Name _____   Date _____

$$y = mx + b$$

↑ slope   ↖ y-intercept

Example: $y = 3x - 2$

↑ slope   ↖ y-intercept

Section A:

Write the equation for the line with the given slope and y-intercept.

Example:

Slope= $\frac{2}{3}$

Y-intercept= -3

Equation: $y = \frac{2}{3}x - 3$

↑ slope   ↖ y-intercept

1) Slope=5

   Y-intercept=2

   Equation:

2) Slope= -9

   Y-intercept= 2

   Equation:

3) Slope= $\frac{1}{5}$

   Y-intercept= 4

   Equation:

4) Slope= $-\frac{2}{5}$

   Y-intercept= 0

   Equation:

5) Slope= 3

   Y-intercept= $\frac{1}{2}$

   Equation:

Section B:

Write the equation for the line with the given y-intercept and passes through the given points.

Example: Y-intercept= -3 Passes through $(5,6)$ and $(2,8)$

Oh no, we are missing the slope (m). Find it using $\frac{y_2 - y_1}{x_2 - x_1}$ $\frac{8-6}{2-5} = \frac{2}{-3}$

↑ slope

Plug the y-intercept in for b and the slope in for m.

$$y = -\frac{2}{3}x - 3$$

↑ slope   ↖ y-intercept

1) Y-intercept= -2
   $(2,4)$ and $(1,3)$

2) Y-intercept= 4
   $(0,-2)$ and $(3,-4)$

3) Y-intercept= 0
   $(2,-2)$ and $(9,-1)$

Section C:

Write the equation for the line with the given slope and passes through the given point.

Example: Slope=2   Passes through $(\overset{x}{5},\overset{y}{7})$

Oh no, we are missing the y-intercept (b). Use the slope and x and y values to help you find b.

x= 5   Plug the given values into $y = mx + b$ (leave b as a variable)

y= 7 $7 = 2 \cdot 5 + b$

m= 2   Solve to find b $\dfrac{7 = 10 + b}{-10 - 10}$

b= ? $-3 = b$

Put m & b into the equation. Keep x & y variables. $y = 2x - 3$

slope   y-intercept

1) Slope= 3 $(2,6)$	2) Slope= -2 $(0,3)$	3) Slope= $\frac{1}{2}$ $(4,8)$
Equation:	Equation:	Equation:
4) Slope= -1 $(-5,4)$	5) Slope= 3 $(2,-3)$	6) Slope= $\frac{1}{3}$ $(6,-5)$
Equation:	Equation:	Equation:
7) Slope= -1 $(-5,4)$	8) Slope= 3 $(2,-3)$	9) Slope= $\frac{1}{3}$ $(6,-5)$
Equation:	Equation:	Equation:

Write the equation for the line with the given slope and passes through the given point.

Example: Passes through $\overset{x\ \ y}{(5,6)}$ and $(6,8)$

Oh no, we are missing the y-intercept (b) and the slope (m). We must find them.

Find m using $\dfrac{y_2 - y_1}{x_2 - x_1}\dfrac{8-6}{6-5} = \dfrac{2}{1} = 2$ ← slope (m)

Now we must find b. Use one of the points and the value for m to find b.
$m=2$ $x=5$ $y=6$ $b=?$

Plug the given values into $y = mx + b$ (leave b as a variable)
$$6 = 2 \cdot 5 + b$$
Solve to find b
$$6 = 10 + b$$
$$\underline{-10 \quad -10}$$
$$-4 = b$$

Put m & b into the equation. Keep x & y variables. $y = 2x - 4$
↑ slope   ↘ y-intercept

1) $(1,4)$ and $(2,7)$

Equation:

2) $(0,-3)$ and $(1,-5)$

Equation:

3) $(1,-2)$ and $(2,2)$

Equation:

4) $(3,1)$ and $(5,5)$

Equation:

5) $(6,3)$ and $(8,4)$

Equation:

6) $(7,2)$ and $(2,-3)$

Equation:

7) $(1,6)$ and $(8,6)$

Equation:

8) $(-2,-1)$ and $(1,5)$

Equation:

9) $(1,2)$ and $(5,14)$

Equation: