

How Do We Write An Equation For A Line?

To write an equation for a line, determine its slope and y-intercept. Then, use the slope-intercept formula: _____.

To write an equation for a line with a given slope and passing through a given point we:

Method:

- 1) Use the slope-intercept form of an equation, $y = mx + b$, and substitute the given value of the slope for "m"
- 2) Use the x and y values of the given point for the x and y in the equation.
- 3) Solve for "b" (the y-intercept.)
- 4) In the equation $y = mx + b$, replace "m" with the given slope and "b" with the value you found in step 3.

Example:

Write the equation of the line through (2, 16) that has a slope of -5

Examples:

1) Write the equation of the line through (3, 5) that has a slope of 4

2) Write an equation of the line whose slope is 2, and that passes through the point (-3, 4).

To write an equation for a line passing through two given points we:

Method:

- 1) Use the slope formula to find the slope of the line passing through the given points
- 2) In $y = mx + b$, replace m by the slope
- 3) Select one of the given points that is on the line and replace the x and y with those coordinate values.
- 4) Solve the resulting equation to find the value of b , the y -intercept.
- 5) Now replace b with its correct value and check to make sure that the coordinates of the second point satisfy the equation.

Example:

Write an equation of the line that passes through the points $(3, 7)$ and $(5, 15)$.

Examples:

- 1) Write an equation of the line that passes through the points $(2, 5)$ and $(4, 11)$.

- 2) Write an equation of the line that passes through the points $(0, -2)$ and $(-3, -5)$