

Grade 7 · Equations of Proportional Relationships · Worksheet

Common Core 7.RP.A.2c · mathovore.fr

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

These 20 problems practice standard 7.RP.A.2c: writing the equation $y = kx$ of a proportional relationship from a table, a graph, a single pair of values, or a real situation. The early problems find the constant of proportionality, and the later ones use the equation to find missing values.

Problems 15 to 20 are word problems that compare two relationships or scale a recipe. Show every step, check the constant with a second pair of values when possible, and include units in each answer.

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

Problem 1: Constant from a table

Find the constant of proportionality for the table. Then write the equation that relates y to x .

x	3	6	9	12
y	12	24	36	48

Table of values for x and y .

Problem 2: Potato prices

The table shows the cost of potatoes at a farmers market. The cost is proportional to the weight.

Pounds	4	8	12	16
Cost	\$6	\$12	\$18	\$24

Cost of potatoes.

- Find the constant of proportionality.
- Write an equation for the cost c of p pounds.
- Find the cost of 10 pounds.

Problem 3: Equation from one pair

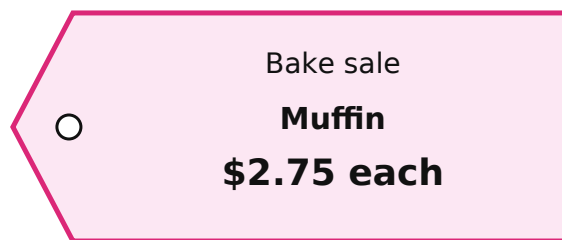
Write the equation of the proportional relationship that includes the pair $(x,y)=(5,35)$. Then find y when $x=9$.

Problem 4: Equation from a pair

A proportional relationship includes the pair $(x,y)=(8,28)$. Write the equation, then find **(a)** y when $x=12$ and **(b)** x when $y=49$.

Problem 5: Equation from a price

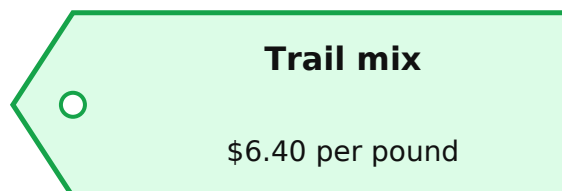
Muffins cost \$2.75 each at a bake sale. Write an equation for the total cost c , in dollars, of m muffins. Then find the cost of 8 muffins.



Price tag for one muffin.

Problem 6: Trail mix price

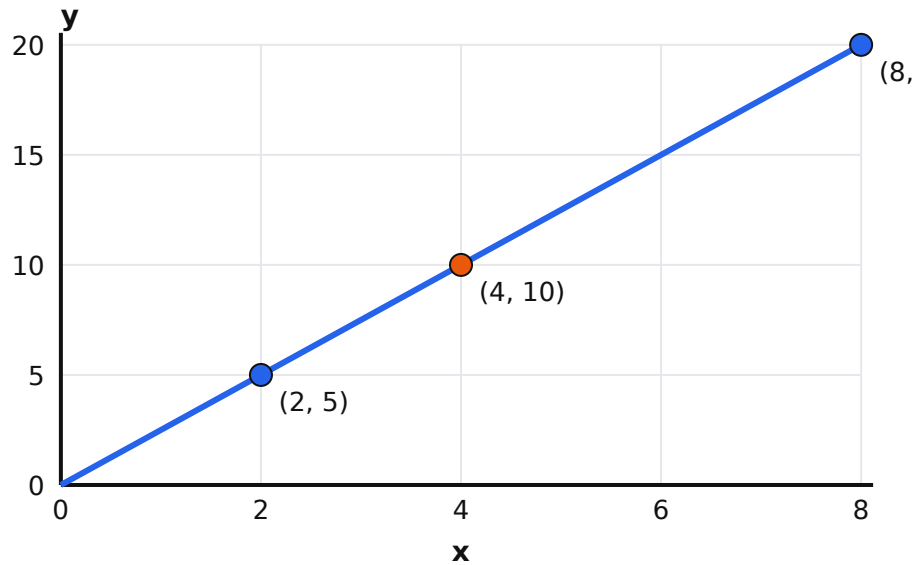
Trail mix costs \$6.40 per pound at a camping store. Write an equation for the cost c , in dollars, of p pounds. Then find **(a)** the cost of 2.5 pounds and **(b)** the number of pounds that can be bought for \$32.



Price tag for trail mix.

Problem 7: Equation from a graph

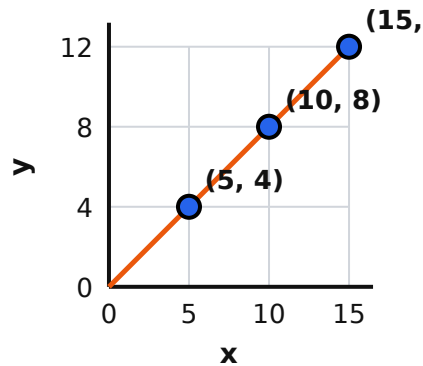
The graph shows a proportional relationship. Write its equation, then find y when $x=10$.



Line through the origin and the points (2, 5), (4, 10) and (8, 20).

Problem 8: Reading a line

The graph shows a proportional relationship. Write its equation, then find y when $x = 25$.



A line through the origin and the points (5, 4), (10, 8) and (15, 12).

Problem 9: Proportional or not?

Decide whether the table shows a proportional relationship. Explain your decision using the ratios $\frac{y}{x}$.

x	2	4	6
y	5	9	13

Table of values for x and y.

