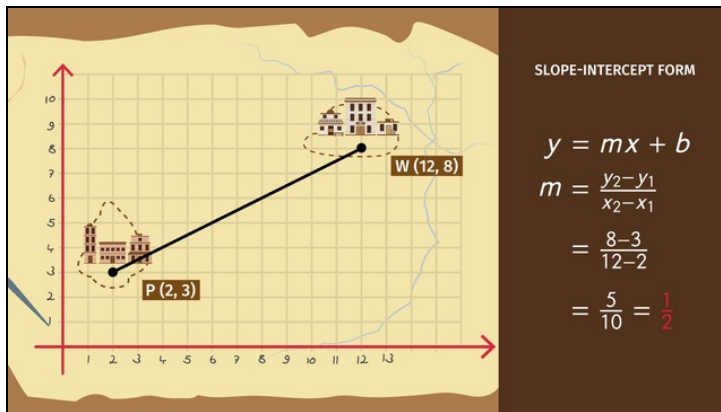




Printable Worksheets from [sofatutor.com](https://www.sofatutor.com)

Writing Linear Equations



- 1 Determine the linear equation in slope-intercept form.
 - 2 Explain how to set up an equation for a parallel line.
 - 3 Find the equation of the line that is perpendicular to $y = \frac{1}{2}x + 2$ and passes through $B(7, 5)$.
 - 4 Decide which equations are represented by the given graphs.
 - 5 Write the equations for the given graphs in different forms.
- + with lots of tips, answer keys, and detailed answer explanations for all of the problems.

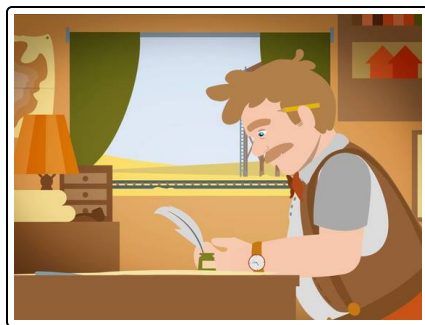


The complete package, including all problems, hints, answers, and detailed answer explanations is available for all [sofatutor.com](https://www.sofatutor.com) subscribers.



Determine the linear equation in slope-intercept form.

Fill in the blanks.



W.J. Palmer is planning a new rail road track to run between two cities, Palm Valley and Wildwood Crest.

The rail road track will be a straight line which is the shortest route possible.

Palm Valley is located at the point $P(2, 3)$, and Wildwood Crest at $W(12, 8)$.

2	1	$x_1 - x_2$	2	2	$y_2 - y_1$	$8 - 3$	2	1	3	$8 - 2$
$x_2 - x_1$	$12 - 2$	$12 - 3$	2							

1 First, we need to determine the slope of the equation by using the slope formula:

$$m = \text{.....}^1 \div \text{.....}^2$$

- y_1 and y_2 are the y-coordinates.
- x_1 and x_2 are the x-coordinates.

Plugging in the coordinates of $P(2, 3)$ and $W(12, 8)$, we get:

$$m = \text{.....}^3 \div \text{.....}^4$$

Simplified and reduced as much as possible, we get:

$$m = \text{.....}^5 \div \text{.....}^6$$



2 Using the slope, we can find the y-intercept.

We can use one of the given points, for example $P(2, 3)$, and plug the given values for x and y into the equation:

$$\dots\dots\dots_7 = m \times \dots\dots\dots_8 + b$$

Substituting $\frac{1}{2}$ for m , we get:

$$b = \dots\dots\dots_9$$

3 Finally, we can write the equation in slope-intercept form:

$$y = \dots\dots\dots_{10} \div \dots\dots\dots_{11} x + \dots\dots\dots_{12}$$



Hints for solving these problems

1
of 5

Determine the linear equation in slope-intercept form.

Hint #1

The slope-intercept form is: $y = mx + b$.

- m is the slope
 - b is the y-intercept
-

Hint #2

To calculate the y-intercept, you have to plug in one of the given points.

Hint #3

When calculating the slope, make sure to be consistent when ordering the points.



Answers and detailed answer explanations for these problems

1
of 5

Determine the linear equation in slope-intercept form.

Answer key: 1: $y_2 - y_1$ // 2: $x_2 - x_1$ // 3: $8 - 3$ // 4: $12 - 2$ // 5: 1 // 6: 2 // 7: 3 // 8: 2 // 9: 2 // 10: 1 // 11: 2 // 12: 2

A linear equation written in slope-intercept form is: $y = mx + b$.

m represents the slope, and b represents the y-intercept.

In order to identify the linear equation, we start with the slope, which is given as the change in y divided by the change in x:

- $m = \frac{y_2 - y_1}{x_2 - x_1}$

Let's plug in the given coordinates of the two points:

- $m = \frac{8-3}{12-2} = \frac{5}{10} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$

The equation is:

- $y = \frac{1}{2}x + b$

The y-intercept b is still unknown. To figure out the y-intercept, we plug the coordinates of either P or W into the equation. Here we use P . You can also use W , you'll get the same y-intercept value.

$$\begin{aligned} 3 &= \frac{1}{2} \times 2 + b \\ &= 1 + b \end{aligned}$$

Subtracting 1 leads to $b = 2$.

As a result we get the linear equation in slope-intercept form:

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

You can check this equation by substituting the coordinates of the other point into the equation:

- $8 = \frac{1}{2} \times 12 + 2 = 6 + 2 \checkmark$