−2,−5)
⑥ $5x + 2y = 15$	17-K (4,−1)	19-N (1,5)	3-A (3,0)	9-M (−1,6)	23-S (5,−5)
⑦ $y = x + 7$	12-D (1,8)	14-O (5,3)	5-W (−3,4)	17-L (−9,−2)	21-U (2,−6)
⑧ $y = 4x - 1$	21-T (2,7)	9-S (1,6)	9-H (−1,−5)	14-T (−2,−3)	14-P (0,−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

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Test of Genius*

1. Write the letter that logically continues each of these series:

   a) A c b D f e G __

   b) b Y d W __

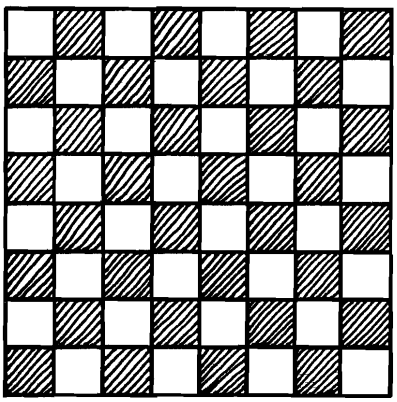
   c) H g F e D c __

2. Adam dropped a rubber ball from a window 40 feet above the sidewalk. The ball always bounces half of the height that it drops. How far will the ball have traveled by the time it hits the sidewalk the 4th time?

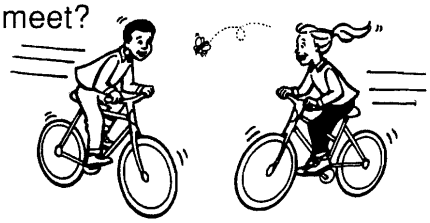
3. A donkey and a mule were carrying bags of grain. If the mule gave the donkey one bag, they would have the same number. If the donkey gave the mule one of his bags, the mule would have twice as many as the donkey. How many bags was each carrying?

4. If nine thousand nine hundred nine dollars is written as $9,909, how should twelve thousand twelve hundred twelve dollars be written?

5. How can 8 queens be placed on a chessboard so that no queen is under attack? Mark their locations on this drawing of a chessboard.



6. Two riders on bicycles, 100 miles apart, begin traveling toward each other at the same time, one traveling at 10 miles per hour and the other at 15 miles per hour. A fly named Paul Revere begins flying between the bicycles, starting from the front wheel of the slower bicycle. If the fly travels at 20 miles per hour flying back and forth between bicycles, being able to reverse directions without losing any time, how far will Paul Revere travel before the bicycles meet?



7. Mr. Sprout built a fence around his garden so it formed a square with ten fence posts on each side. How many fence posts did he need?

8. At a certain party, there were 36 handshakes exchanged. Everyone shook hands with everyone else exactly once. How many people attended the party?

9. Move one toothpick to make a perfect square. Then do it in a different way to make another perfect square.

SCORING KEY

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

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What Happened When There Was a Kidnapping at Bizarre Middle School?

Write each ratio in simplest form, then find your answer at the bottom of the page. Write the letter of the exercise in the box above the answer.

I. Write each ratio.

(E) Stars to squares 5/7 (O) Circles to stars 5/18

(H) Squares to circles 6/7 (T) Stars to all figures 1/3

(M) Stars to circles 5/7 (E) Squares to all figures

II. A N screen is 15 in. high and 20 in. wide. Write each ratio.

(H) Height to width 3/4 (A) Width to height 4/3

III. A magazine photograph is 24 cm long and 16 cm wide. Write each ratio.

(E) Length to width 3/2

(P) Width to length

IV. There are 30 students in a class, including 16 boys. Write each ratio.

(H) Girls to boys 7/8 (R) Boys to girls 8/7

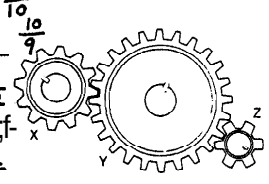
(E) Girls to all students 7/15 (I) Boys to all students 8/15

V. A fire-breathing swamp monster is 36 feet tall. When last observed, his shadow was 40 feet long. Write each ratio.

(T) Height of monster to length of shadow 9/10

(W) Length of shadow to height of monster 10/9

VI. Count the number of teeth on each gear. Then write each ratio.



(C) Teeth on Gear X to teeth on Gear Y 1/2

(U) Teeth on Gear Y to teeth on Gear Z 1/2

(K) Teeth on Gear X to teeth on Gear Z 2/1

THE	TEACHER	WOKE	HIM	UP
5/18 6/7 7/15 2/5	9/10 5/6 4/3 1/2 7/8 1/3	8/7 5/4 10/9 7/5 2/1 3/2	7/11 3/4 8/15 5/7	8/3 4/1 2/3

NOTE: In Exercise 20, students find the average speed in feet per second needed to run a 4-minute mile. (Roger Bannister was the first person to do this.)

Why Did the Writer Enjoy Living in a Basement?

Do each exercise and find your answer to the right. Write the letter of the answer in the box containing the number of the exercise. If the answer has a ●, shade in the box instead of writing a letter in it.

I. Write each ratio as a fraction in simplest form.

(1) 7 to 12 7/12 (2) 9:4 9/4

(3) 8 to 10 4/5 (4) 20 to 12 5/3

(5) 25:50 1/2 (6) 6 out of 15 2/5

(7) 80 to 60 4/3 (8) 35 out of 100 7/20

(9) 78 out of 780 1/10 (10) 90:30 3/1

(11) The ratio of wins to losses for a team with 60 wins and 90 losses. 2/3

(12) The ratio of girls to boys in a 7th grade class with 300 girls and 250 boys. 6/5

(13) The ratio of red to blue for a purple paint made by mixing 24 oz of red with 28 oz of blue. 6/7

(14) The ratio of blue to red for a purple paint made by mixing 24 oz of red with 28 oz of blue. 7/6

Answers:

(H) 8/5 (T) 4/5

(A) 1/10 ● 4/3

● 6/5 (D) 3/10

(A) 7/12 (S) 1/2

(T) 7/20 (L) 3/1

(A) 7/6 (E) 9/4

● 5/6 (I) 6/7

(E) 3/2 (R) 2/5

II. Write the ratio of the two measurements in the unit indicated (a unit rate).

(15) A car traveled 300 miles on 15 gallons of gas. (miles per gallon) 20

(16) Ima Smurf typed 120 words in 3 minutes. (words per minute) 40

(17) Dr. Cranium traveled 2.800 miles in 5 hours. (miles per hour) 560

18 A gear revolved 960 times in 30 minutes. (revolutions per minute) 32

(19) Gloria Trench earned $144 in 8 hours. (dollars per hour) 18

(20) Roger Bannister ran 5,280 feet in 4 minutes. (feet per second) (HINT: 4 min = ? s) 2

Answers:

(M) 48 (B) 560

(C) 32 (L) 22

(T) 15 ● 20

(W) 40 (N) 520

(S) 18 (E) 36

13	3	7	16	9	5	15	1	4	17	11	19	8	12	18	2	20	10	14	6
I	T		W	A	S		A		B	E	S	T		C	E	L	L	A	R

CRYPTIC QUIZ

1. What should the JOLLY GREEN GIANT receive?

T	H	E	_	N	O	B	E	L	_	P	E	A	S	_	P	R	I	Z	E
6	5	18		11	16	15	52	18	70	2	80	18	9	12	13	80	20	30	1	18

2. Why did it take the GOAT more than 3 hours to finish a 20-page book?

H	E	_	W	A	S	N	'T	_	V	E	R	Y	_	H	U	N	G	R	Y
5	18	21		8	9	12	16	6	24	4	18	20	3	60	5	10	16	7	20	3

Solve each proportion and find your answer in the code. Each time the answer appears, write the letter of the exercise above it.

(I) $\frac{2}{5} = \frac{12}{n}$ 30 (S) $\frac{3}{4} = \frac{9}{n}$ 12 (G) $\frac{6}{2} = \frac{21}{n}$ 7

(O) $\frac{10}{4} = \frac{n}{6}$ 15 (Y) $\frac{5}{15} = \frac{n}{9}$ 3 (T) $\frac{12}{8} = \frac{n}{4}$ 6

(U) $\frac{2}{n} = \frac{5}{25}$ 10 (A) $\frac{33}{n} = \frac{11}{3}$ 9 (L) $\frac{49}{n} = \frac{7}{10}$ 70

(V) $\frac{n}{6} = \frac{6}{9}$ 4 (Z) $\frac{n}{4} = \frac{18}{72}$ 1 (H) $\frac{n}{2} = \frac{50}{20}$ 5

(W) $\frac{14}{n} = \frac{7}{4}$ 8 (E) $\frac{8}{12} = \frac{12}{n}$ IS (B) $\frac{n}{13} = \frac{4}{1}$ 52

(R) $\frac{24}{6} = \frac{n}{5}$ 20 16 (P) $\frac{24}{n} = \frac{30}{100}$ 80

What Did Snidely Say After Filling His Car With Super Premium, TopTest, Power Plus Gasoline?

Solve each problem and find your answer in the rectangle below. Cross out the box that contains your answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) The Jelly Junior High school color is made by mixing red paint with yellow paint. The ratio of red to yellow is 3 to 5. How much red paint should be mixed with 20 oz of yellow? 12 oz

(2) The Lawn Order lawnmower factory can produce 12 lawnmowers in 8 hours. How many hours will it take the factory to produce 30 lawnmowers? 20 h

(3) An object that weighs 10 lb on Earth would weigh only 4 lb on Mars. If you weigh 95 lb on Earth, how much would you weigh on Mars? 38 lb

(4) The ratio of orange juice to pineapple juice in Tropical Treat punch is 4 to 3. Bill has 64 oz of orange juice. How much pineapple juice does he need? 48 oz

(5) A cookie recipe for 60 cookies calls for 4 cups of flour. How much flour is needed to make 90 cookies? 6 cups

(6) Jose can read 7 pages of his book in 5 minutes. At this rate, how long will it take him to read the entire 175-page book? 125 min

(7) While exercising, Julie found that her heart was beating 12 times every 5 seconds. How many times was it beating per minute (60 seconds)? 144

(8) If there are 1.200 calories in 8 oz of hot fudge, how many calories are in 3 oz of hot fudge? 450 cal

(9) At a certain college, the ratio of men to women is 6 to 5. If there are 1.500 men, how many women are there? 1,250

(10) One of the world's largest stained-glass windows is at Kennedy International Airport in New York. It is a rectangle with a height to length ratio of 2 to 25. If the window is 80 feet high, how long is it?

HI	RU	TA	KE	EP	JU	NK	IN
450	48	1,210	300	12	125	340	20
GO	TO	HO	OD	NE	ED	GA	SS
136	1,250	6	15	40	144	38	7

T	A	N	K	G	O	O	D	N	E	S	S

TANK GOODNESS

Did You Hear About...

A THE	B WRITER	C WHO	D DROPPED	E TEN	F STORIES
G INTO	H A	I TRASH	J CAN	K AND	L LIVED?

Use a calculator to do each exercise. Find your answer and notice the word next to it. Write this word in the box containing the letter of the exercise.

I. Solve. Round each answer to the nearest tenth.

(A) $\frac{7.5}{12} = \frac{4.2}{x}$ 6.7 (B) $\frac{15}{8} = \frac{80}{x}$ 42.7

(C) $\frac{6}{9.4} = \frac{x}{32}$ 20.4 (D) $\frac{7.9}{x} = \frac{1}{25}$ 197.5

(E) $\frac{12}{3.14} = 3.8$ (F) $\frac{x}{58} = \frac{37.5}{100}$ 21.8

II. Solve. Round each answer to the nearest whole number.

(G) Tom's red bicycle travels 50 ft for every 3 pedal turns. How many pedal turns are needed to travel a mile (5.280ft)? 317

(H) For a survey, a company decided to call 7 out of every 5.000 people How many people should be called in a town of 78.000people? 109

(I) Gloria Trench checked her gas mileage and found that she had used 16.6 gal of gas to travel 372 mi. At this rate. how many gallons will she use to travel from San Francisco to Washington, D.C., a distance of 2,850 mi? 127

(J) A U.S. nickel contains 3.9 g of copper and 1.2 g of nickel. How many kilograms of copper must be combined with 500 kg of nickel to make nickel coins? 1,625

(K) On the stock exchange. 100 shares of Pizzazz Corp. stock are selling for $425. How many shares can be purchased for $1,000? 235

(L) At Paul Bunyon's logging camp, the cook scrambled 20 eggs for every 3 loggers. How many eggs did he need for the 288 loggers at the camp? 1,920

24.7 PIECES
21.8 STORIES
1,840 FAINTED
197.5 DROPPED
19.6 THAT
1,625 CAN
6.7 THE
116 BOX
20.4 WHO
127 TRASH
1,355 PILE
317 INTO
235 AND
3.8 TEN
42.7 WRITER
109 A
324 FROM
1,920 LIVED
211.5 WROTE

E-11 TOPIC 1-e Using a Calculator Solving Proportions

What Is a Termite's Favorite Breakfast?

For each pair of similar figures, find the length x. Cross out the letter next to your answer. When you finish, the answer to the title question will remain.

9 cm	OAKMEAL
14 cm	
15 ft	
20 m	
56 in.	
8 m	
24 in.	
12 cm	
16 ft	
46 m	
21 in.	WOODCHIPS
44 cm	
10 cm	
18 m	
48 in.	
40 cm	
42 m	

(1) 8m, 9 m, 6 m, 12 m, x

(2) 9 cm, 15 cm, 20 cm, x, 12 cm

(3) 40 cm, 18 cm, 30 cm, 24 cm, x

(4) 21 in., 10 in., 35 in., 6 in., x

(5) 50 in., 72 in., 36 in., 25 in.

(6) 18m, 30 m, 25 m, x, 15 m

(7) 12 cm, 21 cm, 20 cm, x, 35 cm

(8) 42 m, 20 m, 14 m, 60 m, x

(9) A flagpole casts a shadow 10 ft long. If a man 6 ft tall casts a shadow 4 ft long at the same time of day, how tall is the flagpole? 15 ft

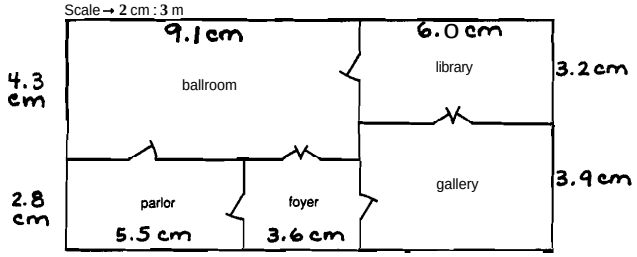
(10) A photograph is 25 cm wide and 20 cm high It must be reduced to fit a space that is 8 cm high Find the width of the reduced photograph. 10 cm

TOPIC 1-f Similar Figures E-12

NOTE: Students need metric rulers for this puzzle.

What Goes Ha! Ha! Ha! Thud?

Scale → 2 cm : 3 m



This is a scale drawing of one floor in a European castle. Do each exercise and find your answer in the adjacent answer column. Write the letter of the answer in each box containing the number of the exercise.

I. One dimension is given for each room. Measure to find the other dimension to the nearest tenth of a centimeter.

(1) ballroom 4.3 cm by 9.1cm
(2) library 3.2cm by 6.0cm
(3) parlor 2.8cm by 5.5
(4) foyer 2.8cm by 3.6cm
(5) gallery 6.0cm by 3.9cm

(U) 3.6cm (N) 6.0cm
(K) 6.3cm (V) 3.4cm
(S) 9.1 cm (O) 5.5cm
(E) 3.9cm (B) 8.4cm

II. Find the actual room dimensions. ("Length refers to the longer dimension and "width" to the shorter dimension.)

(6) length of the ballroom 13.65m (7) width of the ballroom 6.45 m
(8) length of the library 9m (9) width of the library 4.8
(10) length of the parlor 8.25m (11) width of the parlor 4.2 m
(12) length of the foyer 5.4m (13) width of the gallery 5.85 m

(P) 8.65 m (F) 4.2m
(M) 9 m (I) 13.65 m
(A) 5.4 m (L) 8.25 m
(C) 13.25 m (T) 6.15 m
(D) 6.45 m (R) 5.1 m
(H) 5.85 m (G) 4.8 m

12	8	12	2	10	12	4	9	13	6	2	9	13	6	1	13	5	12	7	3	11	11
A	M	A	N	L	A	U	G	H	I	N	G	H	I	S	H	E	A	D	O	F	F

A MAN LAUGHING HIS HEAD OFF

E-13 TOPIC 1-g: Scale Drawings

What Do Centipedes Hate To Do?

Do each exercise and find your answer at the bottom of the page. Write the letter of the exercise in the box containing the answer.

