

Grade 8 · Proportional Relationships and Slope

· Quiz

Common Core 8.EE.B.5, 8.EE.B.6 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

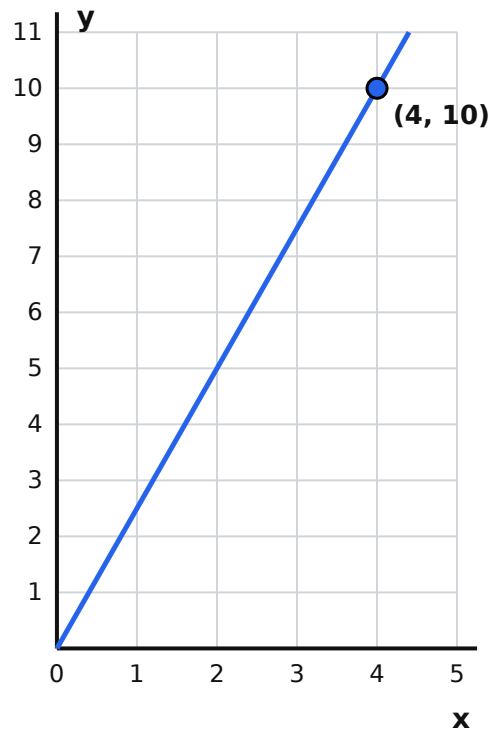
Answer these ten multiple-choice questions on proportional relationships and slope. Several questions use a graph. Choose the single best answer for each, then read the explanation to learn from any mistakes.

Grade 8 Common Core: 8.EE.B.5 · 8.EE.B.6

Questions

Question 1

What is the slope of the line shown?



A line through the origin.

- A. $\frac{1}{4}$
- B. $\frac{1}{10}$
- C. 6
- D. $\frac{7}{2}$

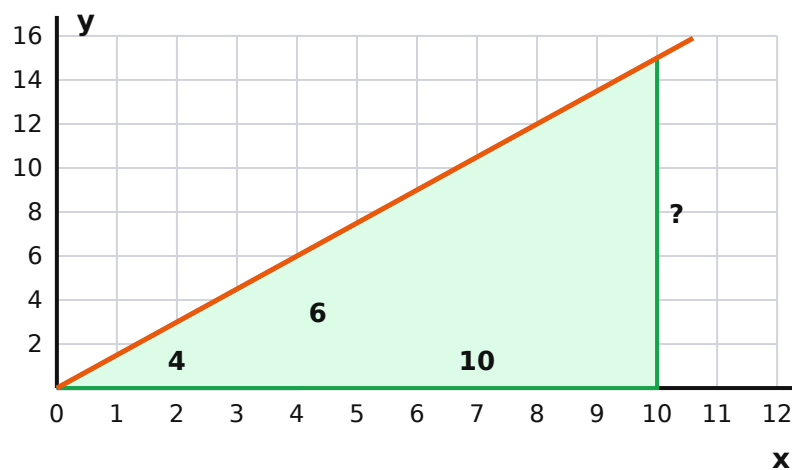
Question 2

Which equation represents a proportional relationship?

- A. $y = 5x$
- B. $y = 5x + 2$
- C. $y = x + 5$
- D. $y = -5x + 2$

Question 3

Both triangles lie under the same line through the origin. What is the missing rise?



Both triangles lie under the same line.

- A. 15
- B. 12
- C. 16
- D. 20

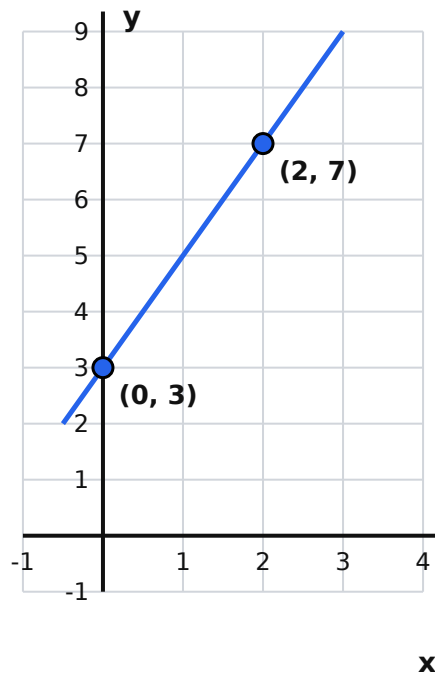
Question 4

Car A follows $y = 45x$. Car B travels 100 miles in 2 hours and 200 miles in 4 hours. Which statement is true?

- A. Car A is faster by 5 mph
- B. Car B is faster by 10 mph
- C. They go the same speed
- D. Car B is faster by 5 mph

Question 5

Which equation describes the line shown?



A line with a positive y-intercept.

