

GOAL: $y = (m)x + (b)$

$m = \underline{\hspace{2cm}}$, $b = \underline{\hspace{2cm}}$

Examples: $y = -3x + 1$, $y = \frac{2}{3}x - 4$

A. When you have the slope and the y-intercept

- plug in slope = m and y-intercept = b into $y = mx + b$

1.) Find the equation of the line with slope of 5 and y-intercept of -2.

B. When you have the slope and a point

- plug in m

- name your point (x, y) and plug these values in for x and y

- solve for b

- plug m and b back into $y = mx + b$
(remember to leave x and y as variables!)

2.) Find the equation of the line with slope of -2 and going through $(-1, 3)$.

3.) Find the equation of the line with slope of $\frac{1}{3}$ and going through $(6, -2)$.

4.) Find the equation of the line with slope of $\frac{3}{4}$ and going through $(1, 5)$.

C. When you have a point and another line (parallel or perpendicular to your line)

- find m from the given line
- if the line is parallel, this is your m ; if the line is perpendicular, find its negative reciprocal
- plug m , x , y into $y = mx + b$
- solve for b
- plug m and b into $y = mx + b$ (leave x and y as variables!)

6.) Find the equation of the line going through $(1, 2)$ and parallel to $y = 3x + 4$.

7.) Find the equation of the line going through (2, 4) and parallel to $2x - y = 5$.

8.) Find the equation of the line going through (3, -2) and perpendicular to $x - 4y = 3$.

D. When you have two points

- **find the slope**
- **pick one of your points to be x and y**
- **plug m, x, y into $y = mx + b$**
- **solve for b**
- **plug m and b into $y = mx + b$**

9.) Find the equation of the line going through (-1, 0) and (4, 2).

10.) Find the equation of the line going through (-3, 1) and (4, 8).

11.) Find the equation of the line with x-intercept 3 and y-intercept -2.

12.) Find the equation of the line with x-intercept -1 and y-intercept 2.

13.) Find the equation of the line going through (4, 3) with x-intercept 6.