

Rates Ratios Percents (RRP) 60MC**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

Write a ratio for the situation in three ways, comparing the first quantity to the second quantity.

- 1 (1 point)
A zoo has 9 monkeys and 13 chimpanzees.
- A 13 to 22, $13 : 22$, $\frac{13}{22}$
- B 13 to 9, $13 : 9$, $\frac{13}{9}$
- C 9 to 13, $9 : 13$, $\frac{9}{13}$
- D 9 to 22, $9 : 22$, $\frac{9}{22}$

- 2 (1 point)
In Largo City, about one in every nine homes contains four televisions.
- A 1 to 9, $1 : 9$, $\frac{1}{9}$
- B 1 to 4, $1 : 4$, $\frac{1}{4}$
- C 4 to 9, $4 : 9$, $\frac{4}{9}$
- D 9 to 13, $9 : 13$, $\frac{9}{13}$

- 3 (1 point)
Represent the ratio 9 : 19 in two other ways.
- A $\frac{19}{9}$, 9 to 19
- B $\frac{19}{9}$, 19 to 9
- C $\frac{9}{19}$, 9 to 19
- D $\frac{9}{19}$, 19 to 9

Express the ratio as a decimal. Round to the nearest hundredth.

- 4 (1 point)
7 : 12
- A 0.23
- B 0.58
- C 0.99
- D 1.71

- 5 (1 point)
 $\frac{54}{44}$
- A 1.04
- B 1.23
- C 0.81
- D 1.53

6 (1 point)

Write three ratios equal to $\frac{4}{28}$.

- A $\frac{4}{28}, \frac{4}{32}, \frac{4}{36}$
 B $\frac{2}{12}, \frac{3}{18}, \frac{4}{24}$
 C $\frac{1}{7}, \frac{2}{14}, \frac{3}{21}$
 D $\frac{1}{8}, \frac{2}{16}, \frac{3}{24}$

7 (1 point)

Write $\frac{165}{363}$ in simplest form.

- A $\frac{5}{11}$
 B $\frac{5}{55}$
 C $\frac{25}{11}$
 D $\frac{25}{55}$

8 (1 point)

Jake sold 42 tickets to the school fair and Jeanne sold 9 tickets. What is the ratio, in simplest form, of the number of tickets Jeanne sold to the number of tickets Jake sold?

- A $\frac{14}{3}$
 B $\frac{3}{14}$
 C $\frac{9}{42}$
 D $\frac{42}{9}$

9 (1 point)

While picking thirty apples, Mia noticed that six apples had worm holes and had to be thrown away. What is the ratio of good apples picked to bad apples picked?

- A 5 : 1
 B 4 : 1
 C 1 : 4
 D 1 : 5

Write a unit rate for the situation. Round to the nearest hundredth if necessary.

10 (1 point)

traveling 212 km in 6 h

- A 42.4 km/h
 B 30.29 km/h
 C 35.33 km/h
 D 0.03 km/h

11 (1 point)

driving 140 mi in 2 h 45 min

- A 0.57 mi/min
 B 1.33 mi/min
 C 0.85 mi/min
 D 0.95 mi/min

12 (1 point)

A soccer player scored 36 goals in 88 games. Express the player's scoring rate as a unit rate rounded to the nearest thousandth.

- A 2.4444 goals per game
 B 0.4091 goals per game
 C 2.444 goals per game
 D 0.409 goals per game

13 (1 point)

Population density is the number of people per unit of area. What is the population density of a state that has 1,622,600 people in 1,435 square miles? Round to the nearest whole number.

- A 113 people per square mile
 B 1,131 people per square mile
 C 11,027 people per square mile
 D 1,101 people per square mile

- 14 (1 point)
During his hockey career, Gordie Howe played 1,767 NHL regular season games, scoring 801 goals and making 1,049 assists. If goals and assists each count as one point, what was his scoring rate in points per game? Round to the nearest hundredth.
- A 1.10 points per game
 - B 0.45 points per game
 - C 0.96 points per game
 - D 1.05 points per game

Use the unit price to find the total price.