I. Write a percent for the amount shaded.

(T) 60% (E) 25% (F) 48% (O) 96%

II. Write a percent for each group of circles.

(A) the shaded circles 33 %
(E) the unshaded circles 67%

III. Write a percent for each ratio.

(S) 1 to 100 1% (N) 83 to 100 83% (O) 54 : 100 54% (T) 2 : 10 20%
(W) $\frac{75}{100}$ 75% (H) $\frac{24}{100}$ 24% (O) $\frac{8}{10}$ 80% (F) $\frac{5}{10}$ 50%
(H) 0.62 62% (O) 0.98 98% (Y) 0.4 40% (R) 0.1 10%
(T) 0.03 3% (G) 0.86 86% (A) 0.07 7% (T) 1.0 100%

IV Solve

(D) There are 100 centtmeters in a meter. What percent of a meter is 30 cm? 30%

(T) There are 100 cents in a dollar? What percent of a dollar is $0 15? 15%

O Of the 100 million acres in California. the federal government owns 45 million acres. What percent is this? 45%

(N) Gulliver tossed a coin 100 times and got 43 heads. What percent of the tosses were tails? 57%

F Of 100 students surveyed. 90 chose math as their favorite subject. What percent chose math? 90%

(R) A sheet of 100 stamps has 22 stamps left. What percent of the stamps has already been used? 78%

1%	3%	7%	10%	15%	18%	20%	24%	25%	29%	30%	33%	40%	42%	45%	48%	50%
S	T	A	R	T		T	H	E		D	A	Y		O	F	F

54%	57%	58%	60%	62%	67%	71%	75%	78%	80%	83%	86%	888%	90%	96%	98%	100%
O	N		T	H	E		W	R	O	N	G		F	O	O	T

TOPIC 2-a Percent E-14

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Why Did the Teacher Give One of Her Students a Button Like This One?

TUIT

Write each answer and then find it in the corresponding set of answers. Print the letter of the exercise in the box above the answer.

Write each fraction as a percent.

(D) $\frac{17}{100}$ 17% (L) $\frac{75}{100}$ 75% (A) $\frac{44}{100}$ 44% (D) $\frac{23}{100}$ 23%

(O) $\frac{8}{100}$ 8% (E) $\frac{33}{100}$ 33% (D) $\frac{5}{100}$ 5% (W) $\frac{100}{100}$ 100%

(H) $\frac{6}{10}$ 60% (S) $\frac{4}{10}$ 40% (U) $\frac{7}{10}$ 70% (I) $\frac{1}{10}$ 10%

Write each decimal as a percent.

(E) 0.33 33% (T) 0.65 65% (A) 0.91 91%

(U) 0.47 47% (E) 0.16 16% (H) 0.82 82%

(S) 0.04 4% (T) 0.07 7% (D) 0.01 1%

(H) 0.2 20% (N) 0.9 90% (T) 0.5 50%

Write each percent as a decimal.

(E) 25% 0.25 (D) 67% 0.67 (G) 39% 0.39

(H) 98% 0.98 (S) 13% 0.13 (E) 71% 0.71

(N) 3% 0.03 (U) 8% 0.08 (H) 2% 0.02

(Y) 40% 0.4 (W) 90% 0.9 (T) 50% 0.5

Write each percent as a fraction in lowest terms.

(U) 23% $\frac{23}{100}$ (O) 81% $\frac{81}{100}$

(D) 10% $\frac{10}{100} = \frac{1}{10}$ (T) 7% $\frac{7}{100}$ (A) 25% $\frac{25}{100} = \frac{1}{4}$ (T) 60% $\frac{60}{100} = \frac{3}{5}$

(I) 90% $\frac{90}{100} = \frac{9}{10}$ (O) 35% $\frac{35}{100} = \frac{7}{20}$ (T) 2% $\frac{2}{100} = \frac{1}{50}$

(N) 75% $\frac{75}{100} = \frac{3}{4}$ (R) 5% $\frac{5}{100} = \frac{1}{20}$ (U) 50% $\frac{50}{100} = \frac{1}{2}$

T	H	E		S	T	U	D	E	N	T		H	A	D		S	A	I	D
20%	33%	4%	36%	0.5	0.08	0.67	0.4	91%	82%	11%	65%	90%	16%	1%	47%	50%	0.21	0.4	0.98

0.39	0.16	0.71	0.02	0.78	0.03	0.25	0.98	0.9	0.5	0.13	64%	23%	75%	70%	8%	100%	42%	3%	60%

17%	10%	44%	40%	14%	5%	81%	23%	7%	25%	60%	35%	2%	50%	1/4	1/5	1/10	1/20	1/25	1/50

1/100	1/2	9/10	1/50	7/100	4/5	23/100	1/10	9/20	3/4	3/5	7/20	33/50	49/100	19/20	3/10	9/25	9/50	13/100	1/100

NOTE: Each fraction in Part II can be changed to an **equivalent fraction** with a denominator of 100.

Why Didn't Dexter Want a Pocket Calculator?

Do each exercise and find your answer in the answer columns. Write the **letter** of the exercise in the box containing the number of the answer.

I. Write each percent as a fraction in lowest terms.

(W) 20% $\frac{1}{5}$ (E) 80% $\frac{4}{5}$

(A) 15% $\frac{3}{20}$ (K) 45% $\frac{9}{20}$

(H) 25% $\frac{1}{4}$ (E) 75% $\frac{3}{4}$

(Y) 30% $\frac{3}{10}$ (D) 70% $\frac{7}{10}$

(R) 4% $\frac{1}{25}$ (O) 36% $\frac{9}{25}$

(W) 18% $\frac{9}{50}$ (A) 66% $\frac{33}{50}$

(S) 13% $\frac{13}{100}$ (H) 49% $\frac{49}{100}$

(E) 95% $\frac{19}{20}$ (Y) 50% $\frac{1}{2}$

II. Write each fraction as a percent.

(A) $\frac{2}{5}$ 40% (E) $\frac{1}{20}$ 5%

(C) $\frac{9}{10}$ 90% (A) $\frac{7}{20}$ 35%

(H) $\frac{3}{25}$ 12% (N) $\frac{16}{25}$ 64%

(D) $\frac{1}{50}$ 2% (O) $\frac{23}{50}$ 46%

(T) $\frac{3}{5}$ 60% (E) $\frac{1}{4}$ 25%

(H) $\frac{7}{10}$ 70% (P) $\frac{3}{4}$ 75%

(L) $\frac{17}{20}$ 85% (K) $\frac{9}{100}$ 9%

(M) $\frac{24}{25}$ 96% (N) $\frac{67}{100}$ 67%

ANSWERS

29 $\frac{4}{5}$ 17 $\frac{49}{100}$ 21 $\frac{3}{20}$ 26 $\frac{9}{25}$

1 $\frac{1}{4}$ 38 $\frac{7}{10}$ 19 $\frac{9}{50}$ 12 $\frac{9}{20}$

23 $\frac{1}{2}$ 15 $\frac{1}{5}$ 2 $\frac{19}{20}$ 10 $\frac{3}{10}$

6 $\frac{1}{25}$ 8 $\frac{33}{50}$

ANSWERS

9 2% 37 40% 11 72%

14 5% 18 46% 25 75%

28 9% 30 60% 5 85%

33 12% 22 64% 24 88%

7 25% 13 67% 27 90%

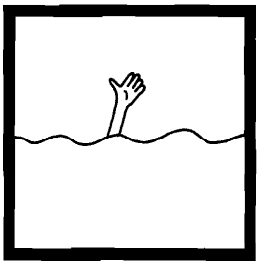
4 35% 36 70% 20 96%

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
H	E		A	L	R	E	A	D	Y		K	N	E	W		H	O	W

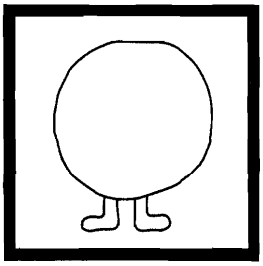
20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
M	A	N	Y	,	P	O	C	K	E	T	S		H	E		H	A	D

What Are the Titles?

1.



2.



Title 1:

W	A	V	E		I	N		T	H	E		O	C	E	A	N
94%	42%	68%	13%	26%	83%	3%	15%	22%	55%	13%	6%	33%	44%	13%	42%	3%

Title 2:

B	U	B	B	L	E		G	U	M		C	H	A	M	P
57%	86%	57%	57%	23%	13%	92%	8%	86%	4%	71%	44%	55%	42%	4%	73%

TO DECODE THE TITLES OF THESE TWO PICTURES:

Write each fraction as a percent rounded to the nearest whole percent. Find your answer in the code. Each time the answer appears, write the letter of the exercise above it.

(O) $\frac{1}{3}$ 33% (U) $\frac{6}{7}$ 86% (T) $\frac{2}{9}$ 22% (A) $\frac{5}{12}$ 42%

(P) $\frac{11}{15}$ 73% (E) $\frac{1}{8}$ 13% (I) $\frac{5}{6}$ 83% (L) $\frac{7}{30}$ 23%

(H) $\frac{6}{11}$ 55% (W) $\frac{15}{16}$ 94% (G) $\frac{1}{13}$ 8% (N) $\frac{1}{32}$ 3%

(V) $\frac{27}{40}$ 68% (C) $\frac{4}{9}$ 44% (M) $\frac{3}{80}$ 4% (B) $\frac{57}{100}$ 57%

NOTE: You may want to have students use calculators for this puzzle, especially for Part II.

Did You Hear About...

A THE	B KID	C WHO	D HEARD	E IT	F RAINED	G AN
H INCH	I AND	J THREE	K QUARTERS	L AND	M SPENT	N THE
O WHOLE	P DAY	Q LOOKING	R FOR	S THE	T QUARTERS	?

Answers A - J:

57 $\frac{1}{6}$% ABOUT

16 $\frac{2}{3}$% HEARD

73 $\frac{5}{11}$% THAT

2 $\frac{1}{2}$% AND

88 $\frac{1}{8}$% THEN

37 $\frac{1}{2}$% THE

28 $\frac{4}{7}$% RAINED

3 $\frac{1}{4}$% MORE

77 $\frac{7}{9}$% WHO

17 $\frac{1}{6}$% SAID

58 $\frac{1}{3}$% IT

18 $\frac{3}{4}$% INCH

66 $\frac{2}{3}$% KID

29 $\frac{1}{7}$% WAS

87 $\frac{1}{2}$% THREE

72 $\frac{8}{11}$% AN

16 $\frac{1}{4}$% EXTRA

Answers K - T:

8.3% LOOKING

6.4% AROUND

33.3% QUARTERS

41.4% NIGHT

88.9% SPENT

62.5% THE

11.8% WHOLE

43.5% PUDDLES

57.1% AND

6.7% FOR

85.6% SEVEN

62.8% SOME

40.6% DAY

8.7% TRYING

43.8% QUARTERS

11.2% NEXT

83.3% THE

Do each exercise and find your answer in the appropriate answer column. Notice the word next to the answer. Write this word in the box containing the letter of the exercise.

I. Write each fraction as a percent that contains a fraction.

(A) $\frac{3}{8}$ 37$\frac{1}{2}$% (B) $\frac{2}{3}$ 66$\frac{2}{3}$% (C) $\frac{7}{9}$ 77$\frac{7}{9}$%

(D) $\frac{1}{6}$ 16$\frac{2}{3}$% (E) $\frac{7}{12}$ 58$\frac{1}{3}$% (F) $\frac{2}{7}$ 28$\frac{4}{7}$%

(G) $\frac{8}{11}$ 72$\frac{8}{11}$% (H) $\frac{3}{16}$ 18$\frac{3}{4}$% (I) $\frac{1}{40}$ 2$\frac{1}{2}$%

(J) On a math quiz, Raoul got 7 out of 8 problems correct. What percent were correct? 87$\frac{1}{2}$%

II. Write each fraction as a percent rounded to the nearest tenth of a percent.

(K) $\frac{1}{3}$ 33.3% (L) $\frac{4}{7}$ 57.1% (M) $\frac{8}{9}$ 88.9%

(N) $\frac{5}{6}$ 83.3% (O) $\frac{2}{17}$ 11.8% (P) $\frac{13}{32}$ 40.6%

(Q) $\frac{1}{12}$ 8.3% (R) $\frac{1}{15}$ 6.7% (S) $\frac{5}{8}$ 62.5%

(T) Jennifer shot the basketball 16 times and made 7 baskets. What was her shooting percentage? 43.8%

NOTE: You might want to encourage students to make some or all of these fraction-percent equivalents. . . they are very useful in mental math and estimation.

Where Is Most of the Money in Egypt Kept?

Write a percent for each fraction. Find the point on the number line that corresponds to the percent. Write the **letter** of the exercise above the number line at that point.

IN THE BANKS OF THE NILE

(S) $\frac{1}{2}$ 50%	(H) $\frac{1}{5}$ 20%	(N) $\frac{1}{10}$ 10%	(T) $\frac{1}{8}$ $12\frac{1}{2}$%	(A) $\frac{1}{3}$ $33\frac{1}{3}$%
(E) $\frac{1}{4}$ 25%	(K) $\frac{2}{5}$ 40%	(B) $\frac{3}{10}$ 30%	(N) $\frac{3}{8}$ $37\frac{1}{2}$%	(T) $\frac{2}{3}$ $66\frac{2}{3}$%
(E) $\frac{3}{4}$ 75%	(O) $\frac{3}{5}$ 60%	(H) $\frac{7}{10}$ 70%	(F) $\frac{5}{8}$ $62\frac{1}{2}$%	(I) $\frac{1}{100}$ 1%
	(N) $\frac{4}{5}$ 80%	(L) $\frac{9}{10}$ 90%	(I) $\frac{7}{8}$ $87\frac{1}{2}$%	(E) 1100%

EXTRA:

Use your answers and the number line above to put a > or < in each ◯.

$\frac{3}{10}$ < $\frac{1}{3}$ $\quad$ $\frac{3}{8}$ < $\frac{2}{5}$ $\quad$ $\frac{2}{3}$ > $\frac{5}{8}$ $\quad$ $\frac{3}{4}$ < $\frac{4}{5}$

NOTE: For Part I, you might have students also estimate the percent that is *not* shaded.

Why Did The Coffee Taste Like Mud?

For each exercise, circle the best estimate. Write the letter next to your answer in the box containing the exercise number.

I. Circle the percent that tells about how much of the bar is shaded.

1. (H) 15% (U) 40%
2. (R) 80% (I) 60%
3. (T) 25% (M) 38%
4. (S) 67% (P) 52%
5. (L) 24% (D) 10%
6. (A) 90% (I) 75%
7. (V) 46% (O) 33%
8. (F) 60% (T) 75%
9. (C) 50% (R) 5%

II. The circle graphs show the results of a student poll. Circle the best estimate for the percent described.

10. About what percent chose rock music?
(P) 75% (S) 55% (L) 40%

11. About what percent chose soul music?
(W) 12% (F) 2% (H) 23%

12. About what percent chose other kinds of music?
(L) 46% (G) 33% (T) 67%

Favorite Kind of Music

13. About what percent chose hot dogs?
(C) 38% (H) 15% (J) 25%

14. About what percent chose pizza?
(S) 60% (L) 50% (N) 45%

15. About what percent chose chicken?
(R) 15% (E) 26% (A) 4%

Favorite School Lunch

2	8		11	6	4		13	1	10	3		12	15	7	9	14	5
I	T		W	A	S		J	U	S	T		G	R	O	U	N	D

What Did Olga's Uncle Give Her For Cold Feet?

Do each exercise mentally, write your answer, and then mark it in the answer columns. For each set of exercises, there is one extra **answer.** Write the **letter** of this answer in the corresponding box at the right.

6	3	10	7	1	9	5	2	8	4
N	I	E	C	E	S	O	C	K	S

		Answers:		
1	100% of 40 cm B			
	50% of 40 cm J	(A) 20 cm	(E) 80 cm	
	10% of 40 cm P	(B) 40 cm	(P) 4 cm	
2	100% of 90 lb Y			
	50% of 90 lb D	(C) 4.5 lb	(Y) 90 lb	
	10% of 90 lb L	(L) 9 lb	(O) 45 lb	
3	100% of 500 ducks A			
	50% of 500 ducks U	(A) 500 ducks	(T) 50 ducks	
	10% of 500 duck T	(I) 25 ducks	(U) 250 ducks	
4	100% 48 L R			
	50% 48 L M	(S) 12 L	(M) 24 L	
	10% of 48 L F	(F) 4.8 L	(R) 48 L	
5	100% of 15 min A			
	50% 15 min C	(Y) 1.5 min	C 7.5 min	
	10% of 15 min Y	(A) 15 min	(O) 5 min	
6	50% of 120 volts H	Answers:		
	10% of 120 volts B	(H) 60 volts	(N) 30 volts	
	1% of 120 volts V	(V) 1.2 volts	(B) 12 volts	
7	50% of 64 oz N			
	10% of 64 oz R	(R) 6.4 oz	(V) 0.64 oz	
	1% of 64 oz L	(C) 3.2 oz	(N) 32 oz	
8	50% of 25 m^2 A			
	10% of 25 m^2 H	(H) 2.5 m^2	(A) 12.5 m^2	
	1% of 25 m^2 I	(V) 0.25 m^2	(K) 1.25 m^2	
9	50% of 101 kg N			
	10% of 101 kg D	(S) 5.05 kg	(D) 10.1 kg	
	1% of 101 kg P	(M) 50.5 kg	(P) 1.01 kg	
10	100% of 5,280 ft T			
	10% of 5,280 ft L	(H) 52.8 ft	(E) 5.28 1	
	1% of 5,280 ft R	(V) 528 ft	(T) 5,280 ft	

What Happened After Old King Cole Ordered That Chopped Cabbage Must Be Mixed With Mayonnaise?

Do each exercise and find your answer in the answer column below it. Write the letter of the answer in the box containing the number of the exercise.

