ALBERT

Name _____ Date _____

Graphing Proportional Relationships Worksheet

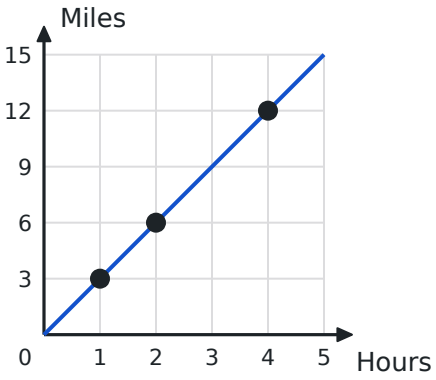
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> Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

Practice

Builds the skill step by step.

1. The graph shows the distance a hiker walks at a constant speed. What is the unit rate?



2. The table shows the cost of cheese at a deli. What is the unit rate in dollars per pound?

Pounds	Cost ($)
2	7
4	14
6	21

3. The equation y = 4.5x gives the cost y, in dollars, of x pounds of grapes. What is the unit rate?

4. Which equation shows a proportional relationship?

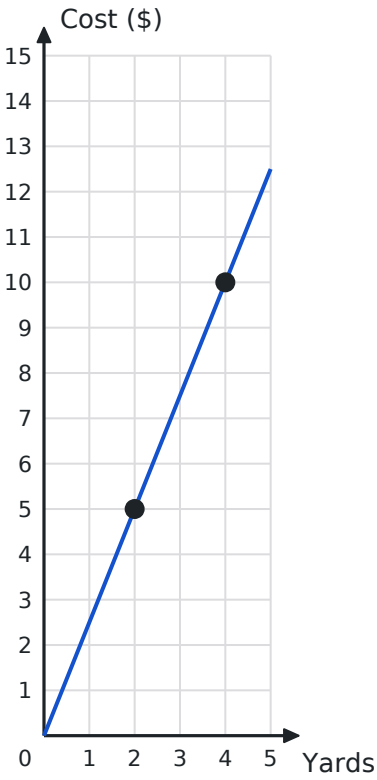
   A. y = 6

   B. y = x + 6

   C. y = 6x + 1

   D. y = 6x

5. The graph shows the cost of fabric. What is the cost per yard?



6. A car travels 150 miles in 3 hours at a constant speed. Write an equation for the distance d, in miles, after t hours.

7. On the graph of y = 7x, what is the y-coordinate of the point where x = 1?

8. On the graph of a proportional relationship, the point (1, r) shows...

   A. the starting amount

   B. the unit rate

   C. where the line crosses the x-axis

   D. nothing special

9. The graph of a proportional relationship passes through (5, 20). What is its slope?

10. Ana earns $12 per hour. Write an equation for her pay p, in dollars, after h hours.

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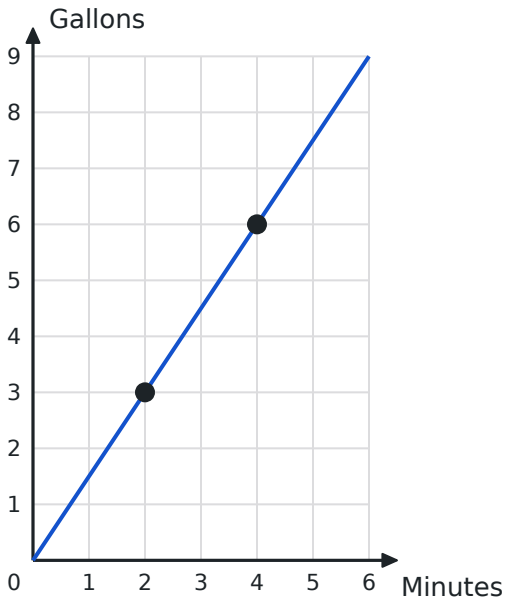
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On Level

Grade-level practice.

1. Car A travels d = 55t miles in t hours. Car B travels 120 miles in 2 hours and 180 miles in 3 hours. How much faster is the faster car, in miles per hour?

2. The graph shows water filling a tank. How many gallons per minute flow in?



3. Runner A runs 400 meters in 80 seconds at a steady pace. Runner B runs d = 5.5t meters in t seconds. Which runner is faster?