- 15 (1 point)
9 gallons at \$1.67 per gallon
- A \$7.52
 - B \$15.93
 - C \$15.03
 - D \$18.56
- 16 (1 point)
28 ft² at \$3.89 per square foot
- A \$111.44
 - B \$71.98
 - C \$108.92
 - D \$106.40
- 17 (1 point)
You pay \$3.60 for 9 bagels. What is the unit price?
- A \$0.50 per bagel
 - B \$0.40 per bagel
 - C \$0.45 per bagel
 - D \$0.32 per bagel
- 18 (1 point)
Which is the best buy?
- A \$16.29 for 9 bottles of juice
 - B \$9.15 for 5 bottles of juice
 - C \$10.80 for 6 bottles of juice
 - D \$14.56 for 8 bottles of juice

- 19 (1 point)
A store sells packages of pencils. Which package offers the best unit price?
- A 15 pencils for \$4.65
 - B 16 pencils for \$4.80
 - C 12 pencils for \$3.84
 - D 13 pencils for \$3.77
- 20 (1 point)
Determine which ratio forms a proportion with $\frac{24}{30}$ by writing the ratios in simplest form.
- A $\frac{8}{10}$
 - B $\frac{8}{35}$
 - C $\frac{28}{45}$
 - D $\frac{36}{35}$

21 (1 point)
Determine which ratio forms a proportion with $\frac{3}{10}$ by finding a common multiplier.

- A $\frac{6}{110}$
B $\frac{33}{20}$
C $\frac{9}{20}$
D $\frac{9}{30}$

22 (1 point)
Determine which ratio forms a proportion with $\frac{10}{4}$ by using cross products.

- A $\frac{35}{6}$
B $\frac{35}{14}$
C $\frac{15}{8}$
D $\frac{20}{6}$

23 (1 point)
Which ratios can form a proportion?

- A $\frac{9}{45}, \frac{8}{40}$
B $\frac{8}{12}, \frac{12}{21}$
C $\frac{8}{12}, \frac{12}{15}$
D $\frac{9}{22}, \frac{14}{28}$

24 (1 point)
Which ratios *cannot* form a proportion?

- A $\frac{8}{14}, \frac{12}{21}$
B $\frac{3}{6}, \frac{12}{24}$
C $\frac{3}{7}, \frac{8}{16}$
D $\frac{5}{12}, \frac{15}{36}$

25 (1 point)
Which ratios *cannot* form a proportion?

- A $\frac{2}{6.3}, \frac{5}{15.8}$
B $\frac{3}{8}, \frac{1.5}{4}$
C $\frac{2}{2.6}, \frac{10}{13}$
D $\frac{5}{5.125}, \frac{4}{4.1}$

26 (1 point)
A truck needs 6 gallons of fuel to travel 66 miles. Can the truck travel 44 miles with 4 gallons of fuel? Explain.

- A No; $\frac{6}{66}$ and $\frac{4}{44}$ are not proportional because $6 \times 44 \neq 4 \times 66$.
B No; $\frac{6}{66}$ and $\frac{44}{4}$ are not proportional because $6 \times 4 \neq 44 \times 66$.
C Yes; $\frac{6}{66}$ and $\frac{4}{44}$ are proportional because $6 \times 44 = 4 \times 66$.
D Yes; $\frac{6}{66}$ and $\frac{44}{4}$ are proportional because $6 \times 4 = 44 \times 66$.

- 27 (1 point)
Drinking 7 fluid ounces of milk provides 236.3 milligrams of calcium. How many fluid ounces of milk provide 94.5 milligrams of calcium? Round to the nearest tenth.
- A 3.0 fluid ounces
 - B 3.3 fluid ounces
 - C 2.5 fluid ounces
 - D 2.8 fluid ounces

- 28 (1 point)
During one team's season, the ratio of the number of games the team won to the number of games the team played was 4 to 12. The team played 45 games. How many games did the team win?
- A 15 games
 - B 18 games
 - C 11 games
 - D 12 games

- 29 (1 point)
A machine takes 3.0 hours to make 7 parts. At that rate, how many parts can the machine make in 21.0 hours?
- A 126 parts
 - B 9 parts
 - C 49 parts
 - D 42 parts

- 30 (1 point)
Apples cost \$2.40 for 4 lb. At that rate, how many pounds of apples can you buy for \$7.20?
- A 14 lb
 - B 13 lb
 - C 11 lb
 - D 12 lb

- 31 (1 point)
In a survey, three out of seven people named blue as their favorite color. One out of six named red. If 1,092 people were included in the survey, how many named neither blue nor red as their favorite color?
- A 650 people
 - B 468 people
 - C 442 people
 - D 806 people

- 32 (1 point)
An astronaut who weighs 126 lb on Earth weighs only 21 lb on the moon. How much would a person who weighs 38 lb on the moon weigh on Earth?
- A 240 lb
 - B 69 lb
 - C 143 lb
 - D 228 lb

- 33 (1 point)
Solve the proportion using mental math.
- $$\frac{x}{8} = \frac{15}{40}$$
- A 2
 - B 3
 - C 24
 - D 4

Solve the proportion using cross products. Round to the nearest hundredth if necessary.