I. Write each percent as a decimal.

(1) 42% 0.42	(6) 9% 0.09	(11) 15% 0.15							
(2) 18% 0.18	(7) 2% 0.02	(12) 62.5% 0.625							
(3) 77% 0.77	(8) 5% 0.05	(13) 33.3% 0.333							
(4) 4.2% 0.042	(9) 20% 0.2	(14) 1.5% 0.015							
(5) 1.8% 0.018	(10) 50% 0.5	(15) 150% 1.5							
Answers:	Answers:	Answers:							
(R) 1.8	(E) 0.02	(S) 0.0333							
(A) 0.042	(L) 0.005	(C) 1.5							
(P) 0.077	(B) 0.2	(N) 0.625							
(E) 0.42	(O) 0.09	● 15.0							
(K) 0.77	(H) 0.05	(M) 0.333							
● 0.018	(F) 2.0	(I) 0.15							
(G) 4.2	● 0.5	(Y) 6.25							
(S) 0.18	(A) 0.009	(T) 0.015							

II. Write each decimal as a percent.

(16) 0.38 38%	(21) 0.04 4%	(26) 0.46 46%							
(17) 0.94 94%	(22) 0.08 8%	(27) 0.125 12.5%							
(18) 0.75 75%	(23) 0.01 1%	(28) 0.667 66.7%							
(19) 0.094 9.4%	(24) 0.8 80%	(29) 0.046 4.6%							
(20) 0.075 7.5%	(25) 0.1 10%	(30) 1.25 125%							
Answers:	Answers:	Answers:							
(N) 94%	● 8%	(C) 4.6%							
(W) 7.5%	(T) 40%	(L) 12.5%							
(G) 3.8%	(W) 10%	(P) 0.46%							
● 75%	(S) 4%	(S) 66.7%							
(I) 0.94%	(N) 100%	(A) 1.25%							
(E) 38%	(A) 80%	(K) 6.67%							
(R) 750%	(O) 1%	● 46%							
(A) 9.4%	(V) 0.8%	(L) 125%							

14	8	11	2	5	9	1	15	4	13	7	10	3	12	6	20	17	26	24	21	18	29	23	27	16	28	22	30	19	25
T	H	I	S		B	E	C	A	M	E		K	N	D	W	N	A	S		C	O	L	E	S		L	A	W	

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NOTE: Emphasize to students that, even though they divide to get their answers, they are actually *multiplying* by a fraction.

What Happened to the Guy Who Ate Ten Pounds of Powdered Food for Dinner?

Do each exercise mentally, then find your answer in the corresponding set of answers. Write the letter of the exercise in the box containing the answer.

$50\% = \frac{1}{2}$	$33\frac{1}{3}\% = \frac{1}{3}$	$25\% = \frac{1}{4}$	$20\% = \frac{1}{5}$	$12\frac{1}{2}\% = \frac{1}{8}$	$10\% = \frac{1}{10}$

I. Use the chart above to find each percent mentally.

(H) 25% of 36 9 (G) 20% of 15 3 (T) 50% of 26 13 (O) $33\frac{1}{3}\%$ of 60 20 (G) $12\frac{1}{2}\%$ of 40 5
(T) 10% of 70 7 (A) 50% of 180 90 (H) 25% of 200 50 (T) $12\frac{1}{2}\%$ of 16 2 (I) 20% of 60 12
(G) $33\frac{1}{3}\%$ of 24 8 (U) 10% of 360 36 (T) 20% of 500 100 (E) 50% of 48 24 (H) $33\frac{1}{3}\%$ of 120 40
(A) 25% of 44 11 (C) $12\frac{1}{2}\%$ of 240 30 (H) 10% of 800 80 (T) 100% of 32 32 (N) 100% of 999 999

13	50	11	100	25	999	12	5	80	2	15	9	24	42	8	20	32	18	30	90	36	3	40	7
T	H	A	T		N	I	G	H	T		H	E		G	O	T		C	A	U	G	H	T

36	20	45	9	450	6	75	18	50	60	15	23	32	11	100	5	70	12	250	40	60	72	4	30
I	N		T	H	E		R	A	I	N		A	N	D		E	X	P	L	O	D	E	D

II. Use compatible numbers to estimate each percent.

(E) 19% of 30 6 (A) 48% of 64 32 (N) 26% of 80 20 (D) 33% of 90 30 (I) 9% of 600 60
(T) 12% of 72 9 (E) 24% of 280 70 (L) 21% of 200 40 (I) 51% of 72 36 (N) 13% of 88 11
(E) 9% of 40 4 (A) 32% of 150 50 (O) 14% of 640 80 (D) 27% of 400 100 (H) 53% of 900 450
(X) 34% of 36 12 (N) 18% of 75 15 (D) 11% of 720 72 (R) 99% of 18 18 (P) 102% of 250 250

How Did Everybody Know When Sir Lancelot War in Love with a Lady?

Estimate each percent. Under each exercise, circle the letter of the better choice. Write this letter in the box containing the number of the exercise.

HINT: First change the percent to a simple fraction. Then change the amount to a number that is easy to divide by the denominator of the fraction.

(1) 26% of 27
(V) about 10
(A) about 7

(2) 49% of 61
(G) about 25
(D) about 30

(3) 33% of 299
(P) about 100
(L) about 120

(4) 18% of 42
(F) about 12
(R) about 8

(5) 41% of 42
(O) about 16
(S) about 10

(6) 58% of 42
(U) about 20
(I) about 24

(7) 74% of 45
(H) about 33
(N) about 27

(8) 67% of 88
(E) about 60
(T) about 50

(9) 13% of 25
(L) about 5
(R) about 3

(10) 37% of 25
(M) about 12
(T) about 9

(11) 63% of 25
(U) about 15
(K) about 20

(12) 86% of 25
(S) about 21
(N) about 18

(13) 68% of 118
(B) about 72
(O) about 80

(14) 79% of 31
(G) about 28
(H) about 24

(15) 24% of $202
(T) about $44
(R) about $50

(16) 36% of $75
(E) about $27
(I) about $36

(17) 62% of $162
(O) about $90
(U) about $100

(18) 76% of $47
(R) about $36
(L) about $30

(19) 39% of 152
(F) about 54
(H) about 60

(20) 52% of 495
(E) about 240
(N) about 250

(21) 98% of 1,010
(M) about 1,000
(P) about 100

$50\% = \frac{1}{2}$
$25\% = \frac{1}{4}$
$75\% = \frac{3}{4}$
$33\frac{1}{3}\% = \frac{1}{3}$
$66\frac{2}{3}\% = \frac{2}{3}$
$20\% = \frac{1}{5}$
$40\% = \frac{2}{5}$
$60\% = \frac{3}{5}$
$80\% = \frac{4}{5}$
$12\frac{1}{2}\% = \frac{1}{8}$
$37\frac{1}{2}\% = \frac{3}{8}$
$62\frac{1}{2}\% = \frac{5}{8}$
$87\frac{1}{2}\% = \frac{7}{8}$

14	8		3	17	10		19	6	12		1	15	21	5	9		18	13	11	20	2		7	16	4
H	E		P	U	T		H	I	S		A	R	M	O	R		R	O	U	N	D		H	E	R

DOUBLE CROSS

1. What do you get when you cross a MONKEY with a FLOWER?

A	C	H	I	M	P	A	N	S	Y
48.6	56.3	140	16	6.12	8.4	9.6	128	9.6	48.6	720	1.53	62.9

2. What do you get when you cross a BABY with a COMPUTER?

S	H	O	R	T		C	I	R	C	U	I	T	S
1.53	16	21.87	6.7	118.8	7.8	140	6.12	6.7	140	2.24	6.12	118.8	1.53

3. What do you get when you cross a PENNY FROM LONDON with a HATCHET?

A	N		E	N	G	L	I	S	H		A	X		C	E	N	T
48.6	720	24.7	46.5	720	75	39.6	6.12	1.53	16	122.8	48.6	48.3	750	140	46.5	720	118.8

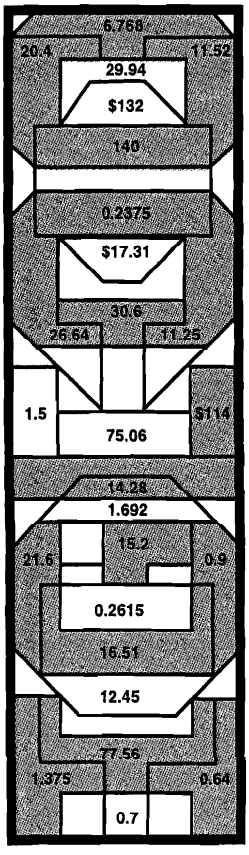
TO DECODE THE ANSWERS TO THESE THREE QUESTIONS:
Do each exercise and find your answer in the code. Each time the answer appears, write the letter of the exercise above it.

(T) 18% of 34 6.12 (O) 27% of 81 21.87 (Y) 85% of 74 62.9 (A) 54% of 90 48.6 (T) 33% of 360 118.8
(E) 62% of 75 46.5 (U) 4% of 56 2.24 (M) 6% of 140 8.4 (G) 12% of 625 75 (R) 5% of 134 6.7
(L) 90% of 44 39.6 (S) 9% of 17 1.53 (P) 48% of 20 9.6 (X) 70% of 69 48.3 (H) 2% of 800 16

(N) Some doctors recommend that no more than 30% of a person's daily calories come from fats. Following this recommendation, if you eat 2,400 calories in a day, what is the maximum number that should come from fats? 720

(C) When training for a fight, Rocky tries to maintain a heart rate that is 80% of his maximum heart rate. Rocky has a resting heart rate of 60 and a maximum heart rate of 175 beats per minute. What is his training heart rate? 140

IGLOO



What Can You Use to Stick Blocks of Snow Together?

Do the exercises below and find your answers in the rectangle. Shade in each area containing a correct answer. You will learn how to build an ice house.

(1) 21% of 68 14.28
(2) 85% of 36 30.6
(3) 8% of 144 11.52
(4) 3% of 720 21.6
(5) 2.5% of 55 1.375
(6) 9.4% of 18 1.692
(7) 6.8% of 300 20.4
(8) 33.3% of 80 26.64
(9) 4% of 16 0.64
(10) 7.5% of 12 0.9
(11) 30% of 37.5 11.25
(12) 72% of 9.4 6.768
(13) 3.8% of 400 15.2
(14) 87.5% of 160 140
(15) 70% of 110.8 77.56
(16) 5% of 4.75 0.2375

(17) Fabio is a video salesman. On each sale, he earns a commission of 12%. One of his customers bought a TV for $550 and a VCR for $400. How much did he earn in commissions? $114

(18) Robin bought a bow and 15 arrows at Nottingham Archery Supply The total price was $254. In Nottingham there is a 6.5% sales tax. How much tax did Robin pay? $16.51

What Does An Artificial Snow Machine Make?

Do each exercise below. Find your answer in the answer column and notice the letter next to it. 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 remaining letters in the rectangle at the bottom of the page.

I. Find the percent of the number.

(1) 120% of 70 84
(2) 200% of 12.5 25
(3) 0.4% of 980 3.92
(4) 0.16% of 600 0.96
(5) 180% of 7.5 13.5
(6) 350% of 32 112
(7) 0.9% of 1.600 14.4
(8) 0.25% of 400 1

II. Solve.

(9) A special vitamin capsule provides 250% of the vitamin C needed daily. If 60 mg of vitamin C are needed daily, how many milligrams of vitamin C are in the capsule? 150 mg

(10) The number of calories in a hot fudge sundae is 300% of the number in a dish of plain vanilla ice cream. If the ice cream has 150 calories, how many calories are in the sundae? 450 cal

(11) The value today of a certain rare coin is 140% of its value 2 years ago. If the coin was worth $190 then, what is it worth today? $266

(12) The money in Laura's savings account is earning interest at the rate of 0.5% per month If she has $1.450 in the account. how much interest is she earning each month? $7.25

(13) An ore is 0.75% pure gold. How many kilograms of gold are in 500 kg of ore? 3.75 kg

(14) A Boeing 747 weighs about 750.000 lb. The original Wright Brothers' plane weighed 0.1% of this. How much did the Wright Brothers' plane weigh? 750 lb

(15) Six weeks ago. Qwerty could type 20 words per minute. But he has been practicing. Now his speed is 175% of his speed 6 weeks ago. How fast can he type now? 35 wpm

Answers
(K) 132
(Y) 3.92
(P) 450
(R) 35
(H) 14.4
(M)
(L) 7.25
(S) 38
(G) 0.96
(N) 4.45
(J) 1
(C) 25
(U) 266
(I) 750
(V) 112
(O) 12.8
(B) 150
(T) 3.75
(F) 620
(D) 13.5
(W) 425

A A S X E A N A A A O A A W M A F L A E A T E D K M E A O P S

ANSWER TO PUZZLE: SNOWFAKES

TOPIC 2-h: Finding a Percent of a Number
Percents Greater Than 100% or Less Than 1%

How Can You Tell a Dogwood Tree?

Decide whether you would choose mental math, estimation, or a tool (paper and pencil or calculator)lo solve each problem. CIRCLE the lener in the appropriate column next to the problem.

Then solve the problem. Find the answer at the bottom of the page and write the lener you circled under it.

Choose: M mental math, E estimation, or T tool

		M	E	T
1	In a class of 35 students, 20% of the students play in the school orchestra. How many of the students play in the school orchestra? 7	(I)	V	H
2	Last year the Midas Middle School cafeteria served pizza on 12% of the school days. If there were 175 school days, how many times was pizza served? 21	U	C	(A)
3	Krispy Krunch cereal is 49% sugar. About how many ounces of sugar are in a 16-ounce box of Krispy Krunch? 8 oz	O	(B)	N
4	Karlene paid $129 plus 6% sales tax for a guitar. What was the total cost? $136.74	P	L	(S)
5	Ms. Jackson bought a new car for $9,360. She agreed to pay 10% of the cost as a down payment and finance the rest. How much was the down payment? $936	(K)	M	D
6	Jewelry marked 18-karat gold is 75% pure gold. How much pure gold is in an 18-karat gold necklace that weighs 258 grams? 193.5 g	A	E	(Y)
7	All the clothes at Unique Boutique are on sale. The discount is $33\frac{1}{3}$% of the regular price. About how much would you save on a jacket with a regular price of $59.50? $20	S	(B)	G
8	The school dance committee had a budget of $200 for the Halloween dance. It decided to spend 25% of the budget on decorations. How much can be spent on decorations? $50	(T)	P	N
9	A writer earns 8% of total sales dollars as a royalty. If 2,000 copies of his book are sold at $14.95 each, how much money does he make? $2,392	L	U	(R)

137.24	8	193.5	35	7	50	136.74	2,485	20	21	2.392	936	187.5
	B	Y		I	T	S		B	A	R	K	

TOPIC 2-i: Problem Solving
Choosing a Calculation Method

How Do You Make a Vegetable Necklace?

Use the information given in the chart to fill in the missing values. In the rectangle below, cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

Article on Sale	Original Price	Percent Discount	Amount of Discount	Sale Price
1. calculator	$12	25%	$3	$9
2. tent	$90	25%	$22.50	$67.50
3. sweater	$65	25%	$16.25	$48.75
4. dress	$78.00	15%	$11.70	$66.30
5. camera	$129.50	40%	$51.80	$77.70
6. sports jacket	$140	35%	$49	$91
7. tape deck	$299.95	20%	$59.99	$239.96
8. VCR	$575.00	10%	$57.50	$517.50
9. racing bike	$360	$33\frac{1}{3}$%	$120	$240

DO	Y	FI	ST	OU	OP	AR	R
$517.50	$51.80	$67.50	$508.50	$59.99	$240	$11.70	$75.20
ST	IN	TO	BI	GB	A	QX	QE
$9	$43.75	$120	$49	$69.30	$3	$239.95	$16.25
P	EA	T	RY	CA	NS	H	UP
$91	$227.86	$66.30	$48.75	$57.50	$64.50	$22.50	$77.70

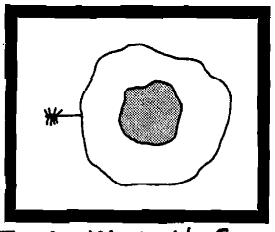
S T R I N G B E A N S

STRING BEANS

TOPIC 2-j: Problem Solving
Discounts and Sale Prices

What Is the Title?

TO FIND THE TITLE OF THIS PICTURE:
Do each exercise below and find your answer in the code. Each time the answer appears, write the letter of the exercise above it.



CODED TITLE.

S P I D E R T O W I N G
$840 $27 $943 $210 $31.50 $36 $425 $421.60 $1,800 $1,200 $943 $96 $3,780

A F R I E D E G G
$938 $225 $3,810 $1,270 $36 $943 $31.50 $210 $1,340 $31.50 $3,780 $3,780

I Find the interest.

(N) savings account
deposit: $800
rate: 6% per year
time: 2 years $96

(D) savings account
deposit. $1.400
rate: 5% per year
time: 3 years $210

(O) auto loan
borrow: $5.000
rate: 12% per year
time: 3 years $1,800

A personal loan
borrow: $1,250
rate. 9% per year
time: 2 years $225

E checking account
deposit: $700
rate: 4.5% per year
time. 1 year $31.50

(P) credit card cash advance
borrow: $300
rate: 18% per year
time: 6 months $27

(W) money-market fund
Invest. $6.000
rate: 8% per year
time: 2.5 years $1,200

(R) savings bond
invest: $50
rate: 7 2%
time: 10 years $36.00

(S) home improvement loan
borrow: $2.000
rate: 10.5%
time: 4 years $840

II Solve (Interest-ing problems.)

(T) Aldo put $400 into a savings account that paid an interest rate of 5.4% per year. What was the total amount in his account at the end of 1 year? $421.60
(Total amount = principal plus interest)

(F) Gretchen invested $1,000 in a certificate of deposit (CD) that paid interest at a rate of 9% per year. How much was the CD worth at the end of 3 years? $1,270

(I) Suzanne borrowed $820 from a bank for one year If the annual interest rate was 15%. what was the total amount she owed the bank at the end of the year? $943

(G) Rolex borrowed $3.600 from a credit union for 6 months at an interest rate of 10% per year. How much did he owe the credit union at the end of the 6 months? $3,780

TOPIC 2k Problem Solving Simple Interest

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NOTE: **The ratio for each exercise in this puzzle can be reduced either to a fraction whose denominator is a factor of 100 or to 1/3 or 2/3.**

Why Did the Airhead Bungle Buy a Floodlight for His Sundial?

