

Grade 7 · Equations of Proportional Relationships · Quiz

Common Core 7.RP.A.2c · mathovore.fr

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

Ten multiple-choice questions on equations of proportional relationships. Each question has exactly one correct answer. Read tables and graphs carefully, find the constant of proportionality, and use $y = kx$ before choosing. The explanation after each question shows the typical mistake.

Grade 7 Common Core: 7.RP.A.2c

Questions

Question 1

Which equation matches the table?

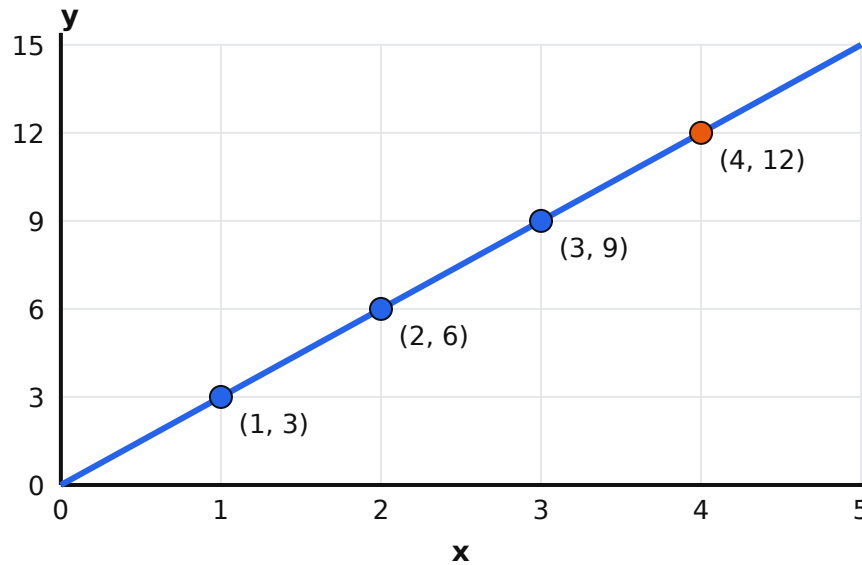
x	3	5	8
y	12	20	32

Table of values for x and y.

- A. $y = 4x$
- B. $y = \frac{x}{4}$
- C. $y = x + 9$
- D. $y = 12x$

Question 2

Which equation is the graph of this line?



A line through the origin and the points (1, 3), (2, 6), (3, 9) and (4, 12).

- A. $y = \frac{x}{3}$
- B. $y = x + 2$
- C. $y = 3x$
- D. $y = 12x$

Question 3

Tickets to the school play cost .50 each. Which equation gives the total cost c of n tickets?

- A. $n = 9.5c$
- B. $c = n + 9.5$
- C. $c = \frac{n}{9.5}$
- D. $c = 9.5n$

Question 4

The equation $y = 2.5x$ describes a proportional relationship. What is y when $x = 12$?

- A. 14.5
- B. 30
- C. 4.8
- D. 300

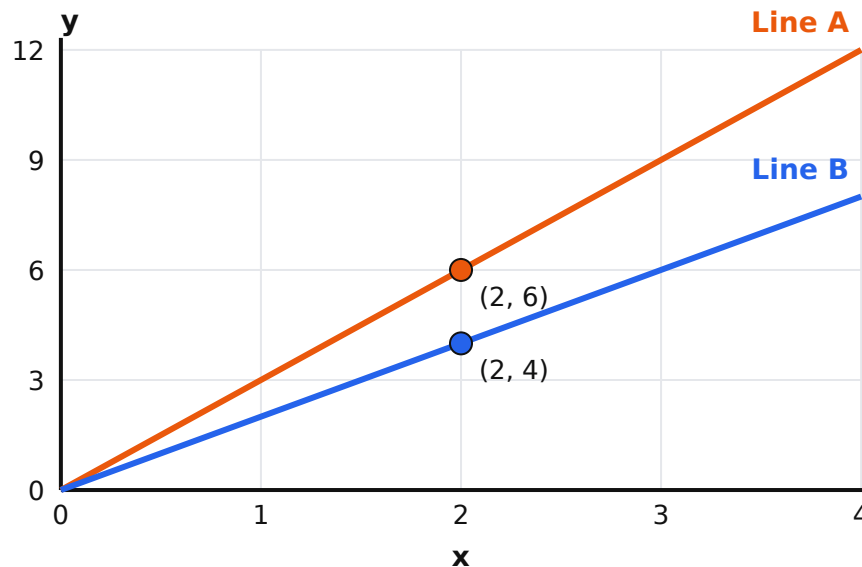
Question 5

Which equation does *not* represent a proportional relationship?