34 (1 point)

$$\frac{22 \text{ miles}}{55 \text{ hours}} = \frac{12 \text{ miles}}{h \text{ hours}}$$

A 48
B 30
C 45
D 22

36 (1 point)

$$\frac{0.5}{5} = \frac{0.03}{n}$$

A 3
B 0.003
C 0.3
D 30

35 (1 point)

$$\frac{3.7}{2.4} = \frac{y}{8.2}$$

A 12.64
B 10.56
C 14.80
D 5.32

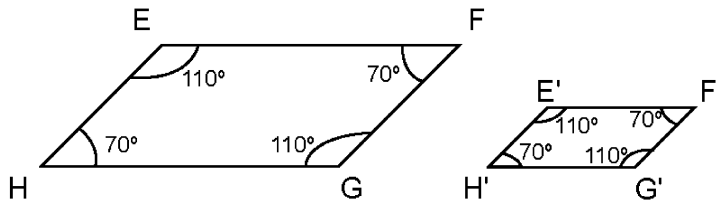
37 (1 point)

$$\frac{\$18.45}{m \text{ gal}} = \frac{\$3.60}{7.5 \text{ gal}}$$

A 38.44
B 32.54
C 8.86
D 42.25

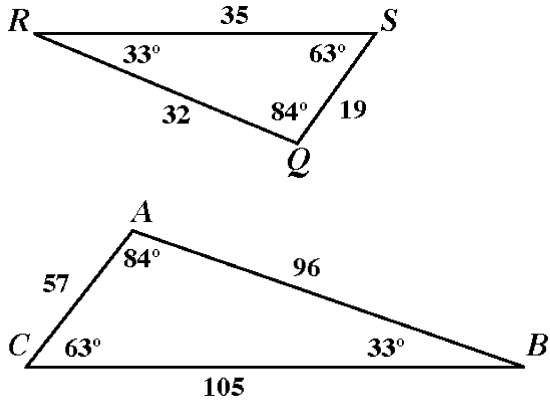
38 (1 point)

Are the figures below necessarily similar? Why or why not?



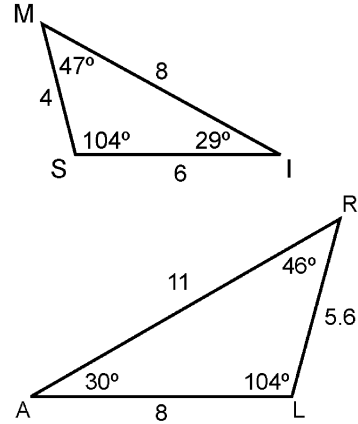
- A No, because the corresponding angles are not necessarily congruent and the corresponding sides are not necessarily proportional.
- B Yes, because the corresponding angles are congruent and the corresponding sides are proportional.
- C No, because the corresponding angles are not necessarily congruent.
- D No, because the corresponding sides are not necessarily proportional.

- 39 (1 point)
Are the figures below similar? Why or why not?



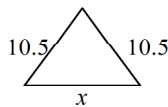
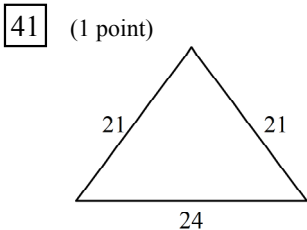
- A Yes, because the corresponding angles are congruent and the corresponding sides are proportional.
 B No, because the corresponding sides are not proportional.
 C No, because the corresponding angles are not congruent.
 D No, because the corresponding angles are not congruent and the corresponding sides are not proportional.

- 40 (1 point)
Are the figures below similar? Why or why not?



