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CHAPTER TEST A

5 Direct and Inverse Proportion

25
Suggested Time: 30 min

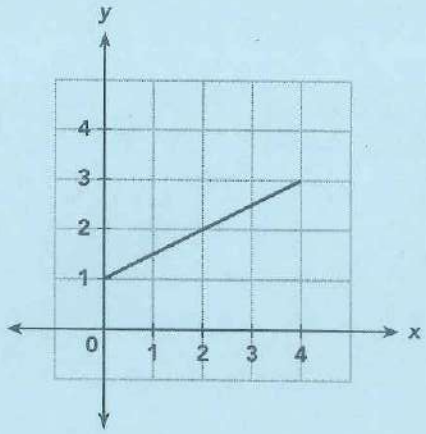
Concepts and Skills (Questions 1 to 6: 6 × 1 point = 6 points, Questions 7 and 8: 2 × 2 points = 4 points)

Tell whether each table, graph, or equation represents a direct proportion, an inverse proportion, or neither.

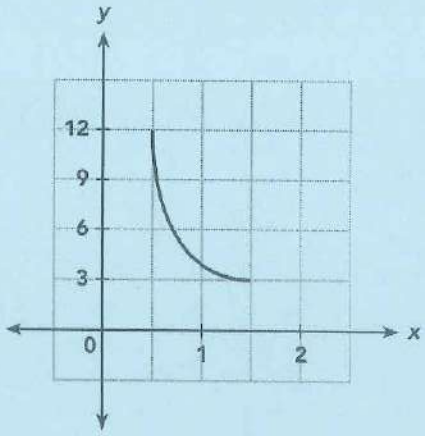
1.

x	7	9	15
y	3.5	4.5	7.5

2.



3.



4. $y = 4x + 3$

5. $2y = \frac{1}{5}x$

Find the constant of proportionality. Then write an equation relating x and y.

6. y is directly proportional to x, and $y = 35$ when $x = 7$.

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Solve using proportional reasoning.

7. y is directly proportional to x, and $y = 216$ when $x = 2$.

   a) Find y when $x = 7$.

   b) Find x when $y = 540$.

8. r is inversely proportional to s, and $s = 30$ when $r = 10$.

   a) Write an equation relating r and s.

   b) Find s when $r = 150$.

Problem Solving

(Question 9: 2 points,
Questions 10 to 12: 3 × 3 points = 9 points,
Question 13: 4 points)

Use a proportion to solve each question. Show your work.

9. The circumference, C, of a circle is directly proportional to the diameter, d, of a circle. They are related by the formula $C = \pi d$.

   a) Find the constant of proportionality in the formula.

   b) What is the diameter of a circle with circumference 105 centimeters? Round your answer to the nearest tenth. Use 3.14 as an approximation for π.

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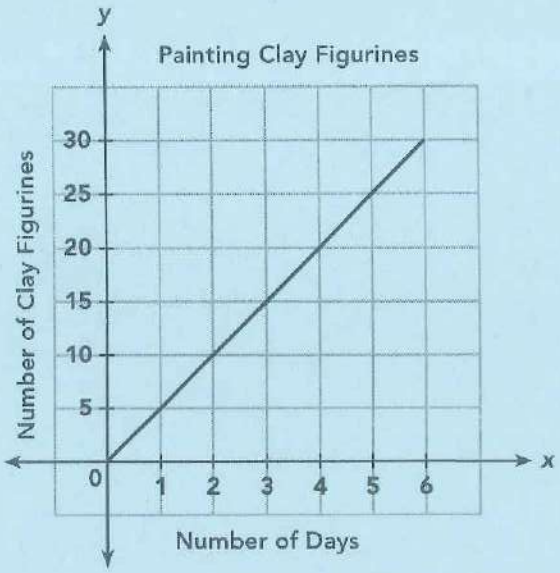
10. The volume of paint used, V liters, is directly proportional to the area, A square feet, that the paint can cover. 5 liters of paint can cover a wall with an area of 75 square feet.

a) Find the constant of proportionality.

b) Write an equation relating V and A.

c) How much paint would be needed to cover an area of 180 square feet?

11. Jane paints clay figurines to sell at a crafts fair. The graph shows that the number of figurines she paints, y, is directly proportional to the number of days she paints, x.



a) Find the constant of proportionality.

b) What does the constant of proportionality represent in this situation?

c) How long will it take Jane to paint 30 figurines?

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12. The table shows the daily houseboat rental rate, in P dollars, for x number of people.

Number of People (x)	1	2	3
Rental Rate (P dollars per person)	240	120	80

a) Describe the relationship between the number of people and the daily houseboat rental rate.

b) Write an equation relating x and P.

c) What is the rental rate, in dollars per person, if 6 people plan to rent the houseboat?

13. The time taken to cycle a particular distance varies inversely with the speed of the bicycle. Tim takes 3 hours to reach his destination traveling at a constant speed of 12 miles per hour.

a) Find the constant of proportionality.

b) What does the constant of proportionality represent in the context of the problem?

c) Write an equation relating speed and time.

d) How long would it take Tim to reach his destination if he travels at a constant speed of 15 miles per hour?