

Grade 7 - Proportional Relationships and $y = kx$ - Quiz

Common Core 7.RP.A.2 · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Answer all 10 multiple-choice questions on proportional relationships, including tables, graphs, the constant of proportionality, and equations of the form $y = kx$. Pick the single best answer, then read the explanation to see why it is right and which common mistake each wrong choice shows. A score of 8 or more means you are ready for the test.

Grade 7 · Common Core State Standards: **7.RP.A.2**

Questions

Question 1

x	2	4	6
y	6	12	18

Which table shows a proportional relationship?

- A. x : 2, 4, 6 and y : 6, 12, 18
- B. x : 1, 2, 3 and y : 4, 6, 8
- C. x : 1, 2, 3 and y : 3, 5, 7
- D. x : 2, 4, 6 and y : 5, 9, 13

Question 2

A proportional relationship has $y=18$ when $x=4$. What is k ?

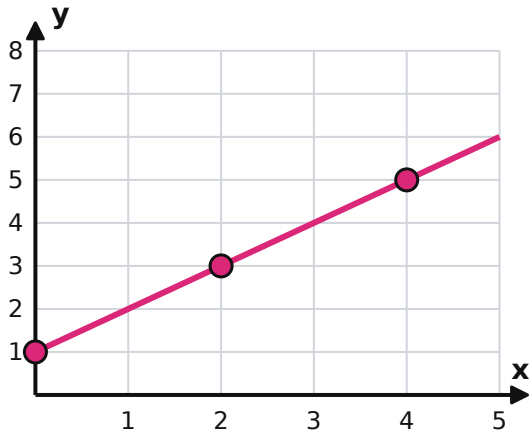
- A. 4.5
- B. 14
- C. 22
- D. 72

Question 3

A taxi charges \$2.50 per mile. Which equation shows the cost y for x miles?

- A. $y = x + 2.5$
- B. $y = 2.5x$
- C. $y = x/2.5$
- D. $y = 2.5/x$

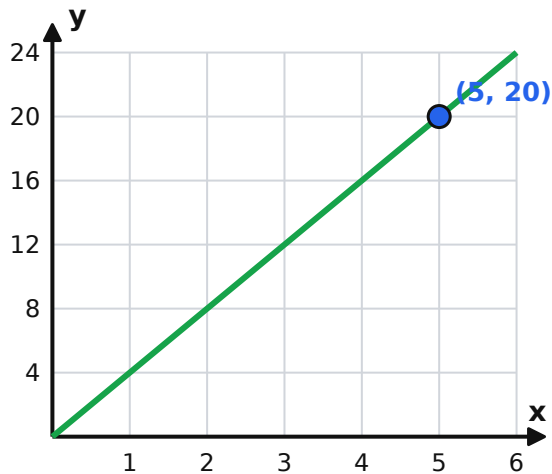
Question 4



What must be true of the graph of a proportional relationship?

- A. It is a straight line through the origin
- B. It is any straight line
- C. It is a curve through the origin
- D. It is a line that crosses the y-axis at 1

Question 5



A proportional graph contains the point (5,20). Which point is also on the graph?

- A. (1,15)
- B. (1,4)
- C. (1,25)
- D. (1,5)

Question 6

In $y = 7x$, what does 7 represent?

- A. The y-intercept

- B. The number of x-values
- C. The constant of proportionality
- D. The sum of x and y

Question 7

If $y = 0.6x$, what is y when $x = 25$?

- A. 24.4
- B. 41.67
- C. 25.6
- D. 15

Question 8

Which statement is true about a car that travels 55 miles in 1 hour and 120 miles in 2 hours?

- A. The distance is proportional to time with $k = 55$
- B. The distance is proportional to time with $k = 60$
- C. The distance is proportional to time with $k = 65$
- D. The distance is not proportional to time

Question 9

A recipe uses $\frac{3}{4}$ cup of rice for 2 servings. If the amount of rice is proportional to servings, how much rice is needed for 6 servings?

- A. $1\frac{1}{2}$ cups
- B. 3 cups
- C. $2\frac{1}{4}$ cups
- D. $6\frac{3}{4}$ cups

Question 10



The point (0, 0) on a proportional graph for dollars earned and hours worked means:

- A. 1 hour earns \$0

- B. 0 hours earns \$0
- C. \$0 earns 1 hour
- D. the unit rate is 0

Answers

1. **A** - Only the first has equal ratios (all 3). The others have changing ratios because they add a fixed amount instead of multiplying.
2. **A** - $k = y \div x = 18 \div 4 = 4.5$. Subtracting or multiplying does not give the ratio.
3. **B** - A constant cost per mile means y is x times 2.5. Dividing by 2.5 would give miles per dollar.
4. **A** - Both conditions are needed. A straight line that misses the origin, such as $y = x + 1$, is not proportional.
5. **B** - $k = 20 \div 5 = 4$, so $(1, 4)$ is on the graph. Subtracting 5 from both coordinates is a common error.
6. **C** - In $y = kx$, k is the multiplier, the unit rate. The graph passes through the origin, so there is no y -intercept other than 0.
7. **D** - Multiply: $0.6 \times 25 = 15$. Dividing 25 by 0.6 solves for x from y .
8. **D** - $55 \div 1 = 55$ but $120 \div 2 = 60$. The ratios differ, so it is not proportional.
9. **C** - $k = \frac{3}{4} \div 2 = \frac{3}{8}$, and $\frac{3}{8} \times 6 = \frac{9}{4} = 2\frac{1}{4}$. Adding 4 servings to the rice is an additive mistake.
10. **B** - The origin pairs zero hours with zero dollars. The unit rate is shown by the point $(1, k)$.

Remember

- Proportional means y/x is the same number k for every pair.
- The equation of a proportional relationship is $y = kx$.
- The graph is a straight line through the origin $(0, 0)$.
- The point $(1, k)$ on the graph gives the unit rate.
- A line that misses the origin, or a table with changing ratios, is not proportional.