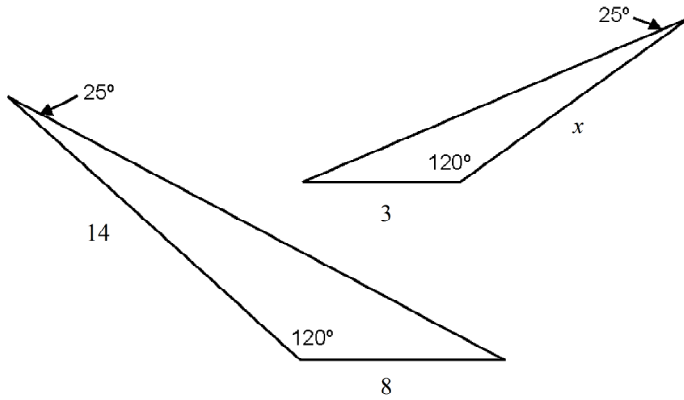
- A Yes, because the corresponding angles are congruent and the corresponding sides are proportional.
 B No, because the corresponding angles are not congruent and the corresponding sides are not proportional.
 C No, because the corresponding sides are proportional but the corresponding angles are not congruent.
 D No, because the corresponding angles are congruent but the corresponding sides are not proportional.

The triangles below are similar. Find the value of x .



- A 12.5 B 14 C 12 D 13.5

42 (1 point)



- A $5\frac{1}{4}$ B 9 C $6\frac{1}{3}$ D $7\frac{1}{2}$

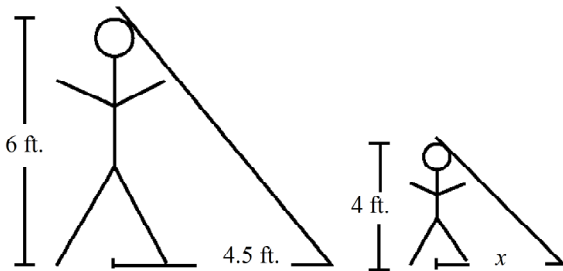
43 (1 point)

Pentagon $ABCDE \sim$ Pentagon $FGHIJ$. Find BC for $GH = 12$, $IJ = 15$, and $DE = 10$.

- A 10 B 12.5 C 18 D 8

44 (1 point)

A 6-ft adult has a shadow 4.5 ft long. How long is the shadow of a 4-ft child standing next to the adult?

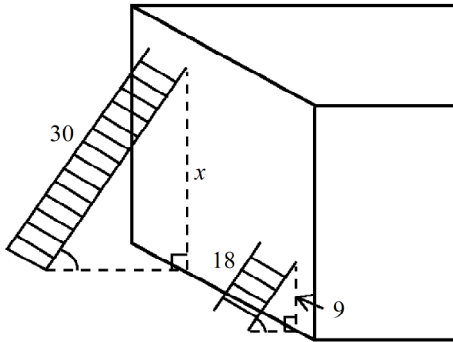


- A 3.5 ft B 4.5 ft C 3 ft D 2.5 ft

45

(1 point)

The ladders shown below are standing against the wall at the same angle. How high up the wall does the longer ladder go? (All measurements are in feet.)

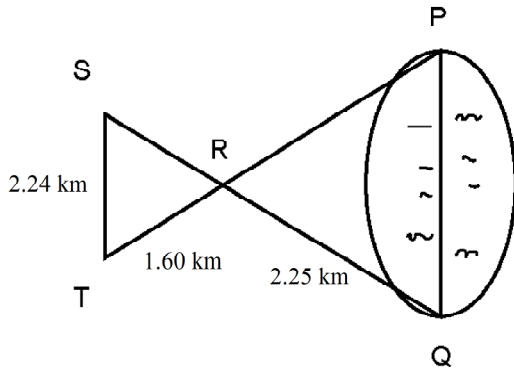


- A 15 ft B 12 ft C 10.67 ft D 21 ft

46

(1 point)

Refer to the diagram below. Surveyors know that $\triangle PQR$ and $\triangle STR$ are similar. What is PQ , the distance across the lake?



- A 2.89 km B 3.15 km C 3.29 km D 3.65 km

A scale drawing uses the scale 3 in. = 20 ft. Find the missing measure.

47

(1 point)

57 in. = _____ ft

- A 1,080
B 380
C 190
D 340

48

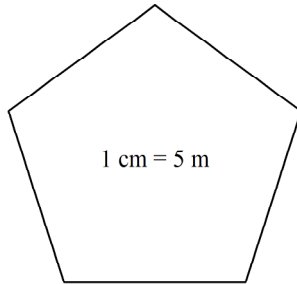
(1 point)

_____ in. = $66\frac{2}{3}$ ft

- A 3.33
B 49.67
C 10
D 6.33

49 (1 point)

In the scale drawing below, each side is 1.9 cm long. Use the scale factor shown. What is the perimeter of the actual object?