Do each exercise and find your answer in the adjacent answer column. Write the letter of the exercise in the box containing the number of the answer.

(E) 5 is what percent of 20?	25%	(19) 52%	
(H) 12 is what percent of 24?	50%	(28) 55%	
(T) What percent of 35 is 7?	20%	(17) 40%	
(L) What percent of 90 is 9?	10%	(21) 44%	
(O) 20 out of 60 is what percent?	$33\frac{1}{3}$%	(19) 95%	
(I) 9 out of 12 is what percent?	75%	(10) 10%	
		(2) 5%	
(T) What percent of 30 is 9?	30%	(22) 90%	
(E) What percent of 30 is 56?	70%	(28) 60%	
(S) 20 is what percent of 50?	40%	(29) $33\frac{1}{3}$%	
(L) 12 is what percent of 15?	80%	(19) 25%	
(A) What percent is 24 out of 36?	$66\frac{2}{3}$%	(18) 50%	
(C) What percent is 10 out of 500?	2%	(20) $33\frac{1}{3}$%	
		(27) 75%	
		(16) 10%	
		(14) 25%	
		(8) $33\frac{1}{3}$%	
		(24) 20%	
		(6) 70%	
		(4) 50%	
		(15) 80%	
		(7) 2%	
		(5) 70%	
		(12) 64%	
		(1) 40%	
		(23) $66\frac{2}{3}$%	
		(30) 30%	

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
S	O		H	E		C	O	U	L	D		T	E	L	L		T	I	M	E		A	T		N	I	G	H	T

E-31

TOPIC 2-l Finding the Percent One Number Is of Another

NOTE: **You may want to have students actually write an estimate for each percent in addition to choosing the correct category.**

What Did the Policeman Say to His Stomach?

Use estimation to choose **Category** I. II, or III for each percent. Under each exercise, circle the letter of the best choice. Write this letter in the box containing the number of the exercise.

I less than 50%	II between 50% and 100%	III more than 100%

(1) 39 is what percent of 60? (K) I (E) II (C) III

(2) 25 is what percent of 97? (A) I (W) II (B) III

(3) What percent of 81 is 70? (D) I (T) II (G) III

(4) What percent of 70 is 81? (N) I (I) II (A) II

(5) 9 out of 24 is what percent? (O) I (H) II (T) III

(6) 300 out of 405 is what percent? (P) I (E) II (F) III

(7) What percent of 62 is 92? (M) I (L) II (N) III

(8) What percent of 110 is 225? (T) I (R) II (U) II

(9) 7 is what percent of 34? (E) I (P) II (F) III

(10) 34 is what percent of 7? (D) I (N) II (R) II

(11) What percent is 25 out of 48? (L) I (Y) II (B) III

(12) What percent is 23 out of 48? (U) I (S) II (I) III

(13) Fink's typing speed increased from 20 words per minute to 45 words per minute. His old speed is what percent of his new speed? (V) I (M) II (G) III

(14) Fink's typing speed increased from 20 words per minute to 45 words per minute. His new speed is what percent of his old speed? (M) I (L) II (R) II

(15) The regular price of a computer is $980. but it is on sale for $750. The sale price is what percent of the regular price? (T) I (D) II (P) III

(16) The regular price of a computer is $980, but it is on sale for $750. The regular price is what percent of the sale price? (R) I (F) II (S) II

11	5	8		2	14	9		12	7	15	1	10		4		13	6	16	3
Y	O	U		A	R	E		U	N	D	E	R		A		V	E	S	T

TOPIC 2-m Estimating the Percent One Number Is of Another

E-32

What Happened to the Plastic Surgeon as He Sat by the Fire on a Cold Winter Night?

Find each correct answer and cross **out** the letter next to it. When you finish, the answer to the title question will remain. (Round each answer to the nearest whole percent.)

(1) What percent is 5 out of 12? 42%

(2) What percent is 6 out of 7? 86%

(3) 19 is what percent of 30? 63%

(4) 6 is what percent of 11? 55%

(5) What percent of 16 is 5? 31%

(6) What percent of 51 is 12? 24%

(7) What percent is 3 out of 70? 4%

(8) 75 is what percent of 96? 78%

(9) What percent of 18 is 17? 94%

(10) 1 out of 6 is what percent? 17%

(11) Jewelry marked 14-karat gold is $\frac{14}{24}$ pure gold. What percent is this? 58%

(12) Julie has read 27 pages out of an 80-page book. What percent of the pages has she read? 34%

(13) Kareem shot the basketball 32 times and made 23 baskets. What percent of his shots were baskets? 72%

(14) A TV station has 11 minutes of commercials for each 60 minutes of air time. What percent of air time is used for commercials? 18%

(15) The Hawks won 7 games. lost 6 games. and tied 2 games What percent of all the games did they win? 47%

(16) The human body is 65% oxygen. 18% carbon. and 10% hydrogen. The rest is other elements What percent is composed of other elements? 7%

31%	26%	94%	86%	65%	34%	76%	18%	24%	14%	42%	7%	17%	56%	78%	72%	45%	92%	55%	58%	36%	47%	63%	4%						
H	E		M	E	L	T	E	D		W	A	S		T	H	E		S	A	M	E		D	A	Y				

E-33

TOPIC 2-l Finding the Percent One Number Is of Another

NOTE: **You might want to discuss the last problem in the context of the Pythagorean theorem. The smaller screen measures 15 by 20 in.; the larger screen, 24 by 32 in. (a 3:4 ratio in each case).**

Why Did the Man in the Shower Say, "Soap, Soap, Soap?"

Solve each problem below. (Round percents to the nearest whole percent.) Find your solution and notice the two letters next to it. Write these letters in the two boxes above the exercise number at the bottom of the page.

(1) On a math test, Miranda got 17 out of 20 problems correct. What percent of the problems were correct? 85%

(2) Last semester, 150 out of the 800 students at Jungle Junior High made the Honor Roll. What percent of the students made the Honor Roll? 19%

(3) The width of a singles tennis court is 75% of the width of a doubles court. A doubles court is 36 feet wide. How wide is a singles court? 27 ft

(4) About 60% of the human body is water. At this rate, how many pounds of water are in the body of a 95-pound person? 57 lb

(5) Tapes-R-Us is having a sale on HQ tape players. The regular price is $60. The discount is $18. What percent discount is this? 30%

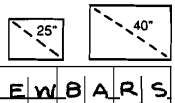
(6) Mr. John Doe was figuring out his federal income tax. His income was $26,800, but he was able to subtract $5,500 in deductions. He paid 15% of the remaining income in tax. How much did he pay? $3,195

(7) Steve put $500 into a savings account. At the end of one year, he had earned $30 in interest. What interest rate was the bank paying? 6%

(8) At Marble Middle School, 35% of the students are 6th graders, 32% are 7th graders, and the rest are 8th graders. What percent are 8th graders? 33%

(9) Mr Spoke is a salesman at Pop's Cycle Shop. Each month he earns $800 plus 7% of his total monthly sales. How much did he earn last month if his sales totaled $9,200? $1,444

(10) The area of a 25-inch TV screen is 300 square inches. The area of a 40-inch TV screen is 768 square inches. The area of the smaller screen is what percent of the area of the larger screen? 39%



(LM)	72%
(EW)	$3,195
(ED)	25 ft
(TA)	$1,514
(IN)	57 lb
(SS)	6%
(SO)	37%
(NG)	85%
(OD)	$3,275
(GI)	$1,444
(HE)	30%
(RS)	27 ft
(AP)	59 lb
(BA)	39%
(AF)	33%
(NT)	8%
(WA)	19%

H	E		W	A	S		S	I	N	G	I	N	G		A		F	E	W		B	A	R	S
5	2		7	4	9		1		8		6		10		3									

HE WAS SINGING A FEW BARS

TOPIC 2-n Problem Solving Mixed Applications

E-34

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NOTE: The directions tell students to use fractions in Part I and decimals in Part II. Students should begin to recognize the percents that have easy fraction equivalents. On page E-36, they must make the discrimination themselves.

Why Can't an Elephant Ride a Bicycle?

Do each exercise and find your answer in the corresponding set of answers. Write the letter of the exercise in the box containing the answer.

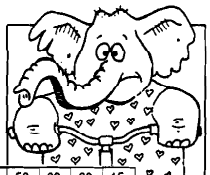
I. Find the number. Use a fraction for the percent.

(O) 20% of what number is 8? 40
(T) 25% of what number is 7? 28
(A) 24 is 50% of what number? 48
(B) 33 1/3 % of what number is 12? 36
(I) 10% of what number is 16? 160
(T) 11 is 1 2 3 % of what number? 88
(S) 1% of what number is 3? 300
(T) 20% of what number is 15? 75
(U) 30 is 25% of what number? 120
(O) 450 is 50% of what number? 900
(H) 33 1/3 % of what number is 32? 96
(N) 250 is 10% of what number? 2,500
(H) 50 is 12 1/2 % of what number?
(M) 5% of what number is 9? 180

160	75	800	96	48	300	60	2,500	40	72	88	400	120	180	36	140	28	900
I	T		H	A	S		N	O		T	H	U	M	B		T	O

II. Find the number. Use a decimal for the percent.

(H) 40% of what number is 14? 35
(E) 15% of what number is 9? 60
(T) 54 is 72% of what number? 75
(I) 33 is 6% of what number? 550
(E) 75% of what number is 96? 128
(L) 32% of what number is 4.8? 15
(N) 3.6 is 45% of what number? 8
(B) 4.5 is 9% of what number? 50
(G) 24% of what number is 54? 225
(L) 80% of what number is 72? 90
(R) 56 is 56% of what number? 100



100	550	8	225	30	75	35	128	375	50	60	90	15		
R	I	N	G		T	H	E		B	E	L	L		

Books Never Written

Getting What They Owe *You* by S U E M. N O W
16 9 2 15 11 7 1

How to Get *Into Shape* by X. R. S I Z E M O R E
8 13 16 5 10 2 15 7 13 2

Most *Embarrassing Moment* by L U C Y L A S T I C
14 9 12 4 14 6 16 3 5 12

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

Do each exercise below. Find your answer and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it.

I Find the number Use a fraction or a decimal for the percent.

(1) 25% of what number is 16? 64
(2) 10% of what number is 80? 800
(3) 36% of what number is 72? 200
(4) 4% of what number is 25? 625
(5) 92% of what number is 69? 75
(6) 65% of what number is 5.2? 8
(7) 20% of what number is 3.47 17
(8) 44% of what number is 55? 125
(9) 33 1/3 % of what number is 21? 63
(10) 50% of what number is 7.5? 15

II Solve

(11) The fastest speed recorded for a runner is 27 miles per hour. This is 20% of the fastest speed for a water skier Find the record for a water skier 135 mph

12 Bowser's dog food is 60% meat. If Bowser needs 24 oz of meat each week how many ounces of dog food should he eat? 40 oz

(13) The length of a ship model is 3% of the length of the actual ship. The model is 1 5 m long How long is the actual ship? 50 m

(14) Students at Lincoln Middle School sell gift wrap to raise money for student activities The school keeps 40% of sales How many dollars worth of gift wrap must be sold to make $1,000? $ 2,500

(15) An airline knows that only about 75% of those who make a reservation actually buy a ticket At this rale how many reservations should the airline accept to fill a plane with 180 seats? 240

(16) Safe Side Bank pays an rnterest rate of 8% per year on certificate accounts How much money must be put into an account to earn $60 in one year? $ 750

Answers

(I) 75
(M) 240
(U) 63
(D) 236
(C) 40
(W) 64
(S) 750
(A) 8
(X) 125
(T) 200
(Z) 15
(L) 2,500
(E) 800
(P) 600
(O) 17
(N) 135
(Y) 625
(R) 50
(K) 2,150

What Is the Best Way to Serve Lion Meat?

Solve each problem and find your answer in the rectangle below. Cross out the box that contains your answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) A person standing on the moon would weigh 16% of his weight on Earth. If Astro Knot weighs 150 lb on Earth, how much would he weigh on the moon? 24 lb

(2) There are 7 oz of sugar in a 16-oz box of Honey Hunks Cereal What percent of Honey Hunks Cereal is sugar (Round to the nearest percent. 44 %

3 A salesmankeeps 20% of his sales as a commission. How much does he have to sell to earn $1,000? $ 5,000

(4) The regular price of an FX-1 electronic keyboard at Circuit Circus is $200. It is on sale at a 25% discount What is the sale price' $ 150

(5) A baseball player got 10 hits in 39 times at bat What percent of his times at bat did he get a hit? (Round to the nearest percent.) 26 %

(6) A math class has studied the first 330 pages of their textbook. It this is 75% of the entire book. how many pages are in the book? 440

(7) The tallest man ever recorded was Robert Wadlow, who was 272 cm tall. The tallest woman on record was Zeng Jinlian. Her height was 91% of Wadlow's height. How tall was Zeng Jinlian? (Round to the neares cm

(8) A color called "Passion Purple" is made by mixing 5 oz of red paint with 9 oz of blue paint. What percent of Passion Purple is blue paint? (Round to the nearest percent.) 64 %

(9) The height of a model rocket is 4% of the height of the actual rocket The model is 1.8 m high How high is the actual rocket? 45 m

(10) Jennifer's new bike cost $180 Her parents paid 40% of the cost and Jennifer paid the rest. How much did Jennifer pay? $ 108

(11) In a poll two weeks before the Presidential election 37% of the people said they would vote for the Democrat 42% said they would vote for the Republican. and the rest were undecided What percent were undecided? 21 %

DI	ON	AS	A	WI	TH	IS	EM	BA
5,000	248	66	24	21	114	26	42	108
AN	T	RY	ED	ST	RO	I	LI	SH
22	45	150	6,500	440	44	475	64	236

A S T H E M A N E D I S H
AS THE MANE DISH

NOTE: Additional practice in finding the mean is found on pages A-64 and 6-72 of this series.

What Do They Call the Guy Who Invented the First Blue Jeans?

Find each answer and cross out the letter next to it. When you finish. the answer to the title question will remain.

1. The scores of 5 golfers on 3 rounds of miniature golf are given in the table Find each of the following. (Round to the nearest point.)

	Round	Round	Round
Juli		83	100
Kay	103	92	118
		96	120

A. The mean of Ray's scores. 97
B The mean of Juli's scores 92
C The mean of the scores in Round 1 102
D. The range of Hal's scores. 14
E. The range of the scores in Round 1. 29
F. The range of the scores in Round 3. 26

2. Find the mean of the first 10 counting numbers (1 through 10).

3 Find the mean of the squares of the first 10 counting numbers. 38.

4. Practice times in the 200-meter dash for 7 runners are given in the table. Find each of the following. (Round to the nearest tenth of a second.)

Name	Trial 1 (s)	Trial 2 (s)
Lewis	24 4	25 1
Raul	27 2	23 6
Edwin	30 6	27.5
Renaldo	24 1	26 3
Chen	26 0	28 4
Steve	31 3	30 9
Hector	29 9	31.0

A. The mean of Raul's times. 25.4s
B. The mean of the times on Trial 1 27.6s
C. The range of the times on Trial 1. 7.2s
D The range of the times on Trial 2. 7.4s
E The range of all the times given. 7.7s

5. The mean of 4 test scores is 90. What is the sum of the scores? 360

6 If the mean rainfall in New York City was 3.4 inches per month, what was the total rainfall for the year? 40.8 in.

7. Each student listed in the table has taken 3 math tests. Find the score each student needs on the next test in order to have an 80 average

Name	Test 1	Test 2	Test 3	Test 4
Bill	78	78	78	86
Jill	66	79	74	94
Phil	72	82	82	84
Will	91	64	76	89

8 Huck's bowling average over 5 games was 100 He scored 118 on the next game What was his new average? 103

W	102
S	72 s
T	24
S	360
W	29
P	25 4 s
U	105
W	97
E	84
W	74 s
M	86
Y	14
Q	38.5
	41 in
T	420
W	103
A	77 s
N	99
S	81 s
Y	26
B	92
	27.6 s
J	94
U	40.8 in
L	26.5 s
E	89
Y	55

J E A N I U S

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NOTE: Exercise 2 illustrates how an extreme value can influence the mean more strongly than the median.

What Happened to the Cat Who Swallowed a Ball of Yarn?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) Find the median for each set of data.

A. 49.32.67.55.58
B. 3.1. 5.2. 4.4, 5.0. 3.8, 2.6, 4.7 4.
C. 29, 12, 30, 22, 7, 23, 36, 15, 18, 9 20
D. 81.6, 83.7, 78.5, 82.8, 81.2, 76.3, 83.5, 78.9 81.4
E. 110, 115, 109, 110. 116, 113. 112, 116. 110. 106,113 112

F. Price of *Zark VII* game at various software stores

$41 75 $43.89 $42 50

45.30

$42.70

(2) The weekly salaries for 5 people who wok at a Las Vegas hotel are given in the table.

Star of stage show	$45,000
Chief chel	1.500
Publicity director	1.100
Lifeguard	

A. What is the mean salary? $10,000
B. What is the median salary? $1,500

(3) Find the mode (or modes) for each set of data.

A.

Suit Sizes		
37	39	41
37	39	41
38	40	41
38	40	42
38	40	44
39	40	44

40

B.

