

FINDING THE EQUATIONS OF LINES

An equation of a line written in slope y-intercept form: _____

To find the equation of a line you need two things: 1) _____ and 2) _____

METHOD 1 (Given Slope and y-intercept)

Substitute the slope and y-intercept variables into the equation $y = mx + b$

Ex 1: Slope = -2 , y-intercept = 5

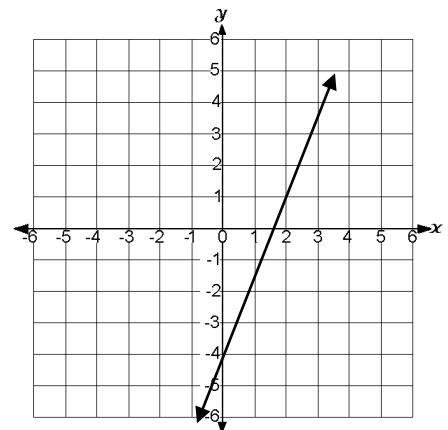
Ex 2: $m = \frac{4}{7}$, $b = -3$

METHOD 2 (Given a Graph)

Find the y-intercept. Find the closest coordinate point.

Calculate the slope using $m = \frac{\text{rise}}{\text{run}}$

Ex 3: Find the equation of the line shown in the graph.



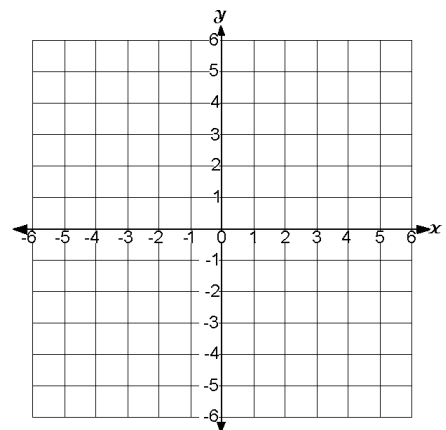
METHOD 3 (Given two points and using a Graph)

Plot the two coordinates on the graph.

Draw a line between the two points and across the y-axis (if it does not already cross). Note the y-intercept.

Calculate the slope between the two points using $m = \frac{\text{rise}}{\text{run}}$

Ex 4: Find the equation of the line passing through points $(3, 1)$ and $(6, 3)$



METHOD 4 (Given slope and one point, no graphing)

Calculate y-intercept using the slope and the point given.
Substitute all values into $y = mx + b$ and solve to get b.
Rewrite the equation using values for **m** and **b** only.

Ex 5: Slope = 4, passing through point (3,2)

Ex 6: Slope = -3, passing through point (1,4)

Ex 7: Find the equation of a line with a slope of $-\frac{1}{2}$ passing through the point (1,4).