- A 34.5 m
- B 47.5 m
- C 9.5 m
- D 38 m

50 (1 point)

Los Angeles is about 385 miles from San Francisco. How far apart would the cities be on a map with a scale of 1 in. = 50 mi? If necessary, round to the nearest hundredth.

- A 7.7 in.
- B 7.86 in.
- C 6.7 in.
- D 7.95 in.

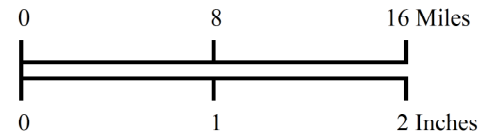
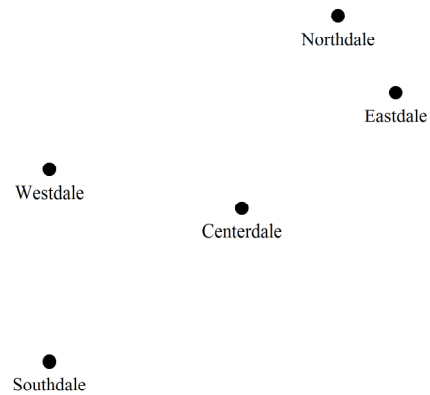
51 (1 point)

Two towns that are 28.5 km apart are 3 cm apart on a map. What is the scale of the map?

- A 1 cm = 8.5 km
- B 2 cm = 16 km
- C 2 cm = 19 km
- D 1 cm = 26.5 km

52 (1 point)

Use the map and scale below. What is the actual distance from Northdale to Southdale?



- A 20 mi
- B 30 mi
- C 40 mi
- D 10 mi

53 (1 point)

A scale model of a car is 8 in. long. The actual car is 12 ft long. What is the scale of the model?

- A 1 in. : 18 ft
- B 1 in. : 18 in.
- C 1 in. : 24 in.
- D 1 in. : 1.5 in.

54 (1 point)

Which of the following would be the most appropriate subject to draw at a scale of 1 : 1?

- A a bedroom
- B a micro-organism
- C New Jersey
- D a baseball

A map of Utah has a scale of 1 cm : 30 mi.

- 55 (1 point)
The border of Utah and Wyoming measures about 3.7 cm. How long is the actual border of Utah and Wyoming? Round the answer to the nearest ten miles.
A 100 mi B 90 mi C 80 mi D 110 mi

Find a ratio equal to the ratio given.

- 56 (1 point)
1 : 4
A 2 : 16
B 1 : 8
C 2 : 8
D 8 : 2

- 57 (1 point)
12 : 48
A 2 : 8
B 2 : 32
C 10 : 8
D 8 : 2

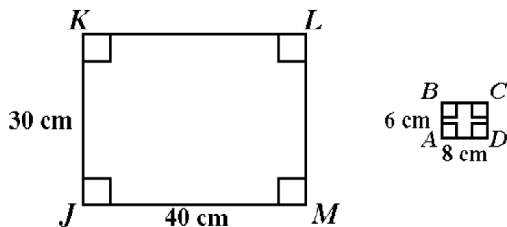
- 58 (1 point)
Your town charter states that at least 20% (0.20) of the town council members must be local business owners.
a. The town council currently has 7 business owners out of a total of 60 members. Write this ratio as a decimal. Round to the nearest hundredth.
b. Does this ratio satisfy the 20% rule?
A 8.57; yes
B 8.57; no
C 0.12; no
D 0.12; yes

Short Answer

A map of Utah has a scale of 1 cm : 30 mi.

- 59 (1 point)
The southern border of Utah is about 285 mi long. How long is the border on the map?

- 60 (1 point)
Are the figures below similar? Why or why not?

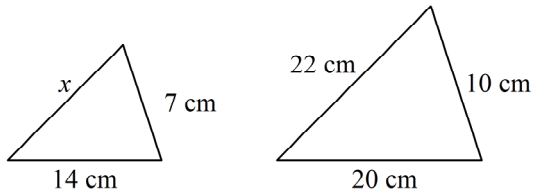


61 (1 point)

- a. Determine whether the ratios $\frac{9}{15}$ and $\frac{18}{30}$ can form a proportion by finding a common multiplier.
- b. Show that the ratios in part (a) are equal by writing them in simplest form.