- A. $y = 3x + 2$
- B. $y = 3x$
- C. $y = \frac{x}{3}$
- D. $y = 0.5x$

Question 6

Line A and Line B are shown. Which statement is true?



Line A passes through (2, 6) and Line B passes through (2, 4).

- A. Line B has the greater constant, 3 compared with 2.
- B. Line A has the greater constant, 3 compared with 2.
- C. Line A has the greater constant, 6 compared with 4.
- D. The two lines have the same constant, 2.

Question 7

A car travels $d = 28g$ miles on g gallons of gas. How far can it go on 7.5 gallons?

- A. 35.5 miles
- B. 0.27 mile
- C. 210 miles
- D. 21 miles

Question 8

In the equation $t = pn$, where t is the total cost of n items, what does p represent?

- A. The total cost of all the items
- B. The number of items bought
- C. The cost when no items are bought
- D. The price of one item, which is the constant of proportionality

Question 9

Pizza slices at a school fair cost $c = 1.75s$ dollars for s slices. Jamal paid .00. How many slices did he buy?

- A. 24.5 slices
- B. 12.25 slices
- C. 0.125 slice
- D. 8 slices

Question 10

Diego's pay is $y = 9x$. Aisha's pay is in the table. Who earns more per hour?

Hours x	4	6	10
Pay y (dollars)	38	57	95

Aisha's pay for 4, 6 and 10 hours.

- A. Diego, by .50 per hour
- B. Aisha, by .00 per hour
- C. Aisha, by .50 per hour
- D. They earn the same amount per hour

Answer key

1. **A** - Each ratio $\frac{y}{x}$ is 4, so $k=4$. The equation $y=x+9$ fits only the first pair, and $y=\frac{x}{4}$ swaps the roles of x and y .
2. **C** - The point $(1,3)$ shows $k=3$. Dividing x by 3 reverses the ratio, and $y=12x$ uses a y -value as the constant.
3. **D** - The cost is the price per ticket times the number of tickets. Adding 9.5 would not scale with the number of tickets.
4. **B** - Multiply: $2.5 \times 12 = 30$. Adding gives 14.5, and dividing 12 by 2.5 gives 4.8.
5. **A** - A proportional equation has the form $y=kx$. The added 2 in $y=3x+2$ means that $x=0$ gives $y=2$, so the graph misses the origin.
6. **B** - Line A: $k=\frac{6}{2}=3$. Line B: $k=\frac{4}{2}=2$. The steeper line has the larger constant. The values 6 and 4 are y -coordinates, not constants.
7. **C** - $28 \times 7.5 = 210$. Adding 28 and 7.5 gives 35.5, and 7.5 divided by 28 is about 0.27.
8. **D** - Because $\frac{t}{n}=p$, the letter p is the cost per item. The total cost is t .
9. **D** - Solve $14=1.75s$: $s=14 \div 1.75=8$. Multiplying instead of dividing gives 24.5.
10. **C** - Aisha: $\frac{38}{4}=9.5$, $\frac{57}{6}=9.5$, $\frac{95}{10}=9.5$. Diego earns 9 per hour, so Aisha earns 0.50 more.

Remember:

- Every proportional relationship has the form $y=kx$, and its graph is a straight line through the origin $(0,0)$.
- The constant $k=\frac{y}{x}$ is the same for every pair of values with $x \neq 0$.
- For total cost $t=pn$, the price per item p is the constant of proportionality.
- To find a missing value, substitute the known number into $y=kx$ and solve.
- Compare two proportional relationships by comparing their constants k , whatever form each is given in.