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 $\frac{5}{7}$ (O) Circles to stars $\frac{6}{5}$
(H) Squares to circles $\frac{7}{6}$ (T) Stars to all figures $\frac{5}{18}$
(M) Stars to circles $\frac{5}{7}$ (E) Squares to all figures $\frac{1}{3}$

II. A TV screen is 15 in. high and 20 in. wide. Write each ratio.
(H) Height to width $\frac{3}{4}$ (A) Width to height $\frac{4}{3}$

III. A magazine photograph is 24 cm long and 16 cm wide. Write each ratio.
(E) Length to width $\frac{3}{2}$
(P) Width to length

24 cm
16 cm

IV. There are 30 students in a class, including 16 boys. Write each ratio.
(H) Girls to boys $\frac{7}{8}$ (R) Boys to girls $\frac{8}{7}$
(E) Girls to all students (I) Boys to all students $\frac{8}{15}$

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 $\frac{9}{10}$
(W) Length of shadow to height of monster $\frac{10}{9}$

VI. Count the number of teeth on each gear. Then write each ratio.
(C) Teeth on Gear X to teeth on Gear Y $\frac{1}{2}$
(U) Teeth on Gear Y to teeth on Gear Z
(K) Teeth on Gear X to teeth on Gear Z

THE TEACHER WOKE HIM UP

E-7 TOPIC 1-a Ratio

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 $\frac{7}{12}$ (2) 9:4 $\frac{9}{4}$
(3) 8 to 10 $\frac{4}{5}$ (4) 20 to 12 $\frac{5}{3}$
(5) 25:50 $\frac{1}{2}$ (5) 5 out of 15 $\frac{1}{3}$
(7) 80 to 60 $\frac{4}{3}$ (8) 35 out of 100 $\frac{7}{20}$
(9) 78 out of 780 $\frac{1}{10}$ (10) 90:30 $\frac{3}{1}$

(11) The ratio of wins to losses for a team with 60 wins and 90 losses. $\frac{2}{3}$
(12) The ratio of girls to boys in a 7th grade class with 300 girls and 250 boys. $\frac{6}{5}$
(13) The ratio of red to blue for a purple paint made by mixing 24 oz of red with 28 oz of blue. $\frac{6}{7}$
(14) The ratio of blue to red for a purple paint made by mixing 24 oz of red with 28 oz of blue. $\frac{7}{6}$

Answers:
(H) $\frac{8}{5}$ (T) $\frac{4}{5}$
(A) $\frac{1}{10}$ ●
(A) $\frac{7}{12}$ (S) $\frac{1}{2}$
(T) $\frac{7}{20}$ (L) $\frac{3}{1}$
(A) $\frac{7}{6}$ (E) $\frac{9}{4}$
● $\frac{5}{3}$ (1) $\frac{6}{5}$
(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. **20** (miles per gallon)
(16) Ima Smurf typed 120 words in 3 minutes. **40** (words per minute)
(17) Dr. Cranium traveled 2,800 miles in 5 hours. **560** (miles per hour)
(18) A gear revolved 960 times in 30 minutes. **32** (revolutions per minute)
(19) Gloria Trench earned $144 in 8 hours. **18** (dollars per hour)
(20) Roger Bannister ran 5,280 feet in 4 minutes. **2** (feet per second) (HINT: 4 min = __?__ s)

Answers:
(M) 48 (G) 560
(C) 32 (L) 22
(T) 15 ● 20
(W) 40 (N) 520
(S) 18 (E) 36

IT WAS A BEST CELLAR

TOPIC 1-b Ratio and Rate E-8

CRYPTIC QUIZ

1. What should the JOLLY GREEN GIANT receive?
THE NOBEL PEAS PRIZE

2. Why did it take the GOAT more than 3 hours to finish a 20-page book?
HE WASN'T VERY HUNGRY

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) $\frac{n}{6} = \frac{5}{9}$ **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) $\frac{24}{6} = \frac{5}{5}$ **20**
16
(P) $\frac{24}{n} = \frac{100}{100}$ **80**

E-9 TOPIC 1-c: Solving Proportions

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 feet high, how long is it?

| HI 450 | RU 48 | TA 1,210 | EB 300 | BE 12 | JU 125 | NK 340 | IN 20 |
| GO 136 | TO 1,250 | HO 6 | OD 15 | NE 40 | ED 144 | SA 38 | SS 7 |

TANK GOODNESS

TOPIC 1-d Problem Solving Using Proportions E-10

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) $\frac{6}{9.4} = \frac{r}{32}$ 20.4
(D) $\frac{7.9}{x} = \frac{1}{25}$ 197.5
(E) $\frac{12}{x} = \frac{3.14}{x}$ 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 (5,280 ft)? 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 78,000 people? 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

Answer column:
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.

OAKMEAL

Answer column:
9 cm — E
14 cm — L
15 ft — A
20 m — T
56 in. — L
8 m — W
24 in. — A
12 cm — M
16 ft — S
48 m — K
21 in. — O
44 cm — A
10 cm — W
18 m — D
48 in. — O
40 cm — T
42 m — S

(1) 8 m
(2) 9 cm
(3) 40 cm
(4) 21 in.
(5) 50 in.
(6) 18 m
(7) 12 cm
(8) 42 m

(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
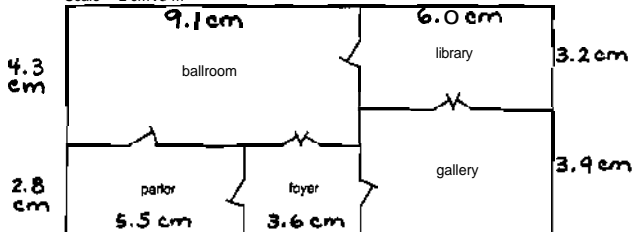
TOPIC 1-f Similar Figures   E-12

NOTE: Students need metric rulers for this puzzle.

What Goes Ha! Ha! Ha! Thud?

Scale → 2 cm : 3 m

9.1 cm ballroom 4.3 cm
6.0 cm library 3.2 cm
gallery 3.9 cm
parlor foyer 2.8 cm
5.5 cm 3.6 cm

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 9.1 cm
(2) library   3.2 cm by 6.0 cm
(3) parlor   2.8 cm by 5.5
(4) foyer   2.8 cm by 3.6 cm
(5) gallery   6.0 cm by 3.9 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 13.65 m
(7) width of the ballroom 6.45 m
(8) length of the library 9 m
(9) width of the library 4.8
(10) length of the parlor 8.25 m
(11) width of the parlor 4.2 m
(12) length of the foyer 5.4 m
(13) width of the gallery 5.85 m

(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
A	M	A	N	L	A	U	G	H	I	N	G	H	I	S	H	E	A	D	O	F	F

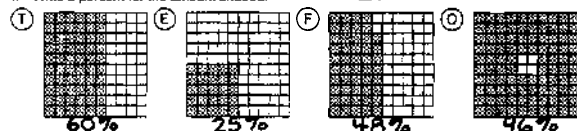A MAN LAUGHING HIS HEAD OFF

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 centimeters 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%	45%	48%	50%
S	T	A	R	T		T	H	E		D	A	Y		O	F

54%	57%	59%	60%	62%	67%	71%	75%	78%	80%	83%	86%	88%	90%	96%	98%	100%
O	N		T	H	E		W	R	O	N	G		F	O	O	T

TOPIC 2-a Percent   E-14