Times in 50-m Dash (s)			
5.7	6.3	6.7	6.9
5.9	6.3	6.7	7.0
6.0	6.4	6.8	7.2
6.0	6.5	6.9	7.3
6.2	6.5	6.9	7.3
6.3	6.7	6.9	7.5

6.9s

C.

Runs Scored					
3	7	2	8	4	
	4	0	5	7	
2	2	4	1	5	
7	1	1	5	6	7
0	5	3	2	2	
6	4	9	5	9	

2 and 5

(4) The table gives typing speeds for 12 students in words per minute (wpm). Find the following for this set of data.

Name	Speed (wpm)	Name	Speed (wpm)
Danny	31	Allison	30
Celeste	27	Ramon	24
Michael	15	George	18
Kalon	31	Jackie	35
Matt	24	Kim	28
Rachel	13	Robert	24

A. The range 22 wpm
B. The mean 25 wpm
C. The median 25.5 wpm
D. The mode (or modes) 24 wpm

TH 25.5 wpm	SH 3	ON 20	E 25 wpm	OW $1,500	EH 27 wpm	IT 6.9 s	GL 112	AD 82.1	SO 24 wpm	M $11 200
E 2 and 5	KN $42.70	IT 6.5 s	IS 55	CA 25 wpm	TE 38	AM 81.4	YA 40	NK 4.4	NS $43.20	RN $10.000

S H E H A D M I T T E N S

SHE HAD MITTENS

According to Math Teachers, What did the Acorn Say When It Grew Up?

Do each exercise and find your answer at the bonom of the page. Write the letter of the exercise in the box above the answer.

I. Use the pictograph at right to answer each question.

(I) How many albums does a whole symbol represent? 20

(E) How many albums does half a symbol represent? 10

(A) How many classical albums does Disco Bob own? 60

E · How many country albums does Disco Bob own? 110

(T) How many more soul albums than jazz albums does Disco Bob own? 40

(E) Disco Bob paid an average of about $8 for each of his rock albums. About how much did he spend altogether for his rock albums? $1,280

Disco Bob's Record Collection

Type	Number Owned ● = 20 albums
classical	● ● ●
soul	● ● ● ◖
jazz	● ◖
rock	● ● ● ● ● ● ● ●
country	● ● ● ● ● ◖

II. The table below shows how many computer games were sold by Action Games Software in June. Round each number to the nearest 50 games. Then complete the pictograph. using whole symbols and half symbols, and answer the questions below.

Kong IV	554	Outland	663
Vindicator	387	Bug Anack	319
Stellar 9	246	Megatron	795

(E) How many symbols did you draw for vindicator? 4

(M) How many symbols did you draw for Outland? 6½

(G) How many symbols did you draw for Megatron? 8

(R) For each game sold. Action Games made a profit of about $10 Give an estimate of their total profits on these games in June. $30,000

Action Games Software June Sales

Game	Number Sold ■ = 100 games
Kong IV	■ ● ■ ■ ■ ◖
Vindicator	■ ■ ■ ■
Stellar 9	■ ■ ◖
Outland	■ ■ ■ ■ ■ ■ ◖
Bug Attack	■ ■ ■
Megatron	○ ■ ○ ■ ■ ■ ■

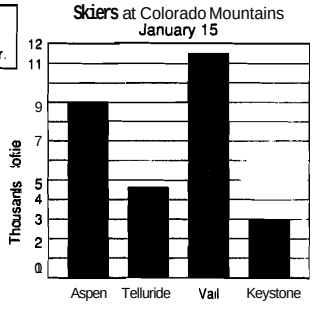
G E E I ' M A T R E E

140	8	110	$1280	50	20	6½	$24000	60	7	40	$30000	10	4	$1.360

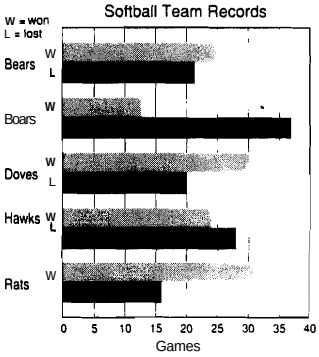
What Do You Call a Fake Chart?

Circle the letter of the better answer for each exercise. Write the letter in the box containing the exercise number.

1. How many skiers were at Aspen?
(C) 9 (A) 9,000
2. How many skiers were at Telluride?
(Y) 4,500 (V) 5,000
3. How many more skiers were at Vail than at Keystone?
(K) 7,000 (P) 8,500
4. How many skiers were at the four mountains altogether?
(M) 30.000 (H) 28,000
5. What was the mean number of skiers at the four mountains?
(O) 7,000 (B) 6.500



6. How many games did the Bears win?
(S) 30 (A) 25
7. How many games did the Boars lose?
(F) 39 (G) 37
8. How many more games did the Hawks lose than win?
(N) 4
9. How many more games did the Rats win than the Boars won?
(P) 19 (T) 16
10. Which team won twice as many games as it lost?
(E) Doves (R) Rats
11. What fraction of its games did the Doves win?
(H) 3/5 (W)



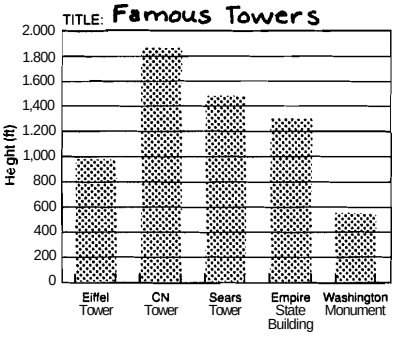
A 6	P 3	H 11	O 5	N 8	Y 2	G 7	R 10	A 1	P 3	H 4

PHONYGRAPH

Bar GraFun

1. Use the data below to make a bar graph showing the heights of five famous towers.

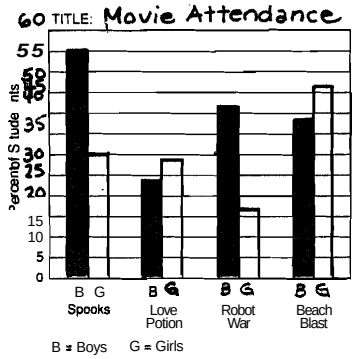
Famous Towers	
Tower	Height (ft)
Eiffel Tower	986
CN Tower	1.822
Sears Tower	1 454
Empire State Building	1.250
Washington Monument	555



2. The Student Council took a survey to find what percent of the students had seen four recent movies. Use the data below to make a double-bar graph showing the percent of boys and girls who had seen each movie.

Begin by completing the horizontal and vertical scales.

Movie Attendance		
Movie	Boys	Girls
Spooks	55%	30%
Love Potion	23%	29%
Robot War	42%	16%
Beach Blast	38%	47%



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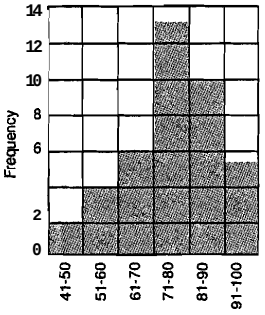
How Do You Repair a Broken Tuba?

Complete each table. Write the letter for each frequency in the box above the corresponding value at the bottom of the page. Make a histogram for each set of data.

Test Scores for 40 Students

80	89	66	73	60	97	53	79	70	58
71	99	44	88	80	69	72	83	86	76
91	77	61	83	57	88	49	77	75	95
64	85	75	72	94	66	84	77	88	82

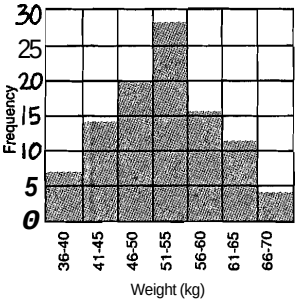
Score	Tally	Frequency	
41-50	II	2	U
51-60	IIII	4	T
61-70	𝍸 I	6	E
71-80	𝍸 𝍸 III	13	A
81-90	𝍸 𝍸	10	W
91-100	𝍸	5	G



Weights for 100 Students (kg)

53	61	55	48	64	58	45	63	55	44
56	44	38	48	52	54	45	41	53	58
46	50	50	52	43	56	36	51	42	47
68	42	50	46	55	62	59	51	52	47
53	63	52	60	54	49	65	58	54	38
48	53	66	49	56	63	48	48	62	54
64	44	56	39	68	52	44	59	54	46
54	47	56	53	53	41	59	50	38	55
58	61	46	36	57	48	54	45	60	52
40	48	62	51	63	42	57	55	43	52

Weight	Tally	Frequency	
36-40	𝍸 II	7	A
41-45	𝍸 𝍸 IIII	14	H
46-50	𝍸 𝍸 𝍸 𝍸	20	U
51-55	𝍸 𝍸 𝍸 𝍸 𝍸 III	28	I
56-60	𝍸 𝍸 𝍸 I	16	T
61-65	𝍸 𝍸 II	12	L
66-70	III	3	B



W	I	T	H	A	T	U	B	A	G	L	U	E
10	28	4	14	13	16	2	3	7	5	12	20	6

WITH A TUBA GLUE

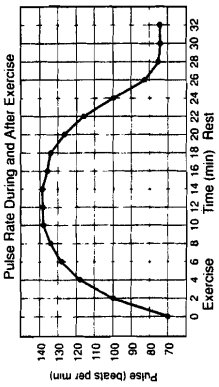
E-43

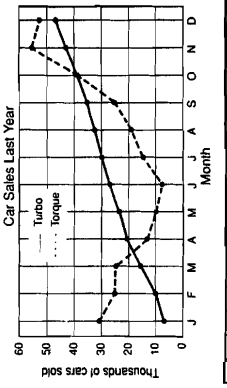
TOPIC 3-e: Histograms

What Happens to a Man Who Carries an Ax in His Teeth?

1 What was the pulse rate when exercise started? (C) 70 (V) 73
2 How much did the pulse rate increase by the end of the first 4 min of exercise? (T) 48 (B) 54
3 Estimate the highest pulse rate on the graph. (S) 133 (E) 139
4 What is the range of the pulse rates? (I) 69 (W) 72
5 The pulse rate at the start was about what fraction of the highest pulse rate? (S) $\frac{1}{2}$ (A) $\frac{1}{3}$
6 About how many Torques were sold in February? (N) 22,000 (D) 26,000
7 About how many more Turbos were sold in December than in January? (L) 36,000 (C) 40,000
8 In what month were about 19,000 Torques sold? (G) August (R) September
9 About how many more Turbos than Torques were sold in July? (M) 12,000 (U) 16,000
10 In what month were about the same number of Turbos and Torques sold? (H) October (U) November
11 What is a reasonable estimate for sales of Turbo cars in January of *this* year? (P) 50,000 (N) 60,000

Circle the letter of the better answer for each exercise. Write the letter in each box containing the exercise number.





10	3	8	3	2	5	7	10	1	11	3	6	9	4	11	5
H	E	G	E	T	S	C	H	O	P	P	E	D	L	I	P

HE GT S WHOPPED LIPS

TOPIC 3-f Line Graphs

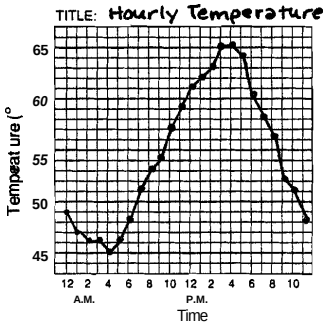
E-44

Line GraFun

1. Use the data **below** to make a line graph showing the **temperature** each hour for a day.

Hourly Temperatures

A.M.		P.M.	
12:00	49°F	12:00	61°F
1:00	47	1:00	62
2:00	46	2:00	63
3:00	46	3:00	65
4:00	45	4:00	65
5:00	46	5:00	64
6:00	48	6:00	60
7:00	51	7:00	58
8:00	53	8:00	56
9:00	54	9:00	52
10:00	57	10:00	51
11:00	59	11:00	48

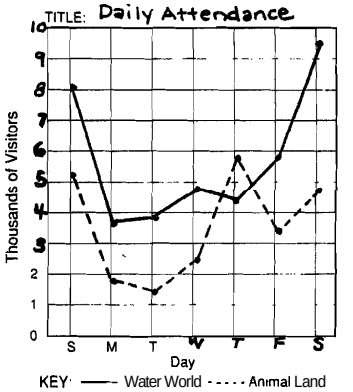


2. Use the data below to make a double-line graph showing the number of **visitors** at two amusement parks each day for a week.

Begin by completing the horizontal and vertical scales.

Daily Attendance

Day	Water World	Animal Land
Sun	7,967	5,140
Mon	3,512	1,864
Tues	3,833	1,328
Wed	4,760	2,465
Thur	4,184	5,730
Fri	5,675	3,291
Sat	9,326	4,622



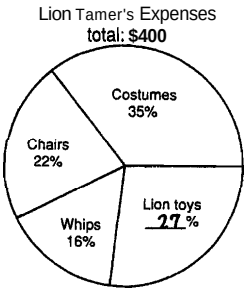
E-45

TOPIC 3-1 Line Graphs

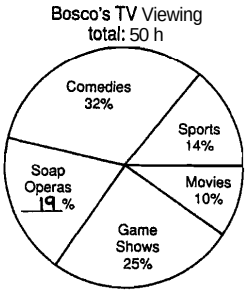
WHO MAKES RAINWATER MIX WITH DIRT?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

1. A lion tamer spent a total of $400. The circle graph shows what percent was spent on each item. Find the amount spent on:
   $140 $88 $64
   A. costumes; B. chairs; C. whips.
2. What percent of the total was spent on lion toys? 27%
3. How much money was spent on lion toys? $108
4. What percent was spent for chairs and whips combined? 38%
5. How much money was spent for chairs and whips combined? $152



6. During the first week of summer vacation, **Bosco** spent **50** hours watching TV. Use the circle graph to find the amount of time he spent watching:
   16h 12.5h 5h
   A. comedies; B. game shows; C. movies.
7. What percent of the total time was spent watching soap operas? 19%
8. How much time did Bosco spend watching soap operas? 9.5h
9. How much more time was spent watching sports than movies? 2h
10. What is always the sum of the percents in a circle graph? 100%



TH	AT	MU	CH	ST	KI	DD	AL	OV	ER
19%	27%	3.5 h	100%	$140	12.5 h	23%	$152	9.5 h	$112
NA	ME	AL	TU	RN	ON	CA	RE	ST	UP
$144	16 h	$88	11 h	2 h	$108	5h	50%	$64	38%

M	U	D	D	E	R	N	A	T	U	R	E

MUDDER NATURE

TOPIC 3-g: Circle Graphs

E-46

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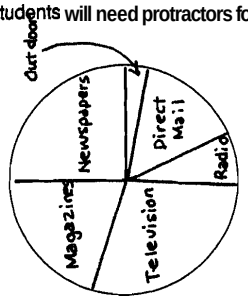
NOTE: Students will need protractors for this puzzle and the next.

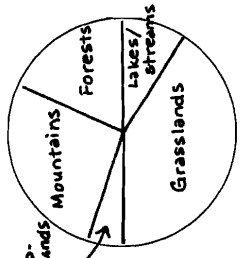
What Do You Call a Person Who Buys and Sells Bugs?

Find the measure of each central angle (rounded to the nearest degree). Write the letter for each answer in the box containing the answer at the bottom of the page. Construct a circle graph for each set of data.



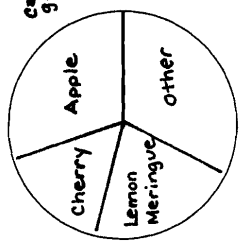
Advertising Budget

Medium	% of total	Central angle
Newspapers	25%	(K) 90°
Magazines	20%	(A) 72°
Television	29%	(D) 104°
Radio	8%	(N) 29°
Direct mail	15%	(L) 54°
Outdoor	3%	(T) 11°



Land Use in a National Park

Land Use	% of total	Central angle
Forests	18%	(I) 65°
Mountains	27%	(N) 97°
Campgrounds	5%	(A) 18°
Grasslands	41%	(T) 148°
Lakes/Streams	9%	(E) 32°



Favorite Kind of Pie (results of a survey)

Kind	% of total	Central angle
Apple	30%	(C) 108°
Cherry	16%	(A) 58°
Lemon meringue	21%	(E) 76°
Other	33%	(R) 119°

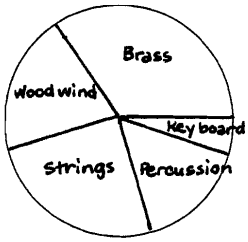
72°	97°	101°	58°	148°	29°	62°	11°	65°	108°	90°	16°	104°	76°	18°	54°	32°	119°
A	N	A	T	N	A	T	I	T	C	K	D	E	A	L	E	R	

Why Did King Kong Play with the Flying Saucer?

Complete each table. (Round each answer to the nearest whole number. if necessary.)Write the letter for each answer in the circle at the bottom of the page that contains the answer. Construct a circle graph for each set of data.

Instruments in the *Arithmics* Rock Band

Family of Instruments	Number of Players	Percent of total	Central angle
Brass	7	(H) 35%	(T) 126°
Woodwind	4	(E) 20%	(G) 72°
Strings	5	(A) 25%	(O) 90°
Percussion	3	(S) 15%	(E) 54°
Keyboard	1	(T) 5%	(I) 18°
TOTAL	20	100%	360°



Clubs at Jaws Junior High

Club	Number of Members	Percent of total	Central angle
Drama	22	(A) 24%	(H) 86°
Crafts	27	(U) 30%	(S) 108°
Computer	16	(E) 18%	(I) 65°
Magic	10	(F) 11%	(T) 40°
Games	15	(H) 17%	(B) 61°
TOTAL	90	(W) 100%	(R) 360°

86°	54°	22%	40°	35%	90°	30%	72°	17%	5%	80°	65°	126°
H	E	T	H	O	U	G	H	T		I	T	

100%	25%	108°	13%	24%	46°	11%	360°	18°	15%	61°	20%	18%
W	A	S	A	F	R	I	S	B	E	E		

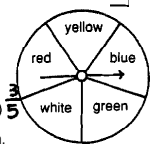
Why Did the King's Birthday Celebration Last So Long?

