

Name: \_\_\_\_\_

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Ratios Rates and Proportions

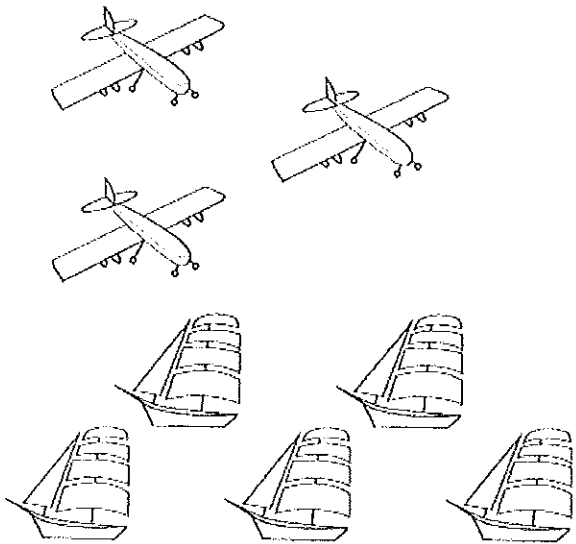
MCAS Released Questions

Mr. Johnson's class has 24 students.

- There are 18 students in the class who study Spanish.
- The other students in the class study French.

In Mr. Johnson's class, which of the following is the ratio of students who study French to students who study Spanish?

- A. 1:3
- B. 1:4
- C. 2:3
- D. 3:4



What is the ratio of the number of model airplanes to the number of model ships?

- A. 8:3
- B. 5:3
- C. 3:8
- D. 3:5

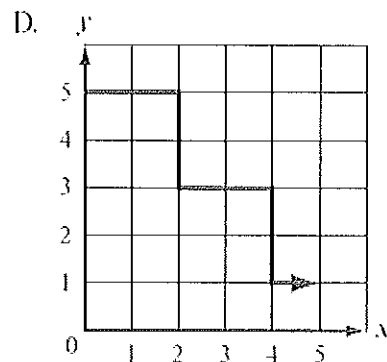
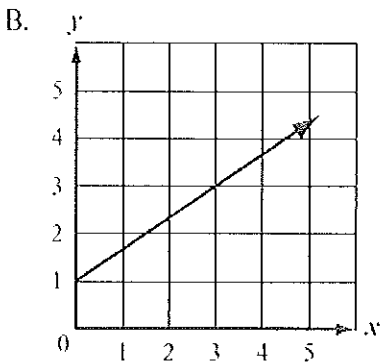
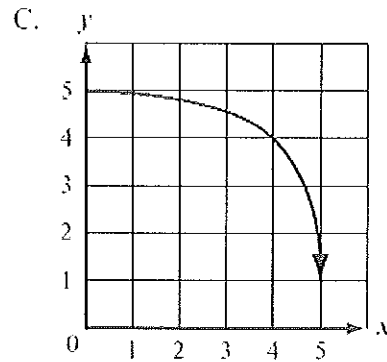
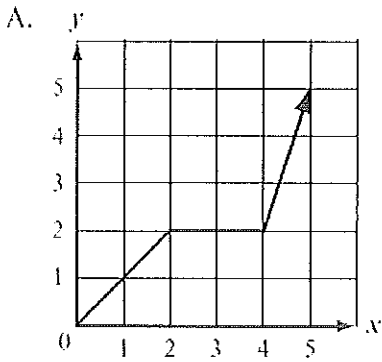
Roya paid \$48 for 12 cartons of orange juice. What is the unit rate per carton of orange juice that Roya paid?

- A. \$3
- B. \$4
- C. \$6
- D. \$12

Each meal at a school cafeteria is served with 2 portions of vegetables. What is the ratio of meals served to portions of vegetables served at the school cafeteria?

- A. 1:2
- B. 1:3
- C. 2:1
- D. 3:1

Which of the following graphs shows a constant rate of change between the variables  $x$  and  $y$ ?



Leigh wants to find the number of ounces of pretzels in a 4-pound container. She knows the ratio of ounces to pounds is 16:1.

Which of the following equations can Leigh use to find  $x$ , the number of ounces of pretzels in the 4-pound container?

A.  $\frac{x \text{ ounces}}{4 \text{ pounds}} = \frac{16 \text{ ounces}}{1 \text{ pound}}$

B.  $\frac{x \text{ ounces}}{4 \text{ pounds}} = \frac{1 \text{ pound}}{16 \text{ ounces}}$

C.  $\frac{4 \text{ ounces}}{x \text{ ounces}} = \frac{16 \text{ pounds}}{1 \text{ pound}}$

D.  $\frac{4 \text{ pounds}}{x \text{ ounces}} = \frac{16 \text{ pounds}}{1 \text{ ounce}}$

All of the benches in a park are red or blue. The ratio of red benches to blue benches in the park is 3:4.

