

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

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

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

These 20 problems practice proportional relationships, including tables, graphs, the constant of proportionality, and equations of the form $y = kx$ (Common Core 7.RP.A.2). They start with the basic skill, move to different kinds of numbers and multistep work, and end with six word problems set in everyday situations such as shopping, sports, and travel.

Show every step of your work, and use the answer key only after you have tried each problem.

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

Exercise 1 - Is it proportional?

Decide whether the table shows a proportional relationship. If so, state the constant of proportionality.

x	1	2	3	4
y	3	6	9	12

Values of x and y.

Exercise 2 - Not proportional

Decide whether the table shows a proportional relationship. Explain.

x	2	4	6
y	5	9	13

Values of x and y.

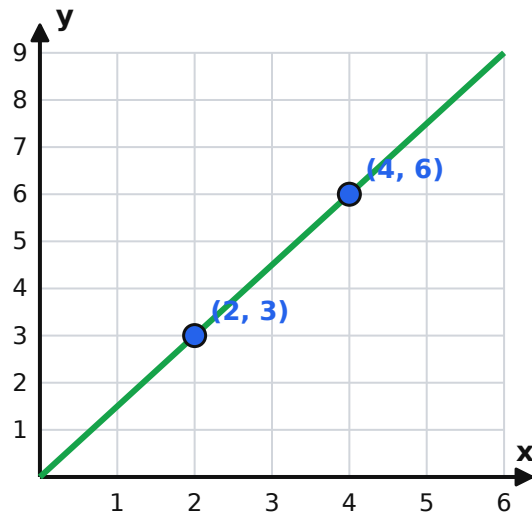
Exercise 3 - Find k

In a proportional relationship, $y = 10$ when $x = 4$. Find the constant of proportionality k.

Exercise 4 - Write an equation

Apples cost \$3.75 per pound. Let x be the number of pounds and y the cost in dollars. Write an equation that relates x and y .

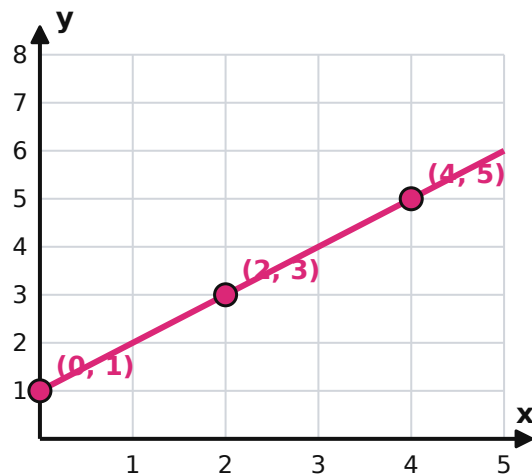
Exercise 5 - Read a graph



A line graph.

Decide whether the graph shows a proportional relationship. If it does, find k .

Exercise 6 - Line that misses the origin



A line graph.

Decide whether the graph shows a proportional relationship. Explain.

Exercise 7 - Fractions in a table

Find the constant of proportionality.

x	1/2	1	2
y	3/4	1 1/2	3

Values of x and y.

Exercise 8 - Complete the table

The constant of proportionality is 4.5. Complete the table.

x	2	5	8
y			

Values to complete.

Exercise 9 - Use the equation

The equation $y = 0.8x$ is proportional. Find y when $x = 15$, and find x when $y = 20$.

Exercise 10 - Unit rate on a graph

A proportional graph passes through the point (3, 12). Find the y-coordinate of the point on the graph where $x = 1$, and explain what it means.

Exercise 11 - Meaning of a point

The graph of a proportional relationship between hours worked (x) and dollars earned (y) contains the point (5, 65). Write the equation and explain what the point (1, 13) means.

Exercise 12 - Which plan is proportional?

Plan A costs \$12 per visit: $y = 12x$. Plan B costs a \$30 joining fee plus \$5 per visit: $y = 5x + 30$. Which plan is proportional? Explain using 0 visits.

Exercise 13 - Write the equation from a table

The table shows the ounces of juice (x) and the cost in dollars (y). Write the equation.

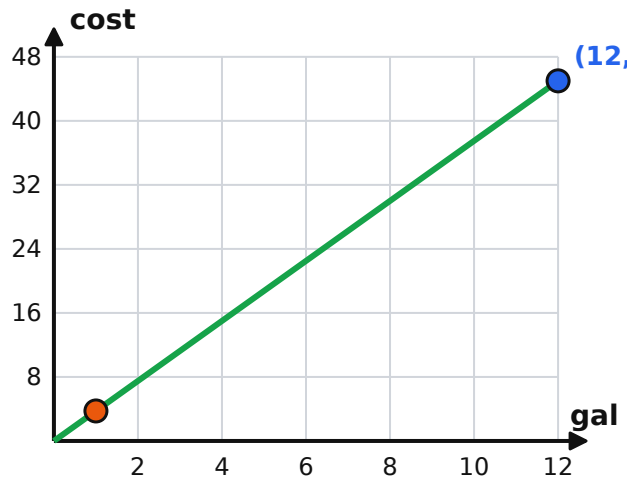
Ounces x	8	12	20
Cost y	1.40	2.10	3.50

Juice prices.

Exercise 14 - Find a missing point

The graph of a proportional relationship passes through (6, 15). Find the value of a if the point (10, a) is also on the graph.

Exercise 15 - Gas station



Gas cost graph.

At a gas station, 12 gallons cost \$45.00. Assume the cost is proportional to the number of gallons g . Write an equation for the cost c , then find the cost of 9 gallons.

Exercise 16 - Pancake batches

Mei's recipe uses 3 cups of flour for every 2 batches of pancakes. Write an equation relating cups y to batches x , and find the cups needed for 7 batches.

Exercise 17 - Two bike riders

Rider A bikes at a steady 10 miles per hour. Rider B's distances are in the table. Decide whether Rider B's distance is proportional to time, and tell who is farther along after 2 hours.

Hours x	1/2	1	2
Miles y	5	10.5	21

Rider B's trip.

Exercise 18 - Concert tickets

Eight tickets cost \$52 at the school fair. Assume the cost is proportional to the number of tickets. Write the equation, then find how many tickets can be bought for \$97.50.

Exercise 19 - Plant growth

Sofia measured a bean plant: 4 inches on day 0, 6 inches on day 2, 8 inches on day 4. Decide whether the height is proportional to the day. Explain.

Exercise 20 - Two printers

Printer A prints 45 pages in 1.5 minutes. Printer B prints 35 pages every minute. Write an equation for each (pages p after t minutes) and find how many more pages Printer B prints in 4 minutes.