4. Which proportional relationship has the greatest unit rate?

   A. $y = 2.5x$

   B. A table where $x = 5$ and $y = 15$

   C. A line through (0, 0) and (2, 7)

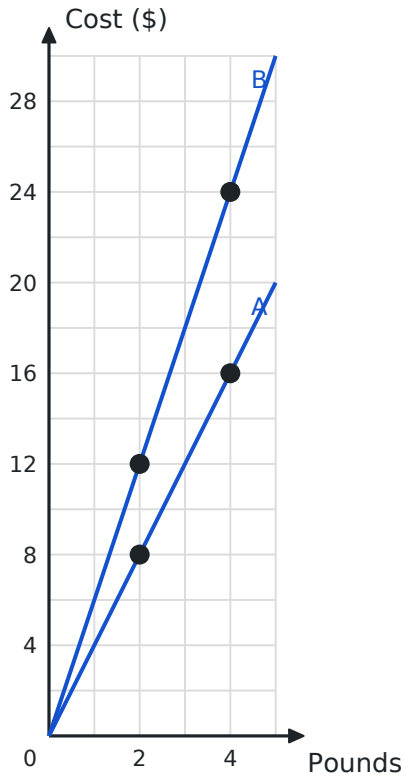
   D. 12 pages read in 4 minutes

5. A line through the origin passes through (6, 9). What is its slope?

6. The table shows the miles a car drives on gallons of gas. Write an equation for miles m driven on g gallons.

Gallons	Miles
3	84
5	140

7. The graph shows the cost of two kinds of nuts, A and B. How much more does 1 pound of B cost than 1 pound of A?



8. Printer X prints 45 pages in 3 minutes. Printer Y prints $p = 16m$ pages in m minutes. How many more pages per minute does the faster printer print?

9. The graph of a proportional relationship is a straight line that...

   A. passes through the origin

   B. crosses the y-axis at 1

   C. is horizontal

   D. curves upward

10. The graph of $y = kx$ passes through $(8, 2)$. Find k.

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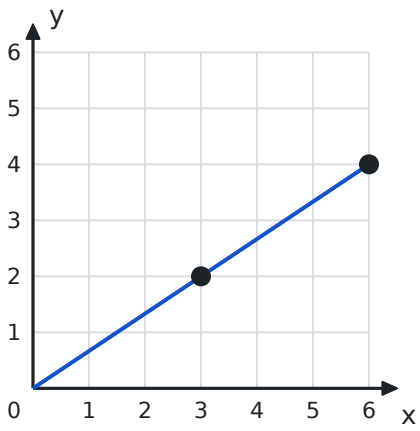
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Challenge

Multi-step and word problems that stretch it.

1. Store A sells 6 cans of beans for $4.50. At Store B, n cans cost c = 0.70n dollars. How much cheaper per can is the cheaper store?

2. The graph shows a proportional relationship. What is the unit rate? Write it as a fraction.



3. Train P's distance-time graph passes through (2, 130), with time in hours and distance in miles. Train Q travels 300 miles in 5 hours. Both leave the same station at the same time in the same direction. How far apart are they after 4 hours?

4. Leo says the line through (0, 0) and (4, 10) has a unit rate of 4 ÷ 10 = 0.4. What is the unit rate?

   A. 4

   B. 0.4

   C. 2.5

   D. 10

5. Recipe 1 uses y = 2.25x cups of flour for x batches. Recipe 2 uses 9 cups of flour for 4 batches. Which recipe uses more flour per batch?

6. In a proportional relationship, y = 18 when x = 4. Find y when x = 10.

7. Job 1's earnings graph passes through (6, 87), with hours on the x-axis and dollars on the y-axis. Job 2 pays $15 per hour. How much more does Job 2 pay for a 20-hour week?

8. Which is NOT a proportional relationship?

   A. A table with the points (1, 4), (2, 8) and (3, 13)

   B. y = 4x

   C. A line through (0, 0) and (2, 8)

   D. The total cost of items at $4 each

9. The point (a, 21) is on the graph of y = 3.5x. Find a.

10. A cyclist's distance-time graph passes through (0.5, 7), with time in hours and distance in miles. A walker travels d = 3.5t miles in t hours. How many times as fast as the walker is the cyclist?