

Linear Equations from Slope and/or Points Notes

Important Information

- If given 2 points on a line, you can find the slope. See example below...

$(-2, 4)$ and $(1, 6)$

$$\text{slope} = \frac{\text{rise} \uparrow}{\text{run} \leftrightarrow} = \frac{\Delta y}{\Delta x}$$

$$\begin{array}{r} 4 + \Delta y = 6 \\ -4 \quad -4 \\ \hline \Delta y = 2 \end{array} \quad \begin{array}{r} -2 + \Delta x = 1 \\ +2 \quad +2 \\ \hline \Delta x = 3 \end{array}$$

$$\frac{\Delta y}{\Delta x} = \frac{2}{3} \quad m = \frac{2}{3}$$

- If given 2 points on a line, you can also write the equation of that line.
 - First find the slope (see notes at left).
 - Then use the slope and one point to solve for b (see notes bottom left).
 - Then substitute m and b into $y=mx+b$.

- When you know the slope and one point on the line, you can write the equation of that line.
- If $m=2$ and the point $(4, 15)$ is on the line, substitute everything you have into $y=mx+b$ and solve for b.

$m = 2$ $\begin{matrix} x & y \\ (4, & 15) \end{matrix}$

$$y = mx + b$$

$\downarrow \quad \downarrow \downarrow$

$$15 = 2(4) + b$$
$$15 = 8 + b$$
$$\begin{array}{r} -8 \quad -8 \\ \hline 7 = b \end{array}$$

Use m and b to write the equation.

$$y = 2x + 7$$

Your Own Example....

---Pick 2 points of your own and find the slope of the line.