Do each exercise and find your answer in the Code Key. Notice the letter under it. Write this letter in the box containing the exercise number.

Code	1/100 H	1/5 T	2/8 S	3/9 N	4/8 I	1 K	4/13 P	5/13 E	2/7 W	1/8 Y	3/8 H	1/2 A	5/8 L	7/8 G

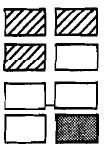
I. Find each probability if you spin the spinner once.

(1) P(red) 1/5
(2) P(green) 1/5
(3) P(blue or white) 2/5
(4) P(not yellow) 4/5
(5) P(not red) 4/5
(6) P(blue or red or yellow) 3/5



II. Find each probability if you choose one card at random.

(7) P(striped) 3/8
(8) P(white) 1/2
(9) P(shaded) 1/8
(10) P(white or shaded) 5/8
(11) P(striped or white) 3/8
(12) P(striped or shaded) 1/2
(13) P(not striped) 5/8
(14) P(not white) 1/2
(15) P(striped or white or shaded)



III. Solve.

(16) What is the probability of guessing the correct answer to a multiple choice question if there are 5 choices? 1/5
(17) What is the probability of guessing the correct answer to a true-false question? 1/2
(18) What is the probability that your birthday will fall on Saturday or Sunday? 2/7
(19) What is the probability of winning a raffle if 500 tickets are sold and you buy 5 of them? 1/100
(20) A class of 25 students has 15 girls and 10 boys If one student is chosen at random, what is the probability it is a girl? 3/5
(21) There are 26 letters in the alphabet What is the probability hat a letter chosen at random is in the word MATHEMATICS? 4/13

5	1	18	8	3	14	6	17	13	10	15	20	4	11	7	16	21	12	19	2	9
I	T	W	A	S	A	N	A	L	L	K	N	I	G	H	T	P	A	R	T	Y

IT WAS AN ALL KNIGHT PARTY

When the Boy Tire Maker Married the Girl Tire Maker, What Did Everyone Say?

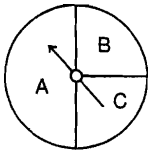
Do each exercise and find your answer at the bottom of the page. Write the letter of the exercise in the box above the answer.

1. Suppose you roll a regular 6-faced die.

(A) How many equally likely outcomes are there? 6
(E) If you roll the die once, what is the probability of rolling a 3? 1/6
(H) If you roll the die 60 times. about how many times would you expect to get a 1?
(I) If you roll the die 300 times, about how many times would you expect to get a 5? 50

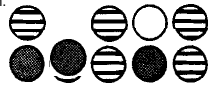
2. A spinner is'shown at the right for which each outcome is not equally likely.

(E) If you spin the spinner once, what is the probability that it will stop on A?
(A) If you spin the spinner once, what is the probability that it will stop on B? 1/4
(T) If you spin the spinner 50 times. about how many times would you expect it to stop on A? 25
(Y) If you spin the spinner 80 times, about how many times would you expect it to stop on C? 20



3. Find each probability if you choose one marble at random.

(E) P(black) 3/10
(S) P(striped) 3/5
(A) P(not black) 7/10
(E) P(not white) 9/10
(R) P(black or white) 2/5
(M) P(yellow) 0



4. Solve.

(N) If you flip a coin 150 times, about how many times would you expect to get heads? 75
(K) If you randomly pick a date in April. how many equally likely outcomes are there? 30
(C) The letters a, e, i, o, u, and y are vowels. If one letter of the alphabet is chosen at random, what is the probability it is a vowel? 3/13
(P) A magician asks you to pick a card. any card. from a standard deck of 52 cards. What is the probability of picking an ace? 1/13

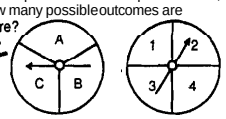
T	H	E	Y		M	A	K	E		A		N	I	C	E		S	P	A	R	E
25	10	9/10	20	1/8	0	6	30	1/2	2/13	7/10	1/5	75	50	3/13	1/6	32	3/5	1/13	1/4	2/5	3/10

NOTE: For the first few exercises, you may want to have students make a list of all possible outcomes, or sample space. You might follow this puzzle with a discussion of certain special sample spaces, such as for a roll of two dice.

Why Was Jesse James In the Hospital?

Find each answer in the code at the bottom of the page. Write the letter of the problem above the answer each time it appears.

(I) If you spin each of these spinners once, how many possible outcomes are there? 12



(E) The students at Metmac Middle School are trying to choose a school mascot and a school color. The suggestions for mascot are lion, bear, and porpoise. The suggestions for color are red, blue, and gold. How many different combinations are there? 9

(R) Mr. and Mrs. Quagmire are trying to decide on a name for their new baby girl. For a first name, they like either Melissa. Jennifer, Karen. Lisa, or Susan. For a middle name, they like either Anne or Jean. How many different choices do they have? 10

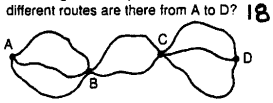
(A) Elmo decided to take two classes during summer school. For first period. he can choose either math or English. For second period, he can choose either art, music, drama, or cooking. How many different schedules of two classes are possible? 8

(C) If a baseball team has 5 pitchers and 3 catchers. how many different pitcher-catcher combinations can be used? 15

(H) Glitzy just bought 4 blouses, 5 skirts. and 2 blazers If all the patterns and colors match, how many outfits can she make? 40

(T) Pizza Mind Pizza Parlor has 8 kinds of pizza, 3 kinds of salad, and 4 kinds of beverage. If you order one item from each category, how many different meals can be ordered? 96

(W) According to the map, how many different routes are there from A to D? 18



(O) Shoe World sells shoes in 20 different styles Each style comes in 4 colors and 9 sizes. If the store manager wants to have every possible combination, how many pairs must he keep in stock? 720

(K) In Cornville, bicycle license plates have 2 letters followed by a 1-digit number. How many different license plates are possible? 6,760

(S) When you order a sandwich at Nelly's Deli. you can choose from 4 kinds of bread and 7 kinds of meat. On any sandwich, you can have mayonnaise or mustard or both or neither. How many different sandwiches can be ordered? 112

CODED ANSWER

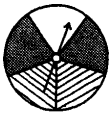
H	E	92	W	A	S	880	A	24	S	12	C	K	6	S	H	O	T	E	R
40	9	92	18	8	112	880	8	24	112	12	15	6,760	6	112	40	720	720	96	9	10

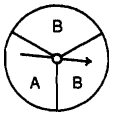
What Do the Police Put On a Bad Pig?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

I. Find each probability if you spin both spinners.

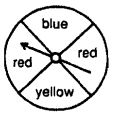
(1) P(white, A) 1/15 (2) P(white, B) 2/15
(3) P(striped, A) 2/15 (4) P(striped, B) 4/15
(5) P(not striped, A) 1/5 (6) P(not striped, B) 2/5
(7) P(not white, A) 4/15 (8) P(not white, B) 8/15

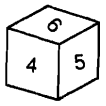




II. Find each probability if you spin the spinner and roll the number cube.

(9) P(blue, 2) 1/24 (10) P(blue, not 2) 5/24
(11) P(yellow, even) 1/8 (12) P(red, even) 1/4
(13) P(not blue, 5) 1/8 (14) P(not blue, odd) 3/8
(15) P(red, 4) 1/12 (16) P(red, not 4) 5/12





III Find each probability if you pick one marble, replace it, then pick a second marble.

(17) P(black, white) 1/18 (18) P(black, striped) 1/6
(19) P(white, striped) 1/6 (20) P(not white, striped) 1/3
(21) P(black, black) 1/36 (22) P(striped, striped) 1/4
(23) P(white, not white) 2/9 (24) P(not white, not white) 4/9

IV. Solve

(25) A test has two multiple choice questions. each with five choices What is the probability of guessing the correct answer to both questions? 1/25

(26) One letter is randomly selected from the word MATH and a second letter is randomly selected from the word JOKES. What is the probability that both letters are vowels? 1/10

A	T	T	N	O	H	E	E	A	T	P	P	I	M	G	C	O
3	4	5	6	1/7	8	8	1/9	10	12	12	15	1/16	18	1/20	24	

T	H	O	U	G	S	S	L	F	A	E	E	F	A	T	S	E
29	36	5	2/7	9	15	15	8	3/10	9	15	15	5/8	12	24	7/15	15

H A M C U F F S

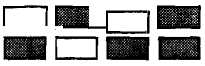
NOTE: Students may find these exercises quite challenging.

What Do You Get if a Bunch of Bad Guys Fall in the Ocean?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

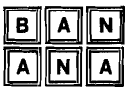
I. Find each probability if you pick a card, do not replace it, then pick a second card.

(1) P(black, then white) 15/56 (2) P(black, then black) 5/14
(3) P(white, then black) 15/56 (4) P(white, then white) 3/28



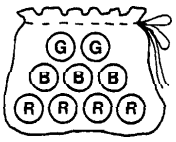
II. Each letter of the word BANANA is written on a card. Find each probability if you pick two cards without replacing the first.

(5) P(B, then N) 1/15 (6) P(B, then A) 1/10 (7) P(N, then B) 1/15
(8) P(N, then A) 1/5 (9) P(A, then B) 1/10 (10) P(A, then N) 1/5
(11) P(N, then N) 1/15 (12) P(A, then A) 1/5 (13) P(B, then B) 0



III. Find each probability if you pick a marble, do not replace it, then pick a second marble. (R = red: B = blue; G = green)

(14) P(blue, then preen) 1/12 (15) P(green, then red) 1/9
(16) P(green, then green) 1/36 (17) P(green, then not green) 7/36
(18) P(red, then blue), 1/6 (19) P(red, then not blue) 5/18
(20) P(blue, then blue) 1/12 (21) P(not blue, then not blue) 5/12



IV. Solve

(22) There were 6 purple socks and 4 orange socks in a drawer. Zucky picked one sock without looking and then another without looking (or replacing the first). What is the probability that he picked 2 purple socks? 1/3

(23) There are 10 boxes in a grab bag. The boxes are identical except that 7 of them contain $20 bills. A contest winner gets to pick two boxes from the grab bag. What is the probability of getting two $20 bills? 7/15

TH	AN	IT	IT	IT	PL	AC	ES	EY	EY	ON	ON	RI	DE
0	3	5	5	5	6	1/8	9	10	10	12	12	1/14	15

DE	DE	SO	ME	ET	WA	TE	AM	LI	RS	VE	RY	ST	ST
1/15	1/15	1/36	2/5	3/28	4/9	5/12	5/14	5/18	1/15	7/18	7/36	5/56	5/56

A C R I M E W A V E

A CRIME WAVE

Why Couldn't the Church Steeple Keep a Secret?

Solve each problem below and find your solution in the answer column. Write the letter of the answer in each box containing the number of the problem.

(1) In how many ways can you arrange 6 things? 720
(2) In how many ways can you arrange 6 things. 3 at a time? 120
(3) Maria keeps her 4 stuffed bears lined up on a shelf over her bed. How many arrangements of the bears are possible? 24
(4) How many different 2-letter arrangements can be selected from the 5 letters in the word CANDY? 20
(5) Eleven people are competing in a sack race. There is a blue ribbon for first. a red ribbon for second. and a white ribbon for third How many different first-second-third place finishes are possible? 990
(6) David has decided he wants to call Jessica. Martha, and Eileen, but he hasn't decided in what order to call them. How many choices does he have? 6
(7) The teacher plans to assign 8 students to 8 desks for a debate. How many different seating arrangements are possible? 40,320
(8) In how many different ways can a president, vice-president and secretary be elected from a class of 32 students? 29,760
(9) If a school offers 9 different subjects, how many different schedules of 5 classes are possible? 15,120
(10) Tak-Kee Plastic Company prints a 2-letter code on each of its products How many different 2-letter codes can be formed using the 26 letters of the alphabet if the two letters must be different? 650
(11) SureLock Lock Company makes combination locks with 50 numbers printed on the dial. Each lock combination is an arrangement of 3 different numbers. How many locks can the company make without repeating a combination? 117,600

(F) 690
(Y) 15,120
(H) 20
(K) 8
(W) 40,320
(N) 110,200
(S) 720
(R) 14,830
(T) 29.760
(O) 24
(L) 117.600
(G) 36
(A) 990
(E) 120
(B) 650
(P) 41.150
(D) 6
(C) 27.360

8	4	2	10	2	11	11	5	11	7	5	9	1	8	3	11	11	2	6
T	H	E	B	E	L	L	A	L	W	A	Y	S	T	O	L	L	E	D

BELL ALWAYS TOLLED

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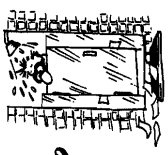
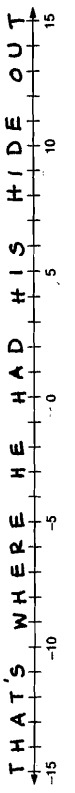
Why Did the Bank Robber Run Home and Jump in the Shower?

Write an integer for each situation. Find the point on the number line that corresponds to the integer. Write the letter of the exercise above the number line at that point.





(D) score 10 points 10
(H) 8 steps forward 8
(E) the opposite of 7 -7
(O) the opposite of -13 13
(H) not positive or negative 0

(H) a loss of $14 -14
(S) 11 fewer members -11
(I) an increase of 5 miles per hour 5
(E) 2 km below the surface -2
(T) 15 s before blastoff -15
(W) a withdrawal of $9 -9
(H) up 4 flights 4
(U) put in 14 gal 14
(E) 5 years ago -5
(T) a debt of $12 -12

(H) 3 units to the left of 0 -3
(A) the opposite of 13 -13
(D) 2 units to the right of 0 2
(E) the opposite of -11 11
(H) 8° below zero -8
(S) a gain of 6 lb 6
(T) a deposit of $15 15
(R) 6 ft below sea level -6
(I) a gain of 9 yd 9
(A) 1 point higher 1

NOTE: **For Parts II and III, when the answer is "no," you might want to have students write the integers in proper order.**

Why Shouldn't You Let a Doctor Put One of Those Sticks in Your Mouth?

Circle the appropriate number-letter next to each exercise. Write the **letter** in the matching numbered box at the **bottom** of the page.

I. For each exercise, write > or < in the ◯.

		>	<
1	8 ◯ -3	6-O	17-L
2	4 ◯ -9	28-E	20-G
3	-6 ◯ 1	32-S	15-W
4	-2 ◯ -3	3-U	8-B
5	-8 ◯ -7	33-V	23-H
6	-12 ◯ -5	26-P	10-K
7	4 ◯ 11	24-J	17-O
8	1 ◯ -10	20-E	12-I
9	-5 ◯ 20	29-M	8-T
10	-7 ◯ 0	1-S	33-A
11	-13 ◯ -14	26-I	13-D
12	-75 ◯ -50	30-F	12-O
13	-25 ◯ 18	7-R	22-T
14	99 ◯ -100	32-E	18-S
15	-99 ◯ -100	1-Y	8-X
16	0 ◯ -100	13-W	34-L

II. For each exercise, decide whether the integers are in order from the least to the greatest.

		yes	no
17	-9, -2, 5	18-A	25-M
18	-8, 0, -1, 9	16-R	24-E
19	12, -7, -5, 6, 15	2-O	19-F
20	-38, -24, 19, -10, 3	5-G	30-C
21	-44, -40, 0, 16, 45	7-N	27-P
22	-58, -60, 4, 59, 61	31-L	16-H

III. For each exercise, decide whether the integers are in order from the greatest to the least.

		yes	no
23	12, -1, 1, -17	4-R	34-M
24	14, 6, 0, -13, -15	5-D	21-S
25	32, -30, 29, -5, -85	9-A	11-N
26	90, 9, 0, -90, -9	31-H	19-T
27	25, 11, -8, -7, -15	14-B	27-C
28	4, 2, 0, -2, -4, -42	31-R	23-U

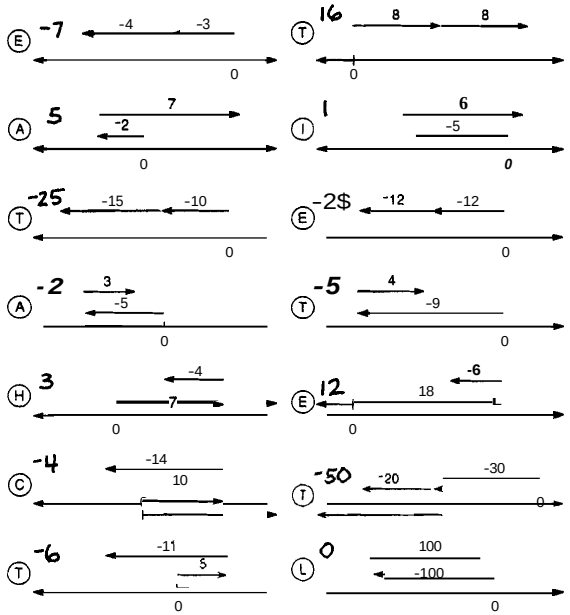
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Y	O	U		D	O	N	'T		K	N	O	W		W	H	O

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
A	T	E		T	H	E		I	C	E		C	R	E	A	M

NOTE: **You might want to have students write an equation for each exercise, such as -3 + -4 = -7.**

How Is a Mouse Like Grass in a Meadow?

