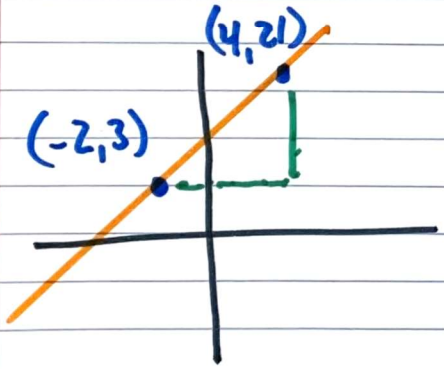
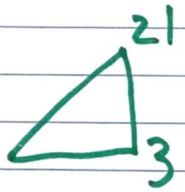
LESSON 2-12 → IS A POINT ON THE LINE?

we can use Triangles and slope to Build entire lines!

A line includes (-2,3) and (4, 21).
Which does it also include? (0,9) or (0,12)

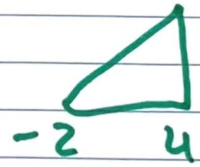
Sketch Graph
find slope!





Rise from 3 to 21

Rise = 18



Run from -2 to 4

