Level 3: Ratios and Proportional Relationships Pre-Test

Question 1:

A baker uses a ratio of cups of flour to teaspoons of baking soda. Which pair of flour-to-baking soda ratios is proportional?

a. $2 : 3$ and $4 : 1$

b. $1 : 1\frac{1}{4}$ and $3 : 3\frac{3}{4}$

c. $3 : 4$ and $6 : 2$

d. $2\frac{1}{2} : 3$ and $3 : 2\frac{1}{2}$

Question 2:

A taxi company uses a formula to determine the cost of a fare. The total cost (y) is the number of miles (x) multiplied by a unit rate (m). The relationship between x and y is proportional. Which point will be located on the graph of the line?

a. $(0, m)$

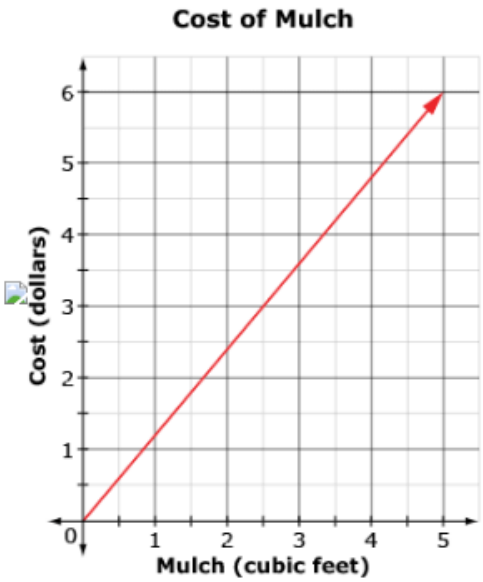
b. $(m, 0)$

c. $(m, 1)$

d. $(1, m)$

Question 3:

A landscaper delivers mulch to customers. The graph shows the relationship between the number of cubic feet of mulch and the total cost.



Based on the graph, what is the unit cost, in dollars of the mulch?

a. $0.83 per cubic foot

b. $1.20 per cubic foot

c. $1.45 per cubic foot

d. $6.00 per cubic foot

Question 4:

A company purchased some equipment 3 years ago for $100,000. The value of the equipment has decreased by 10% each year, as shown in this table.

Value of Equipment

Years	Value ($)
0	100,000
1	90,000
2	81,000
3	72,900

By what total amount will the equipment have decreased in value after 5 years?

a. $40,951

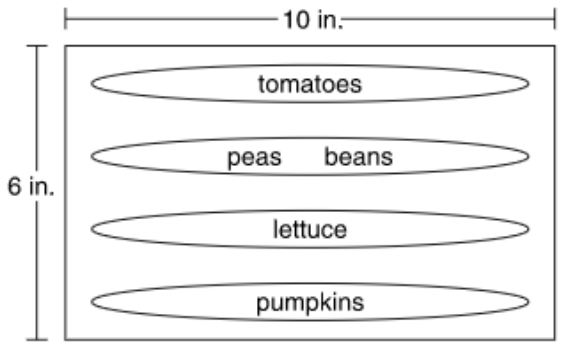
b. $43,300

c. $52,900

d. $59,049

Question 5:

The diagram below is a scale drawing of Mr. Yi's garden.



Scale: 1 in. = 1 1/2 ft.

What is the total area of his actual garden?

a. 60 ft^2

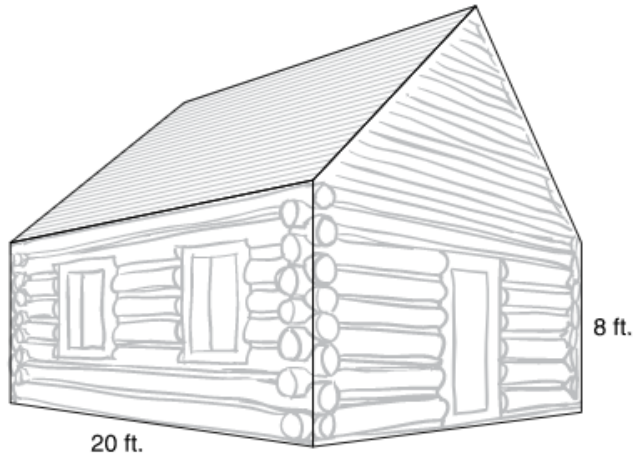
b. 90 ft^2

c. 105 ft^2

d. 135 ft^2

Question 6:

Allison is using the drawing below to build a scale model of a log cabin to include with her history project on colonial life.



She plans to make the walls of her model 5 inches tall.

What will be the length, in inches, of her model?

_____ inches

Question 7:

An airplane traveled $\frac{9}{10}$ kilometer in $\frac{2}{15}$ minute. What was its average speed in kilometers per minute?

_____ km per minute

Question 8:

A hardware store sells rope at a constant price per foot. A 50-foot piece of rope costs $12.

Write an equation that relates c, the cost in dollars of a piece of rope, to f, the length in feet of the piece of rope.

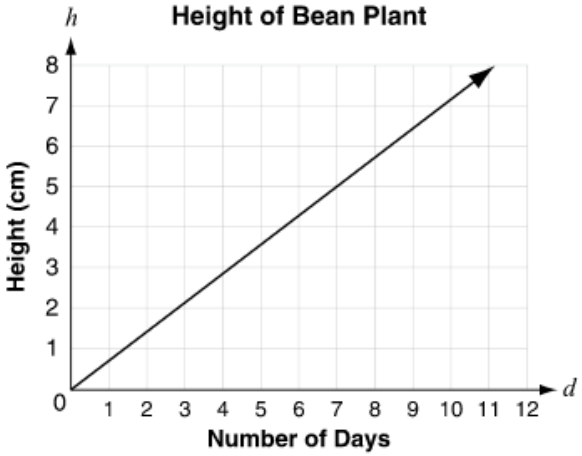
Question 9:

An orchestra has a total of 42 violins and violas combined. The ratio of violins to violas is 5:2.

If the number of violins increases by 10%, what will be the new ratio of violins to violas?

Question 10:

For his science experiment, Jerry measured the height of a bean plant every day for two weeks. This graph shows the results.



Write an equation that shows the relationship between h, the height of the plant in centimeters, and d, the number of days since the beginning of the experiment.

Question 11:

The graph shows how the temperature inside a freezer changed over time when the freezer door was left open.

If the point (a, b) lies on the graphed line, which expression gives the temperature's rate of change in degrees Fahrenheit per minute?

a. $a \times b$

b. $a \div b$

c. $b - a$

d. $b \div a$

Question 12:

The number of visitors to a website each week is modeled by the equation $y = x^2$, where y is the number of visitors and x is the number of weeks since the website was launched.

Which explains whether the relationship is proportional?

a. It is not proportional because the slope of the equation is 1.

b. It is proportional because (0, 0) is a solution of the equation.

c. It is not proportional because the graph of the equation is not a straight line.

d. It is proportional because the graph of the equation goes through (0, 0) and (1, 1).

Question 13:

A tree grows the same amount each year. One year, the tree is 48 inches tall. When it is measured 3 years later, it is 84 inches tall.

How many inches does the tree grow each year?

a. 12 inches

b. 16 inches

c. 28 inches

d. 36 inches

Question 14:

A chair that is normally priced at $75 is marked down to $41.25.

What is the percent of the discount?

a. 34%

b. 45%

c. 55%

d. 82%

Question 15:

Kendra has a vegetable garden. She adds a section to the garden that is 12 feet by 15 feet. This is a 20% increase in the area of her garden.

What is the area of the entire garden?

a. 216 ft^2

b. 900 ft^2

c. 1080 ft^2

d. 4680 ft^2