For each exercise, identify the integer that results from combining the **two** arrows. Write the letter of the exercise in the box **containing** the answer.



16	3	-24	-4	5	-6	-25	0	-7	12	-2	-50	1	-5
T	H	E	C	A	T	T	L	E	E	A	T	I	T

THE CATTLE EAT IT

When Do a Bunch of Cold Germs Celebrate a Victory?

Do each exercise and find your answer in the corresponding set of answer boxes. Write the letter of the exercise in the box containing the answer.

(E) -3 + -4 -7	(I) -20 + -30 -50	(Y) -6 + -1 + -3 -10
(N) -8 + -5 -13	(A) 7 + 8 15	(W) -4 + -7 + -11 -22
(H) -7 + -7 -14	(B) -9 + -2 -11	(G) -9 + -9 + -9 -27
(T) -1 + -16 -17	(N) -4 + -40 -44	(H) 13 + 2 + 6 21

(E) On first down, the Vultures lost 6 yd. On second down, they lost 5 yd. On third down, they lost 8 yd. Use an integer to express their overall change in position as a result of the three plays -19 yd

(R) A scuba diver dove 18 ft below the surface to observe a school of fish. Then he dove another 24 ft to the bottom. If he started at sea level, what was his elevation when he reached the bottom? -42 ft

-22	-14	-19	-44	18	-17	21	-7	-10	-36	-11	-42	-50	-13	-27	-18	15
W	H	E	N		T	H	E	Y		B	R	I	N	G		A

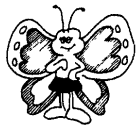
(S) -33 + -15 -48	(O) -47 + -20 -67	(E) -7 + -13 + -6 -26
(E) -29 + -64 -9	(E) -8 + -75 -83	(T) -19 + -48 + -5 -72
(A) -41 + -58 -99	(S) 35 + 39 74	(H) -25 + -25 + -25 -75
(I) 72 + 16 88	(N) -87 + -24 -111	(Z) -8 + -8 + -8 + -8 -32

(M) The temperature at 10 A.M. was -7°F. By noon, the temperature had dropped 12°F. By 2 P.M., it had dropped another 5°F. What was the temperature at 2 P.M.? -24°F

(N) Rolex wrote a check for $45. The next day, he wrote a check for $32. Use an integer to express the change in his bank balance when the two checks were cashed. $-77

-24	-99	-111	-76	-72	-67	82	-75	88	74	-27	-48	-77	-26	-93	-32	-83
~ H	A	M	T	O			H	I	S		S	N	E	E	Z	E

Why Didn't the Butterfly Go to the Dance?



Write each answer, then mark it in the answer column. For each set of exercises, there is one extra answer. Write the letter of this answer in the correspondingbox at the bottom of the page.

		Answers,				Answers.	
1	-5 + 2 -3			8	9+-4 5		
	7 + -3 4	⊗ 4	⊗ -3		3 + -7 -4	⊗ 9	⊗ -4
	-4 + -6 -10	Ⓐ -8	⊗ -10		-6 + 15 9	Ⓘ 12	⊗ 5
2	1 + -8 -7			9	-7 + 1 -6		
	-6 + -12 -18	⊗ 7	Ⓛ 13		-5 + -12 -17	Ⓐ 8	⊗ -11
	-2 + 9 7	⊗ -7	⊗ -18		9 + -20 -11	⊗ -6	⊗ -17
3	-7 + 6 -1			10	-4 + -3 -7		
	5 + -8 -3	⊗ -1	⊗ -3		-4 + 3 -1	⊗ -7	⊗ 1
	12 + 13 25	⊗ 25	Ⓗ 18		4 + -3 1	Ⓣ 7	⊗ -1
4	-10 + -10 -20			11	-8 + 18 10		
	17 + -1 16	⊗ 16	Ⓣ -8		6 + -19 -13	⊗ 10	Ⓦ -16
	-11 + 5 -6	⊗ -20	⊗ -6		13 + 5 18	⊗ 18	⊗ -13
5	4 + -9 -5			12	11 + -2 9		
	-7 + -15 -22	Ⓐ 14	⊗ 9		-7 + -4 -11	Ⓛ 12	⊗ 9
	-3 + 12 9	⊗ -22	⊗ -5		-15 + 8 -7	⊗ -7	⊗ -11
6	16 + -8 8			13	-6 + 12 6		
	-5 + 20 15	⊗ 8	⊗ 15		99 + -99 0	⊗ -2	⊗ 6
	-6 + 6 0	Ⓢ -4	⊗ 0		3 + -5 -2	⊗ 0	Ⓑ -4
7	-13 + -4 -17			14	-20 + -30 -50		
	-7 + 2 -5	⊗ -5	⊗ -17		70 + -40 30	⊗ -50	Ⓜ 50
	14 + -16 -2	⊗ -2	Ⓞ 10		-70 + 40 -30	⊗ 30	⊗ -30

8	4	11	1	6	9	14	7	10	3	13	5	2	12
I	T	W	A	S	A	M	O	T	H	B	A	L	L

IT WAS A MOTH BALL

NOTE: The ***Nutrition Scoreboard*** poster is available from CSPI, 1501 16th St., NW, Washington, DC 20036.

Who Saw the Brontosaurus Enter the Restaurant?

Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) -6 + -4 + 3 -7
(2) 9 + -15 + 8 2
(3) -7 + -12 + -10 -29
(4) -5 + 16 + -2 9
(5) -70 + 20 + 30 -20
(6) 33 + -24 + -9 0
(7) -4 + -5 + 2 + 6 -1
(8) -11 + 8 + -1 + 7 3
(9) -14 + -9 + 20 + -2 -5
(10) 29 + -4 + 25 + 3 53
(11) 18 + -12 + 5 + -6 5
(12) 45 + -10 + -20 + -30 -15

(13) On Monday. the high temperature in Frostbite. Alaska. was -5°F. On Tuesday. it rose 14 On Wednesday. it dropped 20 What was the temperature on Wednesday? -11°F

(14) At its first stop a bus picked up 10 people. At Re next stop. 8 people got on and 3 people got off. At the third stop. 5 people got on and 12 people got off How many passengers were then on the bus? 8

A nutrition expert rated the relative nutritional values of many foods. A few ratings are shown in the table. Ratings of different items can be added to get an overall score for a meal Find the overall score for each of the following meals

(15) Peanut butter (2 tbsp). jelly (1 tbsp). white bread (2 slices) apple 66
(16) Hamburger (3 oz) American cheese (1 oz) hamburger bun whole milk (8 oz) 51
(17) Potato chips (1 oz) Hostess Twinkies (1 pack) Coca-Cola (12 oz) -74
(18) 2 large eggs 1 slice of white bread butter (1 pat) orange juice (6 oz) 42

Nutrition Scoreboard	
potato (medium baked)	71
orange juice 16oz)	47
white bread (2 slices)	44
hamburger bun	36
whole milk (8 oz)	28
apple (1 medium)	23
potato chips (1 oz)	15
peanut butter (2 tbsp)	5
hamburger regular (3 oz)	4
jelly (1 tbsp)	6
egg (1 large)	7
American cheese 11oz)	9
butter (1 pat)	13
Hostess Twinkies 11pack)	34
Coca Cola (12 oz)	55

AF	IT	AT	TH	EY	FO	OO	EF	ED	AT	CH	IN
0	51	2	-13	8	-5	5	42	57	-29	66	6
EE	NT	ER	HO	LE	SS	OM	EA	TS	ON	AW	AR
-15	3	14	9	74	-3°F	-7	-1	-11°F	26	-62	53

THE DINERS SAW

THE DINERS SAW

Why Do Some People Say That Captain Kirk Has Three Ears?

Do each exercise 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 each answer, the answers are arranged in order from smallest to largest.)

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
E	A	R,			A	N	D		A		F	I	N	A	L		E	A	R,		F	R	O	N	T		L	E	F
-50	-30	-25	-24	-20	-18	-15	-14	-13	-12	-11	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	2	8	10	12	13	15	16	19	21
H	E		H	A	S		A		R	I	G	H	T		E	A	R		F	O	U	R		E	Y	E	S		T
28	36	42	50	53	56	59	62	65	66	68	69	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89
I		E		R		E		A		T		S		O		N		M		Y		B		K		W		Q

(E) 4 - 6 -2
(R) 3 - -1 4
(F) 4 - -8 12
(A) -14 - 10 -24
(N) 30 - 9 21
(I) 2 - 16 -14
(E) 35 - -7 42
(A) -3 - -13 10
(S) -15 - 5 -20
(R) -1 - -20 19
(T) -8 - -8 0
(A) 6 - 24 -18
(D) -7 - -15 8
(H) -13 - -1 -12
(R) -10 - -60 50
(A) 9 - -6 15
(E) -11 - -2 -9
(H) -20 - 30 -50
(N) -5 - -12 7
(I) 18 - -18 36
(A) 4 - 9 -5
(G) -4 - 9 -13
(L) 13 - -3 16
(E) -80 - -50 -30
(A) -7 - -103
(R) 13 - 20 -7
(H) -14 - 11 -25
(A) 24 - 18 6
(L) -5 - -2 -3
(O) -6 - -26 20
(T) -12 - -1 -11
(I) 12 - -1 13
(F) 99 - 100 -1
(E) -6 - -8 2
(A) -10 - -2 -8
(F) 3 - -15 18
(R) -11 - 4 -15
(N) 50 - 36 14
(T) 0 - -28 28

BEE MINE

Y	9
W	13
Y	21
B	4
O	0
Y	20
E	-12
M	5
Y	-15
E	3
A	100
R	-14
E	96
O	-4
M	7
E	14
A	33,476
N	-1
D	-7
W	-18
E	17
E	88
K	31,916
B	-5
O	2
O	-8
K	-6

What Did Cupid Say When Asked: "Where Is There Honey Underground?"

Do each exercise and find your answer in the answer column. Cross out the letter next to it. When you finish, the answer to the title question will remain.

(1) 6 + (4 - 7) 3
(2) 9 + (-2 - 8) -1
(3) -12 + (-1 + 5) -8
(4) -3 - (3 - 10) 4
(5) (-2 + 15) - -4 17
(6) (-5 - -1) + -8 -12
(7) (9 - 16) + 2 -5
(8) (4 + -7) - -12 9
(9) (-3 + 8) + (10 - 1) 14
(10) (6 - 7) + (-11 + -2) -14
(11) (5 - -4) + (-5 - 4) 0
(12) (-2 + -6) + (20 + -18) -6
(13) (-7 - 1) - (3 + 7) -18
(14) (-11 + 6) - (9 - 10) -4
(15) (6 + -8) - (-3 - 4) 5
(16) (1 - -99) - (-1 + 99) 2

(17) A scuba diver was swimming at an elevation of -8 meters. A shark was swimming at an elevation of -29 meters. Find the difference between these two elevations. 21 m

(18) Gizmo had a balance of $100 in his checking account. One day he wrote checks for $33 and $20 He also made a deposit of $41 What was his new balance? $ 88

(19) WORLD RECORD: The greatest temperature change ever recorded in a single day occurred in Browning. Montana, in 1916. The temperature dropped from 44°F to -56°F. What was the change in temperature? 100 °F

(20) WORLD RECORD: The world's tallest mountain, if measured from base to peak. is Mauna Kea in Hawaii The base has an elevation of -19.680 feet. The peak has an elevation of 13.796 feet. How tall is Mauna Kea? 33,476 ft

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Why Is Your Nose in the Middle of Your Face?

Write each answer, then mark it in the answer column. For each set of exercises, there is one extra answer. Write the letter of this answer in the correspondingbox at the bottom of the page.

		Answers:				Answers:	
1	-4.5 20 6 · -8 -48 -9 · -2 18	(R) -48 (E) -18	-20 18	8	-2 · 3 · -5 30 4 · -1 · 9 -36 -8 · -5 · 2 80	-36 (S) 36	30 80
2	-3 · 8 -24 -4 · -6 24 7 · 7 49	24 -24	(T) -49 49	9	6 · -2 · -4 48 -7 · 5 · 2 -70 -3 · -8 · -2 -48	48 -70	(T) -50 -48
3	-5 · -9 45 20 · -4 -80 -16.2 · -32	(S) -48 (M) -32	-80 45	10	4 · 3 · -5 -60 -9 · -8 · -1 -72 -2 · 2 · -6 24	-72 24	-60 (E) -24
4	6 · -6 -36 -10 · -18 180 -12 · -3 36	-36 (I) -180	36 180	11	-7 · -3 · -4 -84 5 · -9 · 2 -90 -6 · -5 · 3 90	-90 -84	(H) 84 90
5	-1 · 24 -24 2 · -24 -48 -3 · -24 72	-24 (R) 72	-48 (T) 84	12	-8 · 2 · 10 -160 4 · -5 · -5 100 -6 · -8 · -2 -96	(C) -100 100	-160 -96
6	-7 · -11 77 15 · -4 -60 -12 · -5 60	-60 77	(E) 75 60	13	-7 · 9 · -1 63 - 3 · - 5 · - 3 - ye 63 4 · 8 · -2 -64	(S) -45 (I) -48	-64
7	4 · 50 200 -25 · 8 -200 -90.0 0	(R) -100 0	200 -200	14	-2 · -15 · -5 -150 -6 · -1 · 25 150 3 · -3 · 3 -27	150 -27	(N) 27 -150

4	9	13	3	5	11	1	8	12	6	14	2	10	7
I	T	I	S	T	H	E	S	C	E	N	T	E	R

IT IS THE SCENTER

E-63

TOPIC 5-h Multiplying Integers

Why Did the Cow Give Only Buttermilk?

Do each exercise and find your answer in the corresponding answer column. Write the letter of the exercise in the box containing the number of the answer.

	Answers:		Answers:
(S) -2(-1 + 6) -10	(33) -44	(U) (-1 - -8) + 4 11	(1) -60
(H) 9(-4-3) -63	(13) -24	(E) (7 + -12) · 9 -45	(12) -32
(E) (-8 · -3) - -5 29	(15) -10	(W) 6(-3 - 7) -60	(17) -45
(L) (-9 + -2) · 4 -44	(19) 13	(S) -2(-11 + -4) 30	(4) 36
(I) 20 + (5 - 12) 13	(6) 29	(I) (-15 + 9) - -1 -5	(8) 30
(A) -3(-7 + 1) 18	(24) 15	(A) -4 · -2 · -4 -32	(24) 11
(N) (-6.2) + (2.-6) -24	(3) 18	(E) (-3 · -6) - (5 · -2) 28	(21) 28
	(27) -63		(32) -5

	Answers:		Answers:
(G) 8(16 + -7) 72	(25) -33	(H) (-4 + 9) · -3 -15	(28) -28
(T) 9(20 - 30) -90	(29) 15	(M) -5 · 8 · -2 80	(23) 0
(R) (-14 - 6) + 35 15	(34) -16	(C) -10 - (99 - 100) -9	(26) 4
(H) (5 + 1) · 12 48	(18) 72	(V) -6(-6 + -6) 72	(20) 72
(E) 4 - (2 - 15) 17	(9) 17	(E) (7 + -15) - 20 -28	(31) 80
(T) 11 (7 - 10) -33	(4) -90	(L) 2 · -3 · 9 -54	(7) -54
(K) (-5 -4) + (-6.6) -16	(30) -30	(B) (-1 + -1) (-1 - -1) 0	(2) -15
	(16) 48		(11) -9

1	2	3	4	1	5	6	7	8	9	10	11	12	13	14	15	16	17
W	H	A	T		E	L	S	E			C	A	N		S	H	E

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
G	.	E		B	U	T			H	E	R		M	I	L	K

TOPIC 5 Review Addition Subtraction and Multiplication

E-64

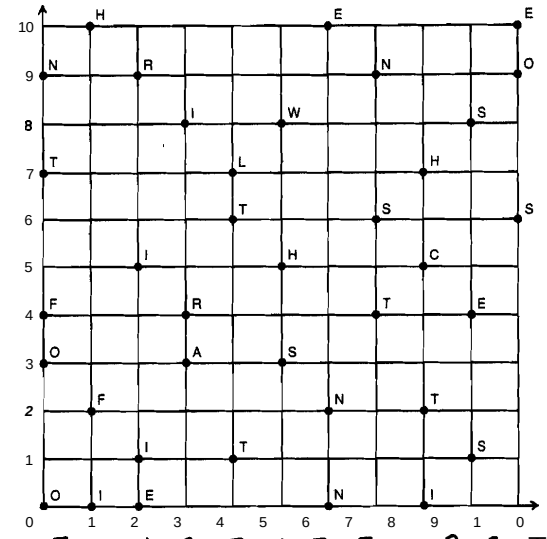
What Should a Boy Do If He Loses a Knee?

Do each exercise and find your answer in the corresponding set of answer boxes. Write the letter of the exercise in the box containing the answer.

| | | | |

Which Skier Won the Norway-to-Finland Cross-country Ski Race?

Each ordered pair at the **bottom** of the page represents a point on the coordinates below. Above each ordered pair, write the lener that appears at that point.