- A. $y = 3x + 2$
- B. $y = 2x - 3$
- C. $y = 7x$
- D. $y = 2x + 3$

Question 6

What is the slope of the line through (1,2) and (5,14)?

- A. $\frac{1}{3}$
- B. 12
- C. 3
- D. 4

Question 7

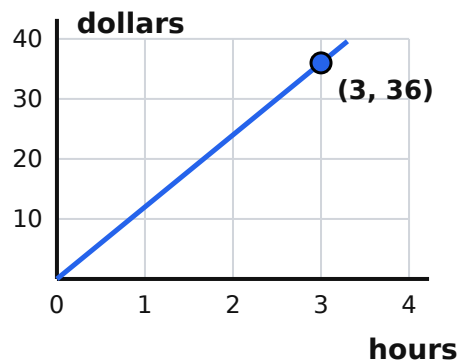
Which point lies on the graph of $y = \frac{3}{4}x$?

- A. (8,6)
- B. (6,8)
- C. (4,7)

D. (3,4)

Question 8

The graph shows the money Jamal earns. Which statement is true?



- A. He earns \$3 per hour
- B. He earns \$12 per hour
- C. He earns \$36 per hour
- D. He earns \$108 per hour

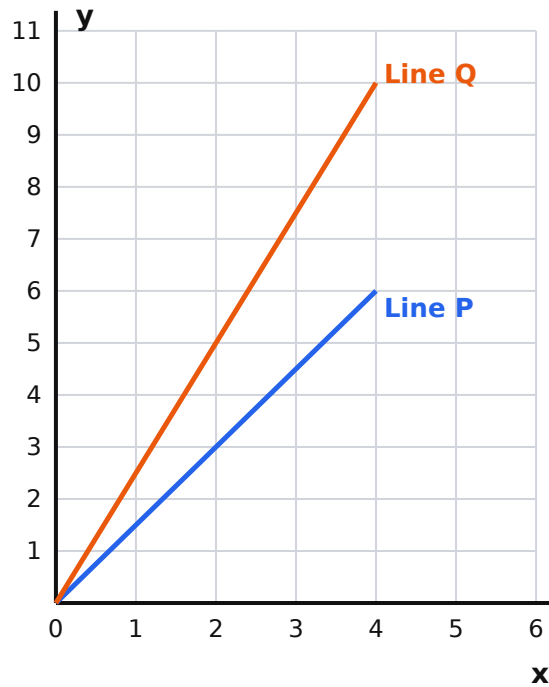
Question 9

What is the y -intercept of the line $y = -2x + 9$?

- A. -2
- B. 9
- C. 2
- D. -9

Question 10

Which statement about the two lines is true?



Two proportional relationships.

- A. P has slope $\frac{3}{2}$, greater than $\frac{5}{2}$
- B. Q has slope $\frac{5}{2}$, less than $\frac{3}{2}$
- C. Q has slope $\frac{5}{2}$, greater than $\frac{3}{2}$
- D. Both lines have slope $\frac{3}{2}$

Answer key

1. **B** - Rise over run from the origin is $\frac{10}{4} = \frac{5}{2}$. The common mistake is flipping it to run over rise.
2. **A** - Only $y = 5x$ has the form $y = mx$, so its line passes through the origin. The others have a nonzero y -intercept.
3. **A** - The slope is $\frac{6}{4} = \frac{3}{2}$, so the rise for run 10 is $\frac{3}{2} \times 10 = 15$. Adding 6 to both sides (getting 12) is the typical mistake.
4. **D** - Car B's rate is $\frac{100}{2} = 50$ mph and Car A's is 45 mph, so Car B is faster by 5 mph.
5. **D** - The line crosses the y -axis at 3 and rises $\frac{7-3}{2} = 2$ per step, so $y = 2x + 3$. Swapping slope and intercept is the usual error.
6. **C** - Slope $= \frac{14-2}{5-1} = \frac{12}{4} = 3$. Using only the rise (12) ignores the run.
7. **A** - For $x = 8$, $y = \frac{3}{4}(8) = 6$. Reversing the coordinates is a common slip.
8. **B** - The unit rate is $\frac{36}{3} = 12$ dollars per hour. The number 36 is the total for 3 hours, not the rate.
9. **B** - In $y = mx + b$, the y -intercept is $b = 9$. The number -2 is the slope.
10. **C** - Line P: $\frac{6}{4} = \frac{3}{2}$. Line Q: $\frac{10}{4} = \frac{5}{2}$. The steeper line has the greater slope.

Remember:

- Standards 8.EE.B.5 and 8.EE.B.6: graph proportional relationships, compare unit rates, and explain slope with similar triangles.
- A proportional relationship is $y = mx$; the slope m is the unit rate.
- Slope is rise over run, $\frac{y_2 - y_1}{x_2 - x_1}$, and is the same between any two points on a line.
- The equation $y = mx + b$ has slope m and y -intercept b .
- To compare two relationships, compare their unit rates.