Level 3: Ratios and Proportional Relationships Mid-Test

Question 1:

Many small engines require a mixture of gasoline and oil. The formula for the mixture is usually written as a ratio of gasoline to oil. Which pair of gasoline-to-oil ratios is proportional?

a. $50 : 1$ and $49 : 2$

b. $30 : 1$ and $15 : \frac{1}{2}$

c. $25 : 2$ and $50 : 1$

d. $30 : 2$ and $60 : \frac{1}{2}$

Question 2:

This question has two parts, be sure to answer both a and b.

Jason has a bag of identical marbles. The weights of different numbers of his marbles are shown in this table.

Number of Marbles	Weight (ounces)
12	42
8	28
4	14

a. What is the weight, in ounces, of one marble?

_____ ounces

b. Write an equation that can be used to find w, the weight of p marbles.

Question 3:

A windstorm removed $\frac{7}{9}$ ton of soil from a small farm in $\frac{1}{4}$ hour.

Which equation shows one of the ways to find the rate of soil removal in tons per hour?

a. $\frac{7}{9} \times \frac{1}{4} = \frac{7 \times 1}{9 + 4} = \frac{7}{13}$

b. $\frac{7}{9} \times \frac{1}{4} = \frac{7 \times 1}{9 \times 4} = \frac{7}{36}$

c. $\frac{7}{9} \div \frac{1}{4} = \frac{7 \times 4}{9 + 1} = \frac{28}{10}$

d. $\frac{7}{9} \div \frac{1}{4} = \frac{7 \times 4}{9 \times 1} = \frac{28}{9}$

Question 4:

A catering company offers four different meals for dinner parties. The table shows how the cost of each meal depends on the number of servings

Total Cost of Catering Different Meals

Number of Servings	Cost of Meal A ($)	Cost of Meal B ($)	Cost of Meal C ($)	Cost of Meal D ($)
5	80	80	60	60
10	160	150	120	110
20	320	300	240	220
50	760	750	600	500

The cost of which meal is proportional to the number of servings?

a. Meal A

b. Meal B

c. Meal C

d. Meal D

Continue ➡

Question 5:

This table shows how the distance traveled by a bird in flight changed over time.

Bird in Flight

Time (seconds)	Distance Traveled (meters)
0	0
5	75
10	150
15	225
20	300

What was the bird's average speed in meters per second?

a. 75

b. 15

c. 5

d. 2

Question 6:

Kelley is downloading files from the Internet. This table shows the relationship between the size of files she downloads and the time required.

Downloading Files

Time Required (seconds)	Size of File (megabytes)
20	4.8
40	9.6
60	14.4
80	19.2
100	24.0

What is the unit rate per second for Kelley to download files from the Internet?

a. 0.24 megabyte per second

b. 0.48 megabyte per second

c. 4.17 megabytes per second

d. 4.80 megabytes per second

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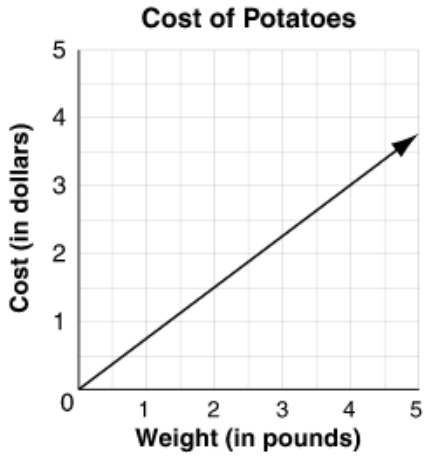
Question 7:

Leslie is buying potatoes at a store. This graph shows the relationship between the number of pounds of potatoes she buys and the total cost.



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

a. $0.75 per pound

b. $1.00 per pound

c. $1.33 per pound

d. $1.50 per pound

Question 8:

A recipe for cookies requires $4\frac{1}{2}$ cups of sugar and makes 3 dozen cookies. Allen wants to use the recipe, but only wants to make 1 dozen cookies.

