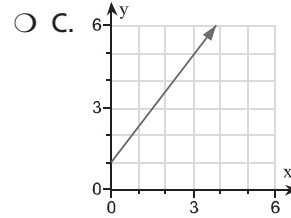
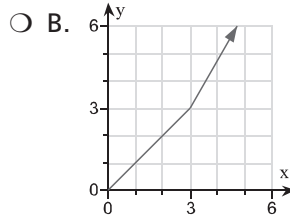
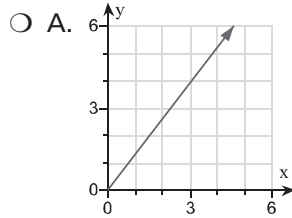
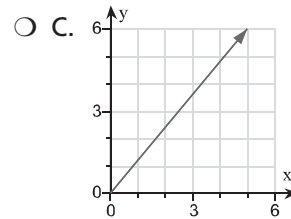
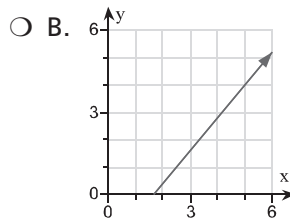
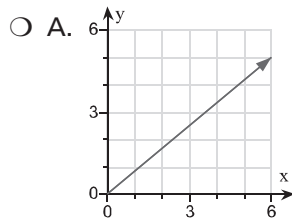


**Practice
2-2****Proportional Relationships and Graphs**

1. Which of the graphs shows a proportional relationship?



2. Which of these graphs shows a relationship that is not proportional?



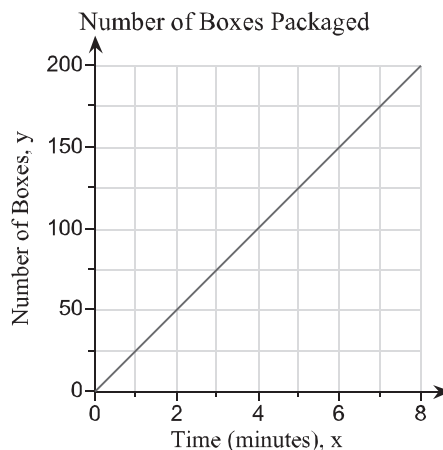
3. Does the equation $y = 8x$ show a proportional relationship between x and y ?

- ☐ A. Yes, the graph of the equation is a straight line that passes through the origin.
- ☐ B. Yes, the graph of the equation is a straight line and does not pass through the origin.
- ☐ C. No, the graph of the equation does not pass through the origin.
- ☐ D. No, the graph of the equation is not a straight line.

4. Does the equation $y = 3x + 4$ show a proportional relationship between x and y ?

- ☐ A. Yes, the graph of the equation is a straight line and passes through the origin.
- ☐ B. No, the graph of the equation is not a straight line.
- ☐ C. No, the graph of the equation does not pass through the origin.
- ☐ D. Yes, the graph of the equation is a straight line.

5. The graph shows a proportional relationship between time and number of boxes a machine packages. How many boxes does the machine package in 4 minutes?



6. A baker likes to make cookies. The graph shows a proportional relationship between cups of flour used and number of cookies made.

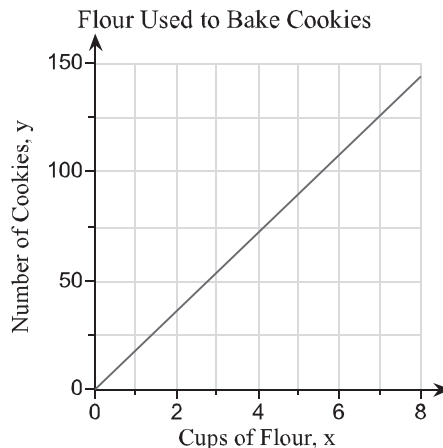
a) What does the point (0,0) represent?

Check all that apply.

- ☐ A. The unit rate is 0 cups of flour per cookie.
- ☐ B. The baker makes 0 cookies with 0 cups of flour.
- ☐ C. The baker needs 0 cups of flour to make 0 cookies.
- ☐ D. The unit rate is 0 cookies per cup of flour.

b) What does the point (1,18) represent? Check all that apply.

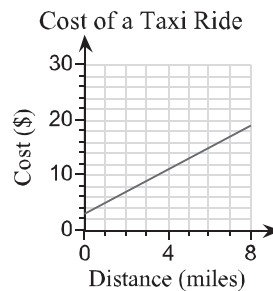
- ☐ A. The unit rate is 18 cookies per cup of flour.
- ☐ B. The baker needs 18 cups of flour to make 1 cookie.
- ☐ C. The baker makes 18 cookies with 1 cup of flour.
- ☐ D. The unit rate is 18 cups of flour per cookie.



7. **Writing** The graph shows the relationship between the distance a taxi travels and the cost of the taxi ride.

a) Is the relationship proportional? Explain.

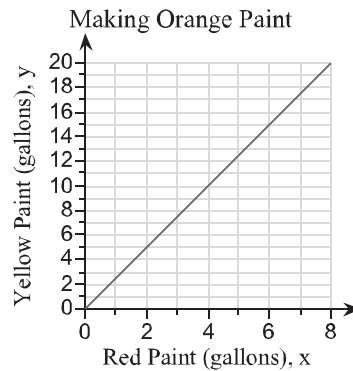
- ☐ A. The relationship is proportional because the graph is a straight line.
- ☐ B. The relationship is not proportional because the graph does not pass through the origin.
- ☐ C. The relationship is not proportional because the graph is not a straight line.
- ☐ D. The relationship is proportional because the cost increases as the distance increases.



b) What is true about ratios for proportional relationships that is not true about ratios for other relationships?

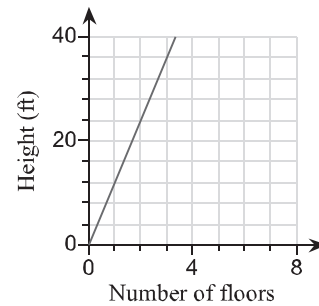
8. a) **Reasoning** Does the equation $y = 6x + 3$ show a proportional relationship between x and y ?
- ☐ A. The equation does not show a proportional relationship because its graph is not a straight line.
 - ☐ B. The equation shows a proportional relationship because its graph passes through the origin.
 - ☐ C. The equation does not show a proportional relationship because its graph does not pass through the origin.
 - ☐ D. The equation shows a proportional relationship because its graph is a straight line.
- b) How can you tell whether an equation of the form $y = mx + b$ shows a proportional relationship or some other relationship? Explain.

9. **Error Analysis** A company mixes custom paints. The graph shows the proportional relationship between gallons of red paint and gallons of yellow paint needed to make orange paint. To make 21 gallons of orange paint, a worker mixes 15 gallons of red paint and 6 gallons of yellow paint, but the color is incorrect.



- a) How many gallons of red paint should the worker use to make 21 gallons of orange paint?
- b) How many gallons of yellow paint should the worker use to make 21 gallons of orange paint?
- c) What was the worker's likely error?
- ☐ A. The worker rounded the number of gallons of yellow paint incorrectly.
 - ☐ B. The worker used the x -value from the graph for the yellow paint and the y -value for the red paint.
 - ☐ C. The worker rounded the number of gallons of red paint incorrectly.
 - ☐ D. The worker used the x -value from the graph for the red paint and the y -value for the yellow paint.
10. **Buying Flowers** Suppose you want to buy bouquets of flowers for a party. An equation that represents the cost, y , in dollars, for x bouquets is $y = 17x$. Does the equation $y = 17x$ represent a proportional relationship?
- ☐ A. No, the graph of the equation is not a straight line.
 - ☐ B. No, the graph of the equation does not pass through the origin.
 - ☐ C. Yes, the graph of the equation is a straight line passing through the origin.

- 11. Open-Ended** The graph represents the relationship between the number of floors, x , and the height of a building, y , in feet.

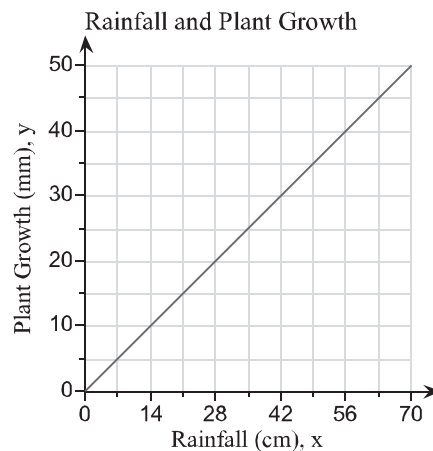


- a) Is the relationship between the number of floors and the height of the building proportional? Explain.
- ☐ A. The relationship is not proportional because the graph is not a straight line.
 - ☐ B. The relationship is proportional because the graph is a straight line that passes through the origin.
 - ☐ C. The relationship is not proportional because the graph does not pass through the origin.
 - ☐ D. The relationship is proportional because, although the graph is not a straight line, it passes through the origin.
- b) Describe at least two ways to find whether the relationship is proportional.

- 12.** The cost for a ticket to a museum is \$13.

- a) Write an equation that represents the cost, y , for x tickets.
- b) Does the equation represent a proportional relationship?
- ☐ A. Yes, the graph of the equation is a straight line that passes through the origin.
 - ☐ B. No, the graph of the equation is not a straight line.
 - ☐ C. Yes, the graph is a straight line that does not pass through the origin.
 - ☐ D. No, the graph of the equation does not pass through the origin.

- 13.** The graph shows the proportional relationship between rainfall during the growing season and seasonal growth of a type of plant.



- a) What does the point (28,20) represent?
- ☐ A. The plants grow 28 mm in seasons with 20 cm of rainfall.
 - ☐ B. The plants grow between 20 mm and 28 mm each season.
 - ☐ C. The rainfall is between 20 cm and 28 cm each season.
 - ☐ D. The plants grow 20 mm in seasons with 28 cm of rainfall.
- b) If the plants grew 10 mm one season, how much rain fell?

14. Challenge Suppose a farmer wants to divide a field into 11 equal squares.

a) If each square has side length s feet, which of the following equations represents the area, A , of the field?

☐ A. $A = 11s$

☐ C. $A = 11s^2$

☐ B. $A = 11 + s$

☐ D. $A = 11 + s^2$

b) Does the equation show a proportional relationship between the side length of a square and the area of the field?

☐ A. Yes, the graph of the equation is a straight line that passes through the origin.

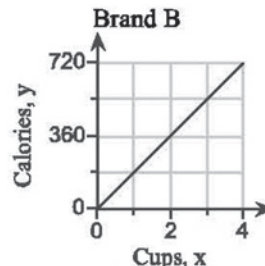
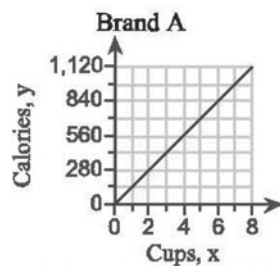
☐ B. Yes, the graph of the equation does pass through the origin.

☐ C. No, the graph of the equation does not pass through the origin.

☐ D. No, the graph of the equation is not a straight line.

c) What is the area of the field if the side length of a square is 31 feet?

15. Challenge Each graph shows the proportional relationship between the number of cups of a brand of breakfast cereal and the number of calories.



a) What is the unit rate of calories per cup for Brand A?

b) What is the unit rate of calories per cup for Brand B?

c) Which brand has fewer calories per cup?

d) If the unit rates for the two relationships are different, one graph should appear to rise faster than the other. Explain why the graphs appear to rise at the same rate.

1. A
2. B
3. A
4. C
5. 100 boxes
6. a) B, C
b) A, C
7. a) B
b) Answers will vary
8. a) C
b) Answers will vary
9. a) 6 gal of red paint
b) 15 gal of yellow paint
c) B
10. C
11. a) B
b) Answers will vary
12. a) $y = 13x$
b) A
13. a) D
b) 14 cm
14. a) C
b) D
c) 10,571 ft²
15. a) Brand A has 140 cal/c.
b) Brand B has 180 cal/c.
c) Brand A
d) Answers will vary