Based on this information, which of the following statements is true?

A. For every 4 benches in the park, 3 are red.

B. For every 7 benches in the park, 4 are red.

C. For every 3 red benches in the park, there are 4 blue benches.

D. For every 3 red benches in the park, there are 7 blue benches.

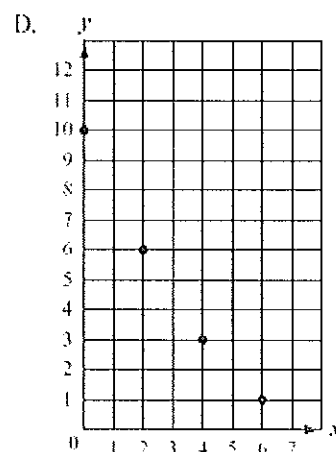
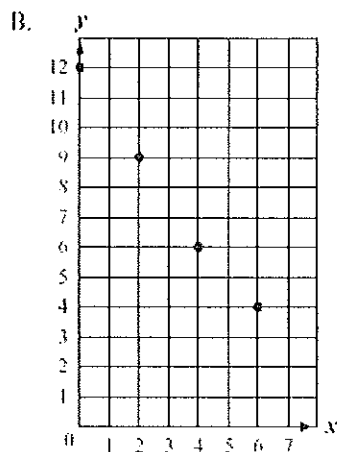
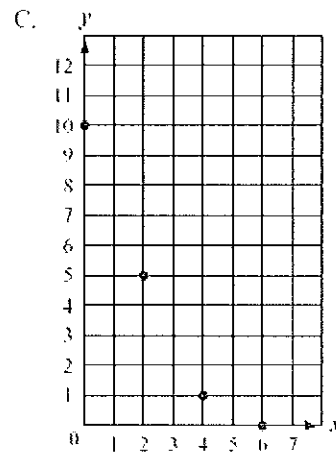
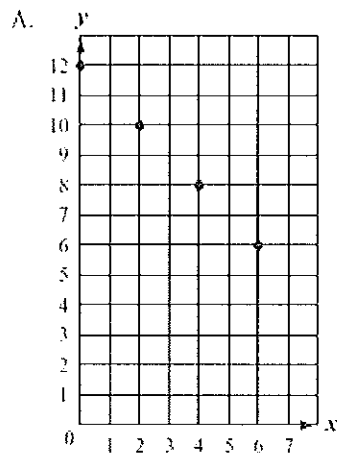
A dairy farmer uses two trucks to deliver milk. The two trucks use different kinds of fuel. Truck A uses gasoline and Truck B uses diesel. The table below shows the distance, in miles, that each truck can travel per gallon of fuel.

Miles Traveled per Gallon of Fuel

Gallons of Fuel	Truck A (Gasoline)	Truck B (Diesel)
1	8 miles	12 miles
2	16 miles	24 miles
3	24 miles	36 miles
4	? miles	48 miles
5	40 miles	60 miles

- Based on the table, what is the total number of miles Truck A can travel using 4 gallons of gasoline? Show or explain how you got your answer.
- Based on the table, what is the total number of gallons of diesel Truck B will use to travel 132 miles? Show or explain how you got your answer.
- Gasoline costs \$4 per gallon and diesel costs \$5 per gallon. Which truck will have a lower fuel cost for a 24-mile trip? Show or explain how you got your answer.

Which of the following graphs shows a constant rate of change between the variables  $x$  and  $y$ ?



The ratio of the number of girls to the number of boys in a chess club is 3 to 2. There are 14 boys in the chess club.

What is the number of girls in the chess club?

- A. 7
- B. 9
- C. 21
- D. 23

Sydney ran 400 meters in 1 minute and 20 seconds. What was Sydney's average rate in meters per second?

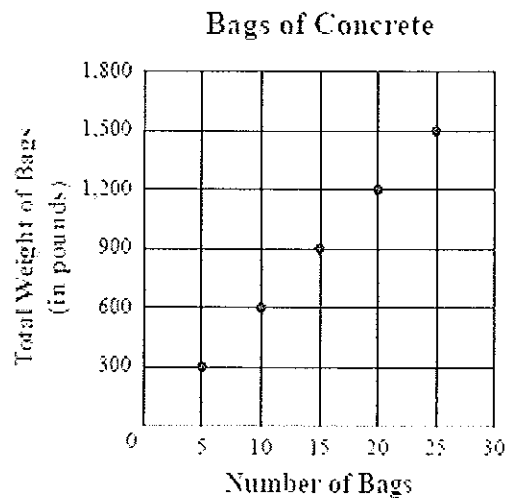
- A.  $\frac{1}{5}$
- B. 3
- C.  $3\frac{1}{3}$
- D. 5

Justine paid \$1.16 for 2 pounds of bananas. Dave bought 2.5 pounds of bananas at the same price per pound that Justine paid.

What was the total amount that Dave paid for his bananas?

- A. \$1.45
- B. \$1.74
- C. \$2.50
- D. \$2.90

Bruce is moving bags of concrete. Each bag weighs the same amount. The graph below shows the relationship between different numbers of bags and the total weight, in pounds, of the bags.



Bruce will move a total of 100 bags. Based on the graph, what is the total weight of 100 bags of concrete?

- A. 1,800 pounds
- B. 6,000 pounds
- C. 15,000 pounds
- D. 30,000 pounds

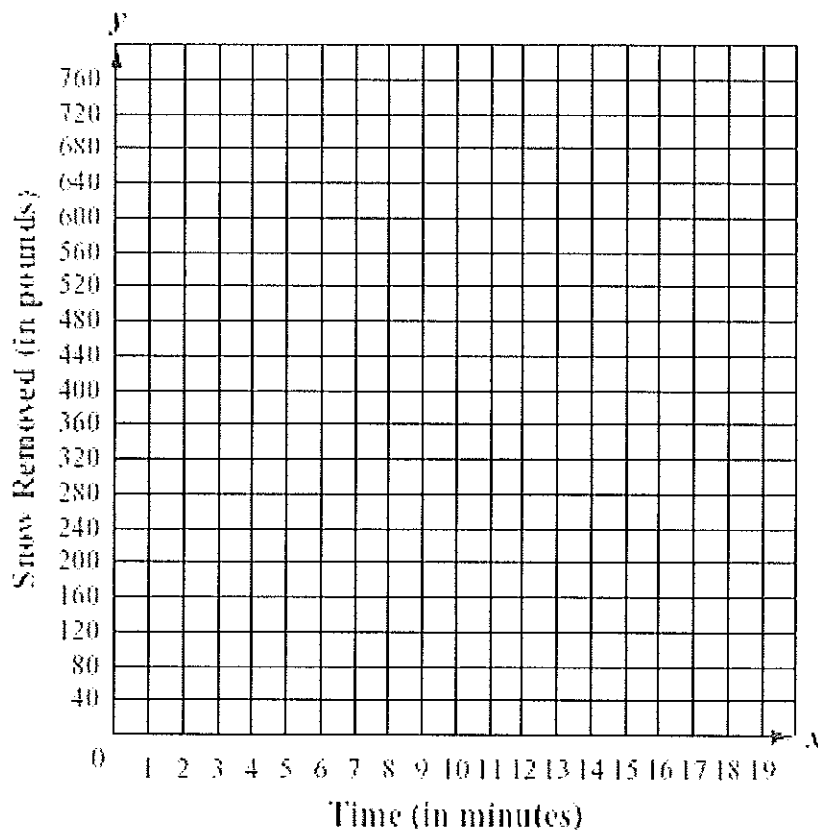
The table below shows the amount, in pounds, of snow that Andy can remove over time using a shovel.

**Snow Removal Using a Shovel**

Time (in minutes)	1	2	3	4	5	6
Snow Removed (in pounds)	80	160	240	320		480

- a. Based on the table, what is the amount, in pounds, of snow that Andy can remove in 5 minutes using a shovel? Show or explain how you got your answer.

On the grid in your Student Answer Booklet, copy the  $x$ -axis, the  $y$ -axis, and the labels exactly as shown below.



- b. On your grid, plot the data from the table to show the amount of snow that Andy can remove over time.
- c. Based on your graph, what is the amount, in pounds, of snow that Andy can remove in 10 minutes? Show or explain how you got your answer.

This table shows the relationship between the number of pies sold at a farm and the total profit made, in dollars, from the pies sold at the farm.

### Profit Made from Pies Sold

Number of Pies Sold, $n$	Profit Made, $p$ (dollars)
2	8
4	16
6	24
8	32

#### Part A

Based on the table, what is the profit made, in dollars, from each pie sold at the farm? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

#### Part B

Write an equation that can be used to find  $p$ , the total profit made, in dollars, when  $n$  pies are sold at the farm.

Enter your equation in the space provided.

#### Part C

Use the equation you wrote in Part B to calculate the profit made, in dollars, when 15 pies are sold at the farm. Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

#### Part D

One day, the farm made a profit of \$144 from the pies sold. How many pies were sold at the farm on that day? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.