

Grade 8 - Slope and Similar Triangles - Answer Key

Common Core 8.EE.B.6 · maths-pdf.fr/en/

This answer key gives a full worked solution for each of the 21 problems on the slope and $y = mx + b$ worksheet (Common Core 8.EE.B.6). Compare each step with your own work, not only the final answer, and note any step where your method differed.

Grade 8 · Common Core State Standards: **8.EE.B.6**

Exercise 1 - Slope from two points

$$m = \frac{8-2}{3-1} = \frac{6}{2} = 3.$$

3

Exercise 2 - Negative slope

$$m = \frac{-1-5}{4-(-2)} = \frac{-6}{6} = -1.$$

-1

Exercise 3 - Slope and intercept

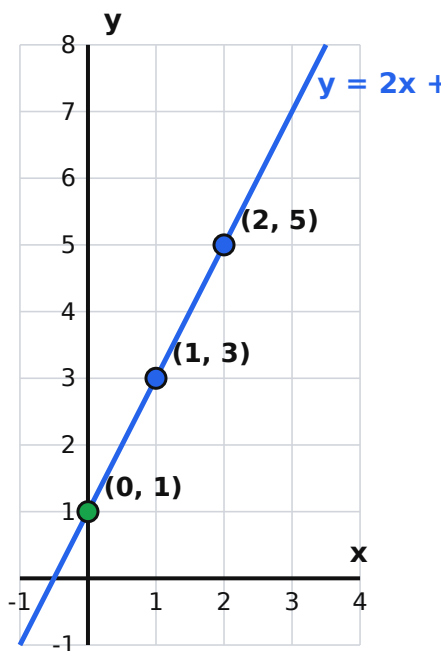
Compare with $y = mx + b$.

$$m = -3, b = 7$$

Exercise 4 - Graph it

x	0	1	2
y	1	3	5

Values for $y = 2x + 1$.



Plot the three points and draw the line.

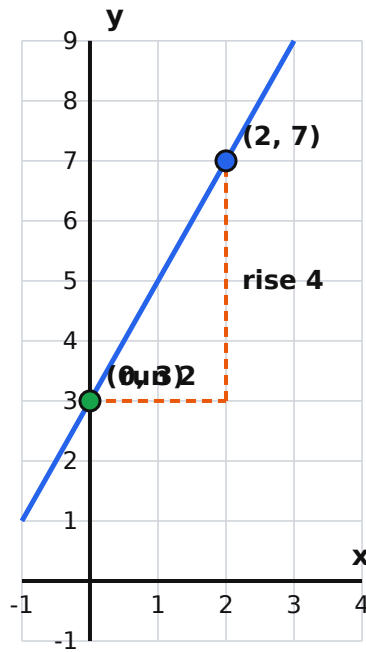
Line through (0, 1), (1, 3), (2, 5)

Exercise 5 - Write the equation

Substitute $m = 4$ and $b = -2$ into $y = mx + b$.

$$y = 4x - 2$$

Exercise 6 - Equation from a graph



Rise 4 over run 2.

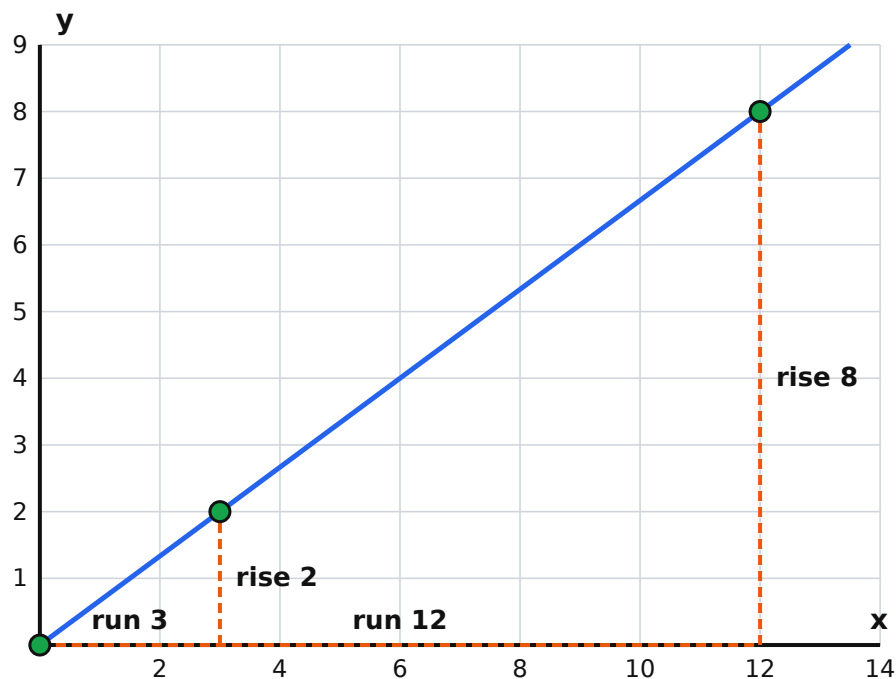
$m = \frac{4}{2} = 2$. The y-intercept is 3.