Essay

62 (1 point)



Drawing not to scale

The two triangles above are similar.

- a. Find x using the ratio of the sides 14 cm and 20 cm: $\frac{x}{22} = \frac{14}{20}$. Show your work.
- b. Find x using the ratio of the sides 7 cm and 10 cm. Show your work.
- c. Explain why the answers to (a) and (b) should be the same.

63 (1 point)

- You have a family portrait that is 4 inches high by 6 inches wide. You want to enlarge the photo so that it is 18 inches wide with dimensions proportional to those of the original.
- a. Write and solve a proportion to find the height of the enlarged photo.
- b. The photo lab charges \$.02 per square inch to print enlarged photos. What is the area in square inches of your enlarged photo? How much will it cost to buy three prints?

Other

64 (1 point)

A recipe for 24 cookies calls for 6 tablespoons of sugar. If you make 36 cookies and use 10 tablespoons, will the cookies taste the same? Explain.

65 (1 point)

Find each unit price. Which is the better buy? Explain.

electrical wire: \$1.49 for 3 ft
 \$.69 for 18 in.

Rates Ratios Percents (RRP) 60MC

Answer Section

MULTIPLE CHOICE

- 1 ANS: C PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 1
 KEY: ratio
- 2 ANS: A PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 1
 KEY: ratio
- 3 ANS: C PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 1
 KEY: ratio
- 4 ANS: B PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 2
 KEY: ratio | decimals
- 5 ANS: B PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 2
 KEY: ratio
- 6 ANS: C PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 3
 KEY: ratio
- 7 ANS: A PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 4
 KEY: ratio | simplest form
- 8 ANS: B PTS: 1 DIF: L3 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 4
 KEY: ratio | word problem | problem solving
- 9 ANS: B PTS: 1 DIF: L4 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 KEY: ratio | word problem | problem solving
- 10 ANS: C PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 1
 KEY: ratio | unit rate | rate

- 11 ANS: C PTS: 1 DIF: L3
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 KEY: ratio | unit rate | multi-part question | rate
- 12 ANS: D PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2
 KEY: ratio | unit rate | word problem | problem solving | decimals | rate
- 13 ANS: B PTS: 1 DIF: L3
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 KEY: ratio | unit rate | word problem | problem solving | rate
- 14 ANS: D PTS: 1 DIF: L3
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2
 KEY: ratio | unit rate | word problem | problem solving | decimals | rate
- 15 ANS: C PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 2
 KEY: ratio | unit price | decimals
- 16 ANS: C PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 2
 KEY: ratio | unit price | decimals
- 17 ANS: B PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 3
 KEY: ratio | unit price | decimals
- 18 ANS: C PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 3
 KEY: ratio | unit price | decimals
- 19 ANS: D PTS: 1 DIF: L2
 REF: 5-2 Unit Rates and Proportional Reasoning
 OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning
 STA: CA 6.AF.2.1 | CA 6.AF.2.2 TOP: 5-2 Example 3
 KEY: ratio | unit price | decimals
- 20 ANS: A PTS: 1 DIF: L2 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 TOP: 5-3 Example 1 KEY: ratio | proportion | simplest form

- 21 ANS: D PTS: 1 DIF: L2 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: ratio | proportion | common multiplier
- 22 ANS: B PTS: 1 DIF: L2 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 TOP: 5-3 Example 1 KEY: ratio | proportion | cross products
- 23 ANS: A PTS: 1 DIF: L3 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: cross products | ratio | proportion
- 24 ANS: C PTS: 1 DIF: L3 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: cross products | ratio | proportion
- 25 ANS: A PTS: 1 DIF: L3 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: cross products | ratio | proportion
- 26 ANS: C PTS: 1 DIF: L3 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: cross products | ratio | proportion | word problem | problem solving | reasoning
- 27 ANS: D PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 TOP: 5-4 Example 1
 KEY: cross products | ratio | proportion | word problem | decimals | problem solving
- 28 ANS: A PTS: 1 DIF: L3 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 KEY: ratio | proportion | word problem | proportional reasoning | problem solving
- 29 ANS: C PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 TOP: 5-4 Example 1
 KEY: ratio | proportion | rate | word problem | decimals | proportional reasoning | problem solving
- 30 ANS: D PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 TOP: 5-4 Example 1
 KEY: ratio | proportion | unit price | word problem | decimals | proportional reasoning | problem solving
- 31 ANS: C PTS: 1 DIF: L4 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3
 KEY: ratio | proportion | word problem | proportional reasoning | problem solving | multi-part question
- 32 ANS: D PTS: 1 DIF: L3 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 TOP: 5-4 Example 1
 KEY: ratio | proportion | unit rate | word problem | proportional reasoning | problem solving
- 33 ANS: B PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 TOP: 5-4 Example 2
 KEY: proportion | mental math