Problem 10: Which equations are proportional?

Decide which of the equations represent a proportional relationship. For each one that does, state the constant of proportionality.

- a. $y = 6x$
- b. $y = x + 6$
- c. $y = \frac{x}{5}$
- d. $y = 2x + 3$
- e. $y = 0.5x$

Problem 11: Using the equation

The cost of ground turkey is given by $c = 4.8p$, where p is the number of pounds and c is the cost in dollars.

- a. Find the cost of 3.5 pounds.
- b. Find how many pounds can be bought for \$33.60.

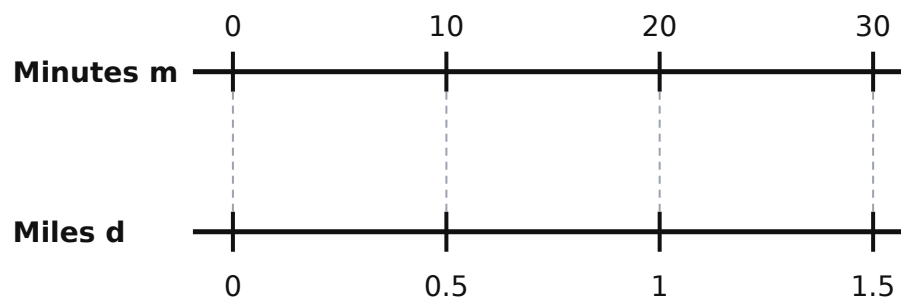
Problem 12: Hybrid car mileage

A hybrid car travels $d = 48g$ miles on g gallons of gas.

- a. Find how far the car travels on 6.5 gallons.
- b. Find how many gallons the car needs to travel 624 miles.

Problem 13: Double number line

Sofia walks at a steady pace. The double number line shows her time and distance.

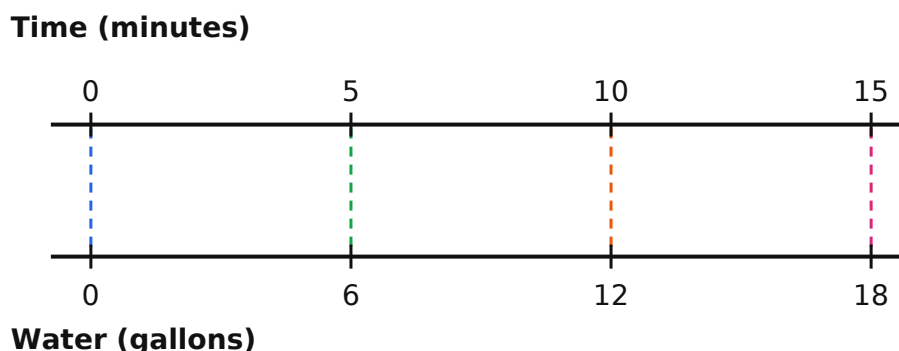


Sofia walks 0.5 mile every 10 minutes.

- a. Write an equation for the distance d in miles after m minutes.
- b. Find how far she walks in 45 minutes.

Problem 14: Water flow number line

A garden hose fills a tank at a steady rate. The double number line shows the time and the amount of water.



The hose delivers 6 gallons every 5 minutes.

- Write an equation for the gallons g after m minutes.
- Find the amount of water delivered in 22 minutes.
- Find how long it takes to deliver 45 gallons.

Problem 15: Road trip

Ethan's family drives at a constant speed. After 3 hours they have traveled 195 miles.

- Find the constant of proportionality and write an equation for the distance d after h hours.
- How far do they travel in 5.5 hours?
- How long does it take to travel 520 miles?

Problem 16: Smoothie recipe

A smoothie recipe uses 3 cups of fruit for every 2 cups of yogurt, and the amounts stay proportional when the recipe is scaled.

- Write an equation for the cups of fruit f needed for y cups of yogurt.
- Find the fruit needed for 7 cups of yogurt.
- Priya has 12 cups of fruit. Find how much yogurt she needs to use all of it.

Problem 17: Comparing two jobs

Maya's pay is given by $y = 11.5x$, where x is hours worked and y is dollars. Jamal's pay is shown in the table.

Hours x	3	6	8
Pay y (dollars)	33	66	88

Jamal's pay for 3, 6 and 8 hours.

- Write an equation for Jamal's pay.
- Who earns more per hour, and by how much?
- How much more does that person earn in a 40-hour week?

Problem 18: Two bike riders

Rider A's distance is given by $d = 12t$, where t is the time in hours and d is the distance in miles. Rider B's distances are shown in the table.

Hours	2	5	6
Miles	27	67.5	81

Rider B's distances.

- Write an equation for Rider B.
- Decide which rider is faster and by how many miles per hour.
- Find how much farther the faster rider goes in 4 hours.

Problem 19: Peaches at two stands

At a farmers market, Stand A sells 3 pounds of peaches for \$7.50. At Stand B, the cost c in dollars of p pounds is $c = 2.4p$.

- Write an equation for the cost at Stand A.
- Priya needs 12 pounds. Find the cost at each stand.
- How much does Priya save by choosing the cheaper stand?

Problem 20: Copy shop prices

At Shop X, 150 copies cost \$12.00, and the cost is proportional to the number of copies. At Shop Y, the cost c in dollars of n copies is $c = 0.075n$.

- Write an equation for the cost at Shop X.
- Decide which shop charges less per copy.
- Find how much a school club saves on 1,200 copies by choosing the cheaper shop.