

Proportional Relationships and Slope: math practice, Grade 8 – download the PDF

21 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Typing speed



Maya types 135 words in 3 minutes at a steady pace.

- Find her unit rate in words per minute.
- How many words can she type in 8 minutes?

2 Smoothie prices



Four cups of smoothie cost \$10.00 at the juice bar, and the price is proportional to the number of cups.

Find the price per cup, then complete the table.

Cups x	1	2	5	8
Cost y (\$)				

3 Proportional or not?



Tell whether each set of ordered pairs is proportional, and justify.

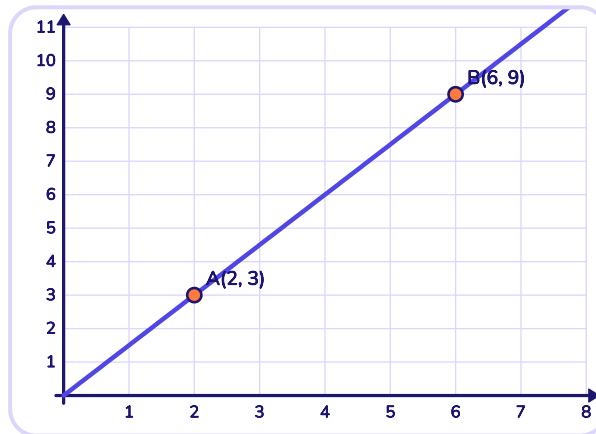
a. $(2, 6), (4, 12), (5, 15)$

b. $(1, 3), (2, 5), (3, 7)$

4 Reading a slope



The line below passes through $A(2, 3)$ and $B(6, 9)$. Find its slope using the rise and the run.



5 Two points



Find the slope of the line through $(1, 2)$ and $(4, 11)$.

6 Highway speed



A car drives 150 miles in 2.5 hours at a constant speed. Find the speed in miles per hour, then convert it to kilometers per hour ($1 \text{ mile} \approx 1.609 \text{ km}$).

7 Plotting $y = 2x$



Complete the table for $y = 2x$ with $x = 0, 1, 2, 3$, plot the points, and state the slope of the line.

8 A steep negative slope



Find the slope of the line through $(-3, 4)$ and $(5, -8)$, and say whether the line rises or falls from left to right.

9 Horizontal and vertical



Find the slope of the line through each pair of points, or explain why it does not exist.

- a. $(2, 5)$ and $(7, 5)$
- b. $(3, -1)$ and $(3, 6)$

10 Apple prices



Store A sells 5 pounds of apples for \$9.00. At Store B the cost y in dollars for x pounds is $y = 1.95x$.

- a. Which store has the lower price per pound?
- b. How much do you save by buying 12 pounds at the cheaper store?

11 A draining tank



A water tank holds 60 gallons at time 0. After 8 minutes it holds 36 gallons. Use the points $(0, 60)$ and $(8, 36)$.

- Find the slope and explain what it means.
- Is the relationship proportional? Why?
- If the pace stays the same, when will the tank be empty?

12 A missing coordinate



A proportional relationship has a graph through $(0, 0)$ and $(4, 10)$. The point $(6, k)$ is also on the line. Find the slope and the value of k .

13 Equation from a table



The table shows a proportional relationship. Find the constant of proportionality and write the equation.

x	2	5	9
y	7	17.5	31.5

14 Running pace



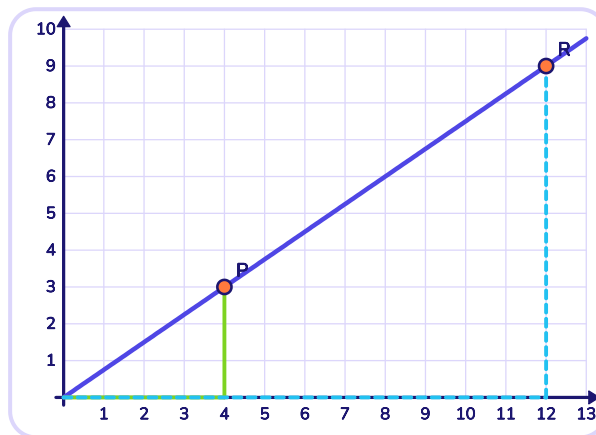
Jordan runs 6 kilometers in 40 minutes at a steady pace. Find the unit rate in kilometers per hour, then in miles per hour (1 mile $\approx$ 1.609 km, round to the nearest tenth).

15 Similar triangles on a line

★★★

Two right triangles are drawn under the same line through the origin: the small one has run 4 and rise 3; the large one has run 12 and rise 9.

- Show that both triangles give the same slope.
- A third triangle on this line has run 20. What is its rise?



16 Wheelchair ramp

★★★

A ramp rises 2.5 feet over a horizontal distance of 30 feet.

- Find the slope as a fraction in simplest form.
- A second ramp with the same slope must rise 1.5 feet. How long is its horizontal run?

17 Find the unknown

★★★

The line through $(2, k)$ and $(6, 13)$ has slope 2.5. Find k .

18 Two sprinklers



Sprinkler 1 delivers 8 gallons in 5 minutes. For Sprinkler 2, the gallons g after t minutes satisfy $g = 1.7t$. Both are proportional.

- Compare their slopes.
- How many gallons does each deliver in 20 minutes?

19 Collinear points



Points $A(-1, -2)$, $B(2, 4)$, $C(5, 10)$ and $D(8, 15)$ are given.

- Show that A , B and C lie on the same line.
- Does D lie on that line?

20 Find the error



A student finds the slope through $(1, 3)$ and $(5, 11)$ and writes $m = \frac{5 - 1}{11 - 3} = \frac{4}{8} = 0.5$. Explain the error and give the correct slope.

21 Two printers



Printer A prints 90 pages in 6 minutes. Printer B's graph is a line through $(0, 0)$ and $(4, 64)$, where the point means 64 pages in 4 minutes. Working together at these steady rates, how long do they need to print 465 pages?



Test yourself: quick challenge for Grade 8

Change level

Level : **Grade 8**

6 random questions, instant feedback.

 **Start the challenge**

 **Speed drill for Grade 8: how many in 60 seconds?**

 **Keep exploring with Zyro**

 **Practice solutions**

Proportional Relationships and Slope:
practice solutions, Grade 8

 **Math lessons**

Proportional Relationships and Slope:
math lesson, Grade 8

 Math quizzes

Proportional Relationships and Slope:
math quiz, Grade 8

 Practice solutions

Graphing Linear Equations: practice
solutions, Grade 8

 Practice solutions

Systems of Linear Equations: practice
solutions, Grade 8

 Math lessons

Graphing Linear Equations: math lesson,
Grade 8

Zyro vous emmène sur nos sites partenaires

Embarquez pour d'autres planètes du savoir et leurs applis.

Décollage