- 34 ANS: B PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
STA: CA 6.NS.1.3 TOP: 5-4 Example 3
KEY: proportion | solving an equation | proportional reasoning | rate
- 35 ANS: A PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
STA: CA 6.NS.1.3 TOP: 5-4 Example 3
KEY: proportion | solving an equation | decimals | proportional reasoning
- 36 ANS: C PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
STA: CA 6.NS.1.3 TOP: 5-4 Example 3
KEY: proportion | solving an equation | decimals | proportional reasoning
- 37 ANS: A PTS: 1 DIF: L2 REF: 5-4 Solving Proportions
OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
STA: CA 6.NS.1.3 TOP: 5-4 Example 3
KEY: proportion | solving an equation | decimals | proportional reasoning
- 38 ANS: D PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 KEY: proportion | similar figures | similar polygons | reasoning
- 39 ANS: A PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 KEY: proportion | similar figures | similar polygons | reasoning
- 40 ANS: B PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 KEY: proportion | similar figures | similar polygons | reasoning
- 41 ANS: C PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 TOP: 5-5 Example 1
KEY: proportion | similar figures | similar polygons | solving an equation
- 42 ANS: A PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 TOP: 5-5 Example 1
KEY: proportion | similar figures | similar polygons | solving an equation
- 43 ANS: D PTS: 1 DIF: L4 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 KEY: proportion | similar figures | similar polygons | solving an equation
- 44 ANS: C PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 TOP: 5-5 Example 2
KEY: proportion | similar figures | word problem | problem solving
- 45 ANS: A PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
STA: CA 6.NS.1.3 TOP: 5-5 Example 2
KEY: proportion | similar figures | word problem | decimals | problem solving

- 46 ANS: B PTS: 1 DIF: L3 REF: 5-5 Using Similar Figures
 OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
 STA: CA 6.NS.1.3 TOP: 5-5 Example 2
 KEY: proportion | similar figures | word problem | decimals | problem solving | indirect measurement
- 47 ANS: B PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 1
 KEY: proportion | similar figures | scale | scale drawing
- 48 ANS: C PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 1
 KEY: proportion | similar figures | scale | scale drawing
- 49 ANS: B PTS: 1 DIF: L3 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5
 KEY: proportion | similar figures | scale | scale drawing
- 50 ANS: A PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 2
 KEY: proportion | similar figures | scale | word problem | map
- 51 ANS: C PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 2
 KEY: proportion | similar figures | scale | word problem | map
- 52 ANS: A PTS: 1 DIF: L3 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 2
 KEY: proportion | scale | word problem | map
- 53 ANS: B PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5
 KEY: proportion | scale | scale model | word problem
- 54 ANS: D PTS: 1 DIF: L3 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5
 KEY: proportion | scale | scale drawing | reasoning
- 55 ANS: D PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 2
 KEY: proportion | similar figures | scale | scale drawing | word problem | map | problem solving
- 56 ANS: C PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 3
 KEY: ratio

- 57 ANS: A PTS: 1 DIF: L2 REF: 5-1 Ratios
 OBJ: 5-1.1 Writing Ratios and Using Them to Compare Quantities
 STA: CA 6.NS.1.0 | CA 6.NS.1.2 | CA 6.MR.2.5 TOP: 5-1 Example 3
 KEY: ratio
- 58 ANS: C PTS: 1 DIF: L3 REF: 5-4 Solving Proportions
 OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products
 STA: CA 6.NS.1.3 KEY: ratio | decimals | multi-part question | word problem | reasoning