How many cups of sugar does Allen need?

a. $1\frac{3}{4}$ cups

b. $1\frac{1}{2}$ cups

c. $1\frac{1}{4}$ cups

d. 1 cup

Continue

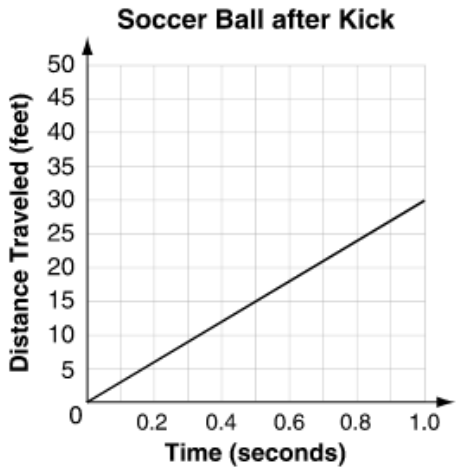
Question 9:

A 2.5-pound bag of almonds costs $15 at the farmers' market. What is the unit cost of the almonds in dollars per pound?

_____ dollars per pound

Question 10:

Kea kicked a soccer ball. The graph shows how the distance traveled by the ball changed over time.



What was the average speed of the soccer ball in feet per second?

_____ feet per second

Question 11:

An automobile engine was tested for performance at a rate of 2400 revolutions for every minute. What is the equivalent of that rate in revolutions per second?

_____ revolutions per second

Continue

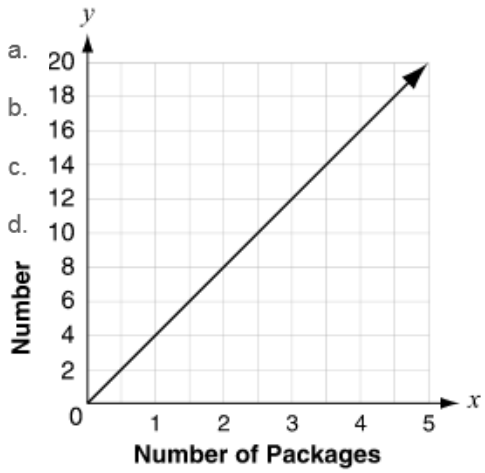
Question 12:

At a bookstore, the retail cost, r, of any book is twice its wholesale cost, w.

Write an equation that describes the relationship between r and w.

Question 13:

A store sells packages of markers. The graph below shows the relationship between the number of packages of markers sold, x, and the total number of markers sold, y.



What are the coordinates of the point that represents the unit rate for makers per package?

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Question 14:

A piano teacher is offering 4 piano lessons for the price of 3. The regular price for 1 lesson is $25.

What is the total price, in dollars, for 12 lessons at the discounted rate?

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Continue

Question 15:

A recipe for fruit punch requires $1\frac{1}{2}$ quarts of orange juice to make 6 quarts of punch.

How many quarts of orange juice are needed for one quart of punch?

_____ quart(s)

Question 16:

Xavier is exchanging some U.S. dollars for Canadian dollars. The equation below shows the relationship between U.S. dollars, *x*, and Canadian dollars, *y*, on the day he is making the exchange.

$$4x = 3y$$

What is the amount in Canadian dollars that Xavier will receive for each U.S. dollar?

a. $0.43

b. $0.75

c. $1.00

d. $1.33

Question 17:

A faucet dripped $\frac{1}{4}$ cup of water in $1\frac{1}{2}$ hours.

What is the rate in cups per hour?

a. $\frac{1}{12}$

b. $\frac{1}{6}$

c. $\frac{3}{8}$

d. $\frac{1}{2}$

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Question 18:

Dana's parents add $2 to her savings account for every $20 she puts in the account.

Which equation models the relationship between the amount her parents put in the account, p, and the amount Dana puts in the account, d?

a. $p = \frac{1}{10}d$

b. $p = \frac{1}{2}d$

c. $p = 2d$

d. $p = 10d$

Question 19:

An equation modeling the number of gallons of water, y, in a tank after x minutes, has a unit rate of r. The relationship between x and y is proportional.

Which point will be located on the graph of the line?

a. $(0, r)$

b. $(r, 0)$

c. $(1, r)$

d. $(r, 1)$

Question 20:

A clothing store owner sold hats and scarves in the ratio of 3:7. He sold 24 more scarves than hats.

How many hats did he sell?

a. 6

b. 8

c. 18

d. 42

Question 21:

Josh is reading a book that contains 100 pages. If he reads $\frac{1}{5}$ of the book in $\frac{2}{3}$ of an hour, how many pages per hour does Josh read?

Stop

[ ] pages per hour