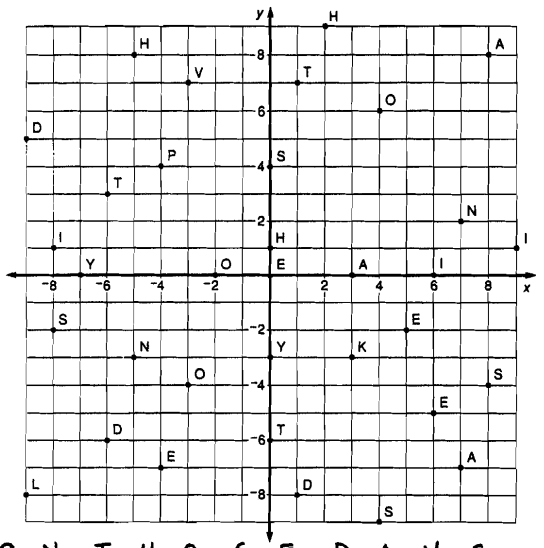
(2,5)	(7,4)	(5,8)	(3,3)	(9,1)	(4,6)	(8,7)	(6,10)	(1,2)	(3,8)	(2,9)	(10,6)	(4,1)
I	T	·	W	A	S	·	T	H	E	·	F	I	R	S	T

(0,0)	(6,0)	(2,0)	(0,7)	(0,3)	(8,5)	(3,4)	(10,9)	(5,3)	(7,6)	(8,2)	(1,10)	(9,4)
O	N	E	·	T	O	·	C	R	O	S	S	·	T	H	E

(0,4)	(8,0)	(6,2)	(7,9)	(2,1)	(9,8)	(5,5)	(4,7)	(1,0)	(0,9)	(10,10)
F	I	N	N	I	S	H	·	L	I	N	E

Why Is a Mother Kangaroo Unhappy When It Rains?

Each ordered pair at the **bottom** of the page represents a **point** on the coordinates below. Above each ordered pair, write the **letter** that appears at that point.

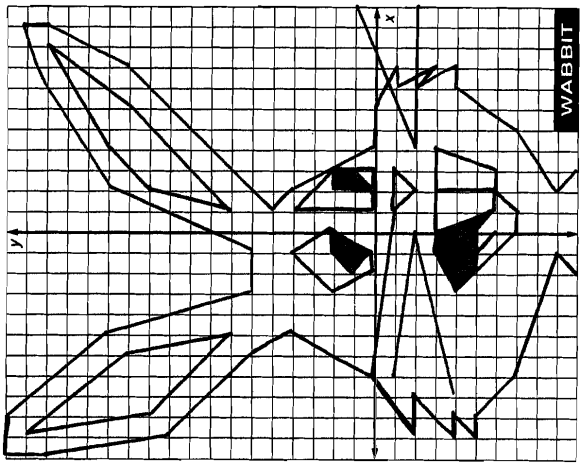


(4,6)	(7,2)	(−6,3)	(−5,8)	(−3,−4)	(−8,−2)	(6,−5)	(1,−8)	(3,0)	(−7,0)	(0.4)
O	N	·	T	H	O	S	E	·	D	A	Y	S

(0,−6)	(2,9)	(−4,−7)	(3,−3)	(−8,1)	(−6,−6)	(4,−9)	(0,1)	(8,8)	(−3,7)	(5,−2)
T	H	E	·	K	I	D	S	·	H	A	V	E

(1,7)	(−2,0)	(−4,4)	(−9,−8)	(7,−7)	(0,−3)	(9,1)	(−5,−3)	(8,−4)	(6.0)	(−9,5)	(0,0)
T	O	·	P	L	A	Y	·	I	N	5	I	D	E

NOTE: Numbers are not printed along the x- and y-axes, as students may benefit from writing the numbers themselves. An overhead transparency of this page may help get students started.



Get the Point

Connect points in order. Do not connect points separate by "Lift Pencil." Shade in areas formed by points inside a box.

| | | |

Daffynition Decoder

Information:	H	O	W		N	A	V	Y		P	L	A	N	E	S		F	L	Y
	-11	-21	-5	-8	-28	-19	25	11	-15	32	48	-19	-28	6	-12	4	10	48	11
Buccaneer:	H	I	G	H		P	R	I	C	E		F	O	R		C	O	R	N
	-11	-29	7	-11	18	32	13	-29	-31	6	-30	10	-21	13	9	-31	-21	13	-28

TO DECODE THESE TWO DAFFYNITIONS:
Solve each equation below and find your solution in the code. Each time the solution appears, write the letter of that exercise above it. Enjoy the de-fun-itions!

(E) $x + 5 = 11$ → 6

(W) $u + 7 = 2$ → -5

(G) $y + -10 = -3$ → 7

(F) $-18 + a = -8$ → 10

(V) $x + 20 = 45$ → 25

(I) $x + 30 = 1$ → -29

(A) $t + -1 = -20$ → -19

(C) $-2 + x = -33$ → -31

(L) $n + -36 = 12$ → 48

(R) $y + -4 = 9$ → 13

(S) $b + 8 = -4$ → -12

(Y) $6 + n = 17$ → 11

(T) $) y + 14 = -14$ → -28

(O) $5 + m = -16$ → -21

(H) $15 + x = 4$ → -11

(P) $-7 + d = 5$ → 32

Did You Hear About...

A THE	B SILLY	C LITTLE	D GIRL	E WHO	F KEPT	G TRYING
H TO	I FEED	J HER	K TWO	L TEDDY	M BEARS	N UNTIL
O SHE	P FOUND	Q OUT	R THEY	S WERE	T ALREADY	U STUFFED?

Solve each equation and find your solution in the appropriate answer column. Notice the word next to the solution. Write this word in the box containing the letter of the exercise.

(A) $x + 9 = 2$ → -7

(B) $-15 + y = 8$ → 23

(C) $x - 11 = 4$ → 15

(D) $-30 + n = 17$ → 47

(E) $a - 10 = -6$ → 4

(F) $x - 1 = -14$ → -13

(G) $-3 + u = -20$ → -17

(H) $m - -5 = 12$ → 7

(I) $y - -8 = 40$ → 32

(J) $w - -7 = 2$ → -5

(K) $x - -16 = -16$ → -32

(L) $-15 + t = -9$ → 6

(M) $a - -6 = -30$ → -24

(N) $-22 + x = 50$ → 72

(O) $37 = n + 3$ → 34

(P) $-5 = d - 18$ → 13

(Q) $-29 = x - 7$ → -22

(R) $-4 = x - -31$ → 35

(S) $x - 12 = 56$ → 68

(T) $30 = k - -9$ → 21

(U) $y - -10 = 10$ → 0

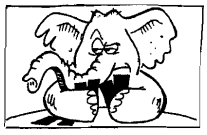
Answers: L - U:

68	WERE	13	FOUND	-3	DOGS	-24	BEARS	21	ALREADY	-39	FULL	-35	THEY	34	SHE	6	TEDDY	-26	THAT
0	STUFFED	38	WHEN	-22	OUT	28	HEARD	72	UNTIL										

Answers K:

7	TO	36	JUMP	-13	KEPT	-7	THE	-32	TWO	27	HOLDING	4	WHO	32	FEED	15	LITTLE	-11	MONKEY
-17	TRYING	23	SILLY	-8	BIG	-5	HER	47	GIRL										

Why Didn't the Elephant Like to Play Cards in the Jungle?



Solve each equation and find your solution in the correspondingset of answer boxes. Write the **letter** of the exercise in the box containingthe solution.

(E) $4x = 28$ → 7

(R) $9n = 45$ → 5

(H) $24 = 2k$ → 12

(T) $-3y = 24$ → -8

(E) $-7x = 49$ → -7

(O) $80 = -8a$ → -10

(R) $6m = -18$ → -3

(E) $5q = -60$ → -12

(T) $-32 = 16d$ → -2

(O) $-9x = -72$ → 8

(E) $-18u = -180$ → 10

(W) $-100 = -4y$ → 25

-2	12	10	-3	7	-25	25	-7	5	-12	2	-8	8	-10
T	H	E	R	E		W	E	R	E		T	O	O

(H) $-6t = 66$ → -11

(A) $15x = -30$ → -2

(S) $7n = 42$ → 6

(E) $-3p = -39$ → 13

(Y) $48 = -8a$ → -6

(H) $-90 = 30x$ → -3

(E) $400 = 4m$ → 100

(M) $-200 = -50y$ → 4

(A) $-17p = 17$ → -1

(N) $-x = 30$ → -30

(C) $10w = 720$ → 72

(T) $-y = -10$ → 10

-4	4	-2	-30	-6	-13	72	-11	100	13	10	-1	-3	6
	M	A	N	Y		C	H	E	E	T	A	H	S

What Do You Call A Slow Skier?

Solve each equation and find the solution in the rectangle below. Cross out the box containing the solution. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

① $\frac{x}{6} = 5$ → 30

② $\frac{n}{9} = 4$ → 36

③ $\frac{1}{2}y = 25$ → 50

④ $\frac{w}{7} = -3$ → -21

⑤ $\frac{1}{4}q = -20$ → -80

⑥ $-8 = \frac{x}{5}$ → -40

⑦ $\frac{-1}{3}u = 10$ → -30

⑧ $\frac{-t}{8} = 12$ → -96

⑨ $2 = \frac{-1}{13}a$ → -26

⑩ $\frac{-k}{4} = -11$ → 44

⑪ $\frac{-1}{5}p = -16$ → 80

⑫ $-3 = \frac{-x}{21}$ → 63

⑬ $17 = \frac{x}{10}$

⑭ $-6 = \frac{1}{9}y$ → -54

⑮ $\frac{-d}{2} = -48$ → 96

⑯ $3 = \frac{-t}{15}$ → -45

⑰ $\frac{1}{7}m = 20$ → 140

⑱ $\frac{v}{60} = -1$ → -60

⑲ $\frac{-1}{4}x = 8$ → -32

⑳ $-24 = \frac{-h}{3}$ → 72

㉑ $12 = \frac{n}{12}$ → 144

TH	ES	AB	IN	AS	KI	IG	HI	SN	LI	OW	LO	WS
80	50	80	96	-42	144	44	30	-45	30	170	-64	-32
AR	AS	PE	AK	ED	PO	OR	TE	FA	ST	KE	YB	EP
-80	-54	-15	36	72	180	140	63	21	26	75	-36	96

A	S	L	O	P	E	P	O	K	E

A SLOPE POKE

What Did the Butcher Say to the Tough Piece of Meat?

Solve each equation and find your solution below. Notice the letter next to the solution. Write this letter in the box containing the exercise number. If the solution has a ● shade in the box instead of writing a letter in it.

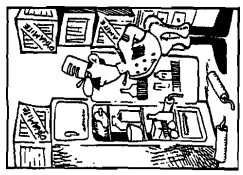
① $y + 10 = 4$ **-6**
② $n + -6 = 11$ **17**
③ $x - 15 = -2$ **13**
④ $w - -3 = 18$ **15**
⑤ $9a = 36$ **4**
⑥ $-7q = 21$ **-3**
⑦ $\frac{m}{5} = 14$ **70**
⑧ $\frac{-1}{3}d = 12$ **-36**
⑨ $-4 + u = -16$ **-12**
⑩ $-88 = -8y$ **11**
⑪ $-36 = \frac{x}{2}$ **-72**
⑫ $20 = v - 13$ **33**
⑬ $15 = x + 7$ **8**
⑭ $-75 = 20$ **-25**
⑮ $p - -2 = -9$ **-11**
⑯ $-4y = -28$ **7**
⑰ $\frac{-1}{6}t = -6$ **36**
⑱ $50 = \frac{-k}{10}$ **-500**
⑲ $n + 11 = -80$ **-91**
⑳ $-32 = w - 12$ **-20**
㉑ $70 = 2a$ **35**
㉒ $-24 + x = -3$ **21**
㉓ $\frac{c}{16} = -1$ **-16**
㉔ $-5y = 0$ **0**

Answers 1 - 12: Ⓐ -3, Ⓞ -72, Ⓝ -12, Ⓐ 33, Ⓛ -6, Ⓔ 11, Ⓡ 17, Ⓘ 70, Ⓔ 4, Ⓢ 13, Ⓟ -64, Ⓣ 38, ● 15, ● -36

Answers 13 - 24: Ⓛ -16, Ⓨ -20, Ⓔ 8, Ⓓ 0, ● -91, Ⓣ -500, Ⓛ 7, Ⓝ -10, Ⓡ -11, ● -25, Ⓣ 21, Ⓗ 35, Ⓐ 24, Ⓤ 36

7	14	3	21	12	1	16	19	22	5	9	24	13	2	8	20	11	17	4	23	6	18	10	15
I		S	H	A	L, L			T	E	N	D	E	R		Y	O	U		L	A	T	E	R

Viva la France!



1. Why did Pierre Jacques Marseille at home in a bakery?
2. What do they call the famous French general who kept dynamite in his kitchen?

11	7	1	1	9	8	15	10	20	7	2	2	11	-16	9	-20	7	-8
L	I	N	O	L	E	U	M	B	L	O	W	N	A	P	A	R	T
-3	5	-2	3	-3	7	6	12	30	9	3	3	1	2	14	9	-13	9	-20	-4

You've probably heard about the guy who fell off a bridge in Paris. He went in Seine. To find out about two other French citizens:
Solve each equation below and find your solution in the code. Each time the solution appears, write the letter of the exercise above it.

Ⓢ $3n - 5 = 19$ **8**
Ⓞ $4x + 2 = 14$ **3**
Ⓒ $9y + 10 = -8$ **-2**
Ⓔ $2a - 15 = -17$
Ⓣ $-5x + 7 = 27$ **-4**
Ⓘ $-8w + 4 = -36$
Ⓐ $11 + 6k = 65$ **9**
Ⓜ $7 + 3m = -29$ **-12**
Ⓓ $1 - 10x = 81$ **-8**
Ⓗ $2 - 7d = -75$ **11**
Ⓤ $-4y - 9 = 15$ **-6**
Ⓦ $-8 + 12e = -20$ **-1**
Ⓕ $44 = 5x - 6$ **10**
Ⓟ $-7 = 2n + 19$ **-13**
Ⓛ $31 = 4 - 9y$ **-3**
Ⓡ $-52 - 3u = 8$ **-20**
Ⓝ $-11r - 2 = -24$ **2**
Ⓑ $6 - x = 15$ **-9**

NOTE: You might want to have students graph the 3 solutions for each equation. Since these are linear equations, the solutions for each equation are on a line. Any other point on the line, of course, represents another solution.

What Did Olga Say After She Had Angina, Arteriosclerosis, Tuberculosis, Pneumonia, Aphasia, Hypertrophic Cirrhosis, and Eczema?

For each equation, only three of the given ordered pairs are solutions. CIRCLE the three solutions and notice the number-letter above each. Write the letter in the matching numbered box at the bottom of the page.

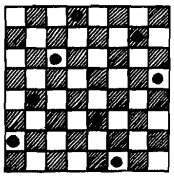
① $x + y = 8$	10-A (3,5)	18-K (5,2)	4-T (7,1)	24-D (-3,6)	22-E (-1,9)
② $x - y = -5$	11-M (2,8)	13-S (1,6)	2-H (4,9)	7-F (-1,3)	18-I (-3,2)
③ $2x + y = 4$	6-A (1,2)	24-T (-2,8)	8-U (2,-5)	11-R (3,-2)	15-B (-4,3)
④ $x - 3y = -6$	1-C (-1,5)	15-E (3,3)	23-R (2,-3)	20-G (6,4)	7-S (0,2)
⑤ $x - y = 3$	16-L (8,5)	12-N (-3,7)	1-T (1,-2)	19-F (4,0)	8-A (-2,-5)
⑥ $5x + 2y = 15$	17-K (4,-1)	19-N (1,5)	3-A (3,0)	9-M (-1,6)	23-S (5,-5)
⑦ $y = x + 7$	12-D (1,8)	14-O (5,3)	5-W (-3,4)	17-L (-9,-2)	21-U (2,-6)
⑧ $y = 4x - 1$	21-T (2,7)	9-S (1,6)	9-H (-1,-5)	14-T (-2,-3)	14-P (0,-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
T	H	A	T	W	A	S	A	H	A	R	D	S	P	E	L	L	I	N	G	T	E	S	T

THAT WAS A HARD SPELLING TEST

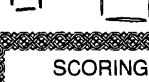
Test of Genius

1. Write the letter that logically continues each of these series.
   a) A c b D f e G **I**
   b) b Y d W **f**
   c) H g F e D c **B**
2. Adam dropped a rubber ball from a window 40 feet above the sidewalk. The ball always bounces half of the height that it drops. How far will the ball have traveled by the time it hits the sidewalk the 4th time? **110**
3. A donkey and a mule were carrying bags of grain. If the mule gave the donkey one bag, they would have the same number. If the donkey gave the mule one of his bags, the mule would have twice as many as the donkey. How many bags was each carrying? **donkey 5 bags mule 7 bags**
4. If nine thousand nine hundred nine dollars is written as $9,909, how should twelve thousand twelve hundred twelve dollars be written? **$12,212**
5. How can 8 queens be placed on a chessboard so that no queen is under attack? Mark their locations on this drawing of a chessboard.



6. Two riders on bicycles, 100 miles apart, begin traveling toward each other at the same time, one traveling at 10 miles per hour and the other at 15 miles per hour. A fly named Paul Revere begins flying between the bicycles, starting from the front wheel of the slower bicycle. If the fly travels at 20 miles per hour flying back and forth between bicycles, being able to reverse directions without losing any time. how far will Paul Revere travel before the bicycles meet? **80mi**

7. Mr. Sprout built a fence around his garden so it formed a square with ten fence posts on each side. How many fence posts did he need? **36**
8. At a certain party, there were handshakes exchanged. Everyone shook hands with everyone else exactly once. How many people attended the party? **9**
9. Move one toothpick to make a perfect square. Then do it in a different way to make another perfect square. **The 4 is a perfect square**



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

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