$$y = 2x + 3$$

Exercise 7 - Similar triangles

The triangles are similar, so $\frac{\text{rise}}{12} = \frac{2}{3}$.

$$\text{rise} = 12 \cdot \frac{2}{3} = 8.$$



Both triangles have slope $\frac{2}{3}$.

Rise = 8

Exercise 8 - Show equal slopes

A to B: $\frac{3}{2}$. B to C: $\frac{6-3}{4-2} = \frac{3}{2}$.

Both slopes equal $\frac{3}{2}$

Exercise 9 - Equation from two points

$m = \frac{5-(-1)}{3-0} = 2$. The y-intercept is -1 .

$$y = 2x - 1$$

Exercise 10 - Find b

$$m = \frac{10-4}{3-1} = 3.$$

Use $(1,4)$: $4 = 3 \cdot 1 + b$, so $b = 1$.

$$y = 3x + 1$$

Exercise 11 - Slope and a point

$$5 = \frac{1}{2} \cdot 4 + b, \text{ so } 5 = 2 + b \text{ and } b = 3.$$

$$y = \frac{1}{2}x + 3$$

Exercise 12 - Horizontal line

$$m = \frac{3-3}{5-(-2)} = 0. \text{ Every point has } y = 3.$$

$$m = 0, y = 3$$

Exercise 13 - Rewrite as $y = mx + b$

$$\text{Subtract } 2x \text{ from both sides: } y = -2x + 6.$$

$$m = -2, b = 6$$

Exercise 14 - Solve for y

$$\text{Divide every term by 3: } y = 2x - 3.$$

$$y = 2x - 3$$

Exercise 15 - Where it crosses the x-axis

$$\text{The x-axis has } y = 0 : 0 = 2x - 4, \text{ so } x = 2.$$

$$(2, 0)$$

Exercise 16 - Parallel lines

Both have slope 2, so they are parallel.

Intercepts: 1 and -3, a distance of $1 - (-3) = 4$.

Parallel; 4 units apart

Exercise 17 - Ramp

$$\text{Slope} = \frac{3}{12} = \frac{1}{4}.$$

$$\text{rise} = \frac{1}{4} \cdot 20 = 5.$$

Slope 1/4; rise 5 feet

Exercise 18 - Taxi fare

Slope 2 (dollars per mile), intercept 3: $y = 2x + 3$.

$$y = 2 \cdot 10 + 3 = 23.$$

$$y = 2x + 3; \text{\$23}$$

Exercise 19 - Plant growth

$$y = 2.5x + 40.$$

$$y = 2.5 \cdot 12 + 40 = 70.$$

$$y = 2.5x + 40; \text{\$70}$$

Exercise 20 - Compare lines

Line A: slope $\frac{4-1}{2-0} = \frac{3}{2}$, intercept 1.

Line B: slope 1, intercept 5.

A has the greater slope; B has the greater y-intercept

Exercise 21 - Explain

The two right triangles share the same angles, so they are similar and their sides are proportional. $\frac{3}{2}$ and $\frac{6}{4}$ are equal.

Both slopes are $\frac{3}{2}$