SHORT ANSWER

- 59 ANS:
 9.5 cm
- PTS: 1 DIF: L2 REF: 5-6 Maps and Scale Drawings
 OBJ: 5-6.1 Using Proportions Solving Problems Involving Scale
 STA: CA 6.NS.1.2 | CA 6.NS.1.3 | CA 6.MR.2.5 TOP: 5-6 Example 2
 KEY: proportion | similar figures | scale | scale drawing | word problem | map | problem solving
- 60 ANS:
 Yes, because the corresponding angles are congruent and the corresponding sides are proportional.
- PTS: 1 DIF: L2 REF: 5-5 Using Similar Figures
 OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures
 STA: CA 6.NS.1.3 KEY: proportion | similar figures | similar polygons | reasoning
- 61 ANS:
 a. $\frac{9}{15} \times \frac{2}{2} = \frac{18}{30}$
 b. $\frac{9 \div 3}{15 \div 3} = \frac{3}{5}$, $\frac{18 \div 6}{30 \div 6} = \frac{3}{5}$
- PTS: 1 DIF: L2 REF: 5-3 Proportions
 OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3
 KEY: ratio | proportion | simplest form | common multiplier | multi-part question

ESSAY

62 ANS:

[4]

$$\text{a. } \frac{x}{22} = \frac{14}{20}$$

$$20x = 22 \cdot 14$$

$$x = \frac{22 \cdot 14}{20}$$

$$x = 15$$

$$\text{b. } \frac{x}{22} = \frac{7}{10}$$

$$10x = 22 \cdot 7$$

$$x = \frac{22 \cdot 7}{10}$$

$$x = 15$$

c. Explanations may vary. Sample: Since the triangles are similar, the ratios of all corresponding sides are equal.

[3] two parts correct

[2] one part correct

[1] all answers correct but with no work shown

PTS: 1 DIF: L3 REF: 5-5 Using Similar Figures

OBJ: 5-5.1 Using Proportions Finding Missing Lengths in Similar Figures

STA: CA 6.NS.1.3 KEY: similar figures | problem solving | rubric-based question | extended response

63 ANS:

[4] a. h = the height of the enlarged photo

$$\frac{4}{6} = \frac{h}{18}$$

$$6h = 4 \cdot 18$$

$$h = \frac{4 \cdot 18}{6}$$

$$h = 12 \text{ in.}$$

b. Area of the enlarged photo = 216 in.²

$$\text{Cost for three prints} = 3 \times \text{area of photo} \times \$0.02/\text{in.}^2 = 3 \times 216 \times 0.02 = \$12.96$$

[3] correct answer for (a) and correct process for (b) with minor error

[2] minor error in (a) with (b) calculated correctly based on incorrect value

[1] minor error in (a) with (b) calculated incorrectly or missing

PTS: 1 DIF: L4 REF: 5-4 Solving Proportions

OBJ: 5-4.1 Solving Proportions Using Unit Rates, Mental Math, and Cross Products

STA: CA 6.NS.1.3

KEY: proportional reasoning | cross products | word problem | rubric-based question | extended response

OTHER

64 ANS:

No; the ratio of tablespoons of sugar to cookies in the original recipe is $\frac{6}{24}$, but the ratio of tablespoons of sugar to cookies in the larger batch is $\frac{10}{36}$. If you check the cross products, $6 \times 36 = 216$ and $10 \times 24 = 240$, so these ratios are not proportional.

PTS: 1 DIF: L3 REF: 5-3 Proportions

OBJ: 5-3.1 Testing Whether Ratios Form A Proportion STA: CA 6.NS.1.2 | CA 6.NS.1.3

KEY: proportion | cross products | word problem | proportional reasoning | writing in math

65 ANS:

$$\frac{\$1.49}{3 \text{ ft}} \approx \$0.50/\text{ft}; \frac{\$.69}{18 \text{ in.}} \approx \$0.04/\text{in.}$$

$$1 \text{ ft} = 12 \text{ in.}, \text{ so } \frac{\$.04}{\text{in.}} \times \frac{12 \text{ in.}}{1 \text{ ft}} = \$.48/\text{ft. } \$.69 \text{ for } 18 \text{ in. is the better buy.}$$

PTS: 1 DIF: L3 REF: 5-2 Unit Rates and Proportional Reasoning

OBJ: 5-2.1 Finding Unit Rates and Unit Costs Using Proportional Reasoning

STA: CA 6.AF.2.1 | CA 6.AF.2.2

KEY: unit price | proportional reasoning | problem solving | multi-part question | reasoning