



Level 3: Ratios and Proportional Relationships Posttest Answer Key

Question 1:

The table shows the price of gasoline.

Gallons of Gasoline	0	1	2	3
Cost (\$)	0.00	3.72	7.44	11.16

Which statement explains whether the relationship in the table is proportional?

- ☒ a. It is proportional because the graph of the equation is a straight line.
- ☐ b. It is proportional because (1,1) is a solution of the equation.
- ☐ c. It is not proportional because the slope of the equation is 1.
- ☐ d. It is not proportional because the graph of the equation goes through (0,0).

Question 2:

Jerry is filling a wading pool with water from a hose. The equation $A = 0.75t$ describes the relationship between the time in seconds, t and the number of liters of water in the pool, A .

At what rate, in liters per minute, is Jerry filling the pool with water?

- ☒ a. 45
- ☐ b. 60
- ☐ c. 75
- ☐ d. 80

Question 3:

Marcus invested \$2000 in a bank account earning simple interest. The interest, I , he has after t years at an interest rate r is given by this equation.

$$I = 2000rt$$

After 2 years, the total amount in the account was \$2160. What was the annual interest rate?

- ☒ a. 4%
- ☐ b. 8%
- ☐ c. 16%
- ☐ d. 40%



Question 4:

Norah bought a guitar that was on sale for 15% off the regular price of \$200. The total cost included 8% sales tax.

What was the total cost?

- a. \$186.00
- ☒ b. \$183.60
- c. \$178.00
- d. \$176.80

Question 5:

Tyler works at a bicycle shop. When he sells a bicycle, he earns 6% of the sale price as a commission. One day Tyler sold 1 bicycle for \$450 and 2 bicycles for \$250 each.

What was the total amount of commission he earned?

- a. \$5.70
- b. \$6.90
- ☒ c. \$57.00
- d. \$69.00

Question 6:

Marc is buying soda at a store.

- 1 case of soda contains 24 cans and costs \$8.64.
- Each can in the case contains 12 ounces of soda.
- 1 large bottle of soda costs \$0.80 and contains 32 ounces.

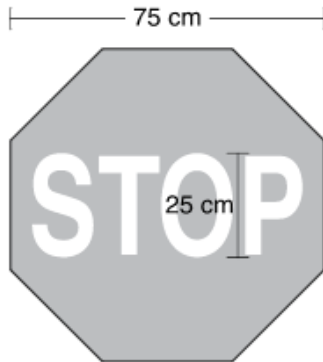
What is the difference in cost between 1 ounce of soda in a bottle and 1 ounce of soda in a can?

- a. \$0.050
- b. \$0.030
- c. \$0.025
- ☒ d. \$0.005



Question 7:

The diagram below shows the actual dimensions of a stop sign.



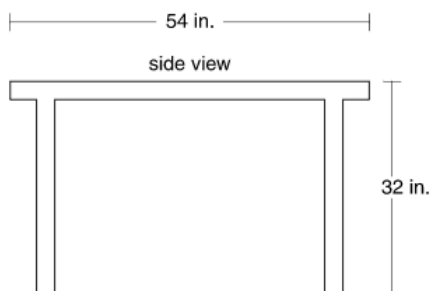
Marcy is drawing a stop sign to scale using letters that are 5 centimeters tall.

What should be the width of her drawing of the stop sign?

- a. 10 cm
- ☒ b. 15 cm
- c. 20 cm
- d. 55 cm

Question 8:

The diagram below shows width and height of a table.



Mr. Howell wants to build a table with the same ratio of width to height as shown in the diagram. He wants the height of his table to be only 24 inches.

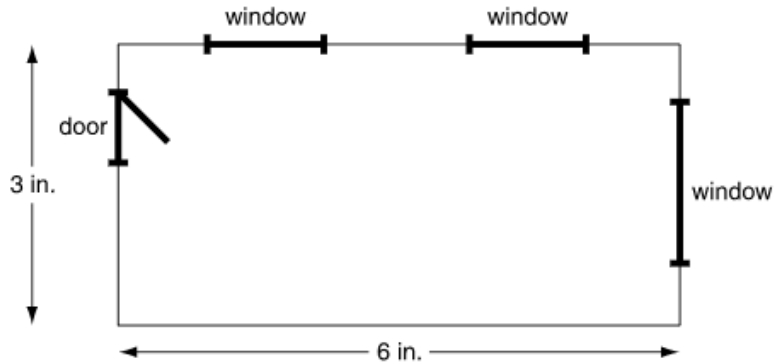
How wide should Mr. Howell make his table?

- ☒ a. 40.5 in.
- b. 46 in.
- c. 51.5 in.
- d. 72 in.



Question 9:

The diagram below shows a scale drawing of a rectangular room.

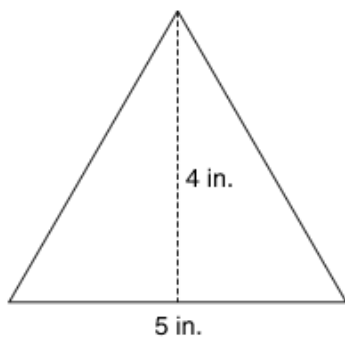


The wall with two windows is actually 17 feet long. What is the area of the room in square feet?

144.5 sq ft

Question 10:

The diagram below shows the dimensions of an isosceles triangle.



Marla will make a scale drawing of this triangle. The height of the new triangle will be 18 inches. What should be the actual length of the base, in inches, of Marla's triangle?

22.5 inches



Question 11:

A palm tree was 60 feet in height in the year 2000. Between 2000 and 2005, its height increased by 10%. Between 2005 and 2010, its height increased by 5%. What was the height, in feet, of the palm tree in 2010?

69.3 ft

Question 12:

Every minute, a machine makes enough chocolate candies to fill 5 boxes. Each box of candies weighs 3 pounds. At that rate, how many pounds of candies does the machine make per second?

$\frac{1}{4}$

pounds per second

Question 13:

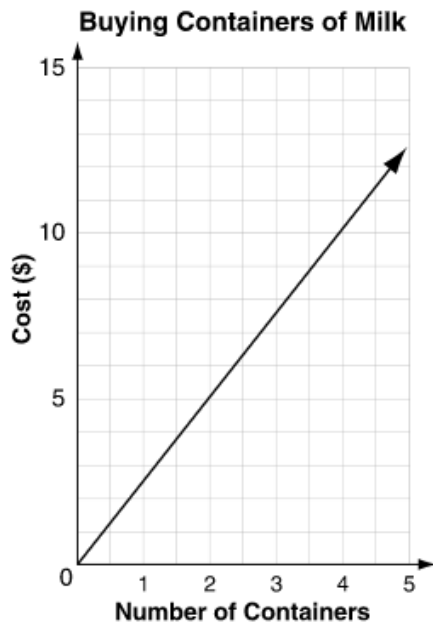
A car salesperson earns a commission that is a percentage of the price of each car she sells. Last week, she sold 3 cars for a total of \$75,000 and earned \$4,500 in commission. At that rate, what will the salesperson earn in commission if her total car sales are \$275,000?

\$16,500



Question 14:

The graph below shows the relationship between the number of containers of milk a customer buys and the total cost.

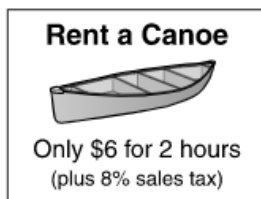


Hiram buys 7 containers of milk. Based on the graph, what is the total cost?

- a. \$12.50
- b. \$14.00
- c. \$14.50
- d. \$17.50

Question 15:

The sign below shows the cost to rent a canoe at a lake.



Based on the rate shown in the sign, what is the total cost, including tax, to rent a canoe for 5 hours?

- a. \$15.00
- b. \$15.80
- c. \$15.96
- d. \$16.20



Question 16:

Penelope has \$40 to spend on a pair of new jeans. She must pay sales tax of 6% on the price of the jeans.

What is the greatest price Penelope can afford to pay for a pair of jeans and not spend more than \$40, including the sales tax?

- a. \$34.00
- b. \$37.60
- ☒ c. \$37.73
- d. \$39.94

Question 17:

Ali and his family went to an amusement park. The total cost of admission for 4 adults and 6 children was \$63.00. It cost \$7.50 per adult for admission.

What was the cost of admission per child?

\$ per child

Question 18:

Jill used $\frac{1}{2}$ quart of paint in $\frac{3}{4}$ hour.

What is her usage rate in quarts per hour?

- a. $\frac{3}{8}$
- ☒ b. $\frac{2}{3}$
- c. $\frac{3}{4}$
- d. $\frac{3}{2}$



Question 19:

This table shows the cost of different amounts of bananas

Cost of Bananas

Weight (pounds)	Total Cost (dollars)
1.5	0.87
4	2.32
4.5	2.61

What is the cost per pound of the bananas?

- a. \$0.29
- b. \$0.58**
- c. \$1.45
- d. \$1.74

Question 20:

A biker rides for h hours at a speed of s miles per hour and travels d miles. Which equation models the relationship?

- a. $h = sd$
- b. $d = sh$**
- c. $h = \frac{s}{d}$
- d. $d = \frac{h}{s}$

Question 21:

Kevin's yard is a quadrilateral with its sides in a ratio of 3 : 4 : 5 : 6. The perimeter of the yard is 90 meters.

What is the length of the shortest side of the yard?

- a. 5 meters
- b. 7.5 meters
- c. 15 meters**
- d. 22.5 meters



Question 22:

A store sells jackets.

- The store owner pays \$30 for a jacket.
- He prices the jacket using a 100% markup.
- The jacket is later put on sale for 30% off.

What percent of the original cost was the profit on this jacket?

- a. 18%
- b. 40%
- c. 42%
- d. 70%

Question 23:

The population of Centerville is 16,400; 75% of the people live in urban areas and 25% of the people live in rural areas. The population of Centerville is expected to increase 5% in the next ten years.

If the percent of people living in urban areas stays the same, how many people will be living in urban areas in the next ten years?

- a. 4,305
- b. 12,300
- c. 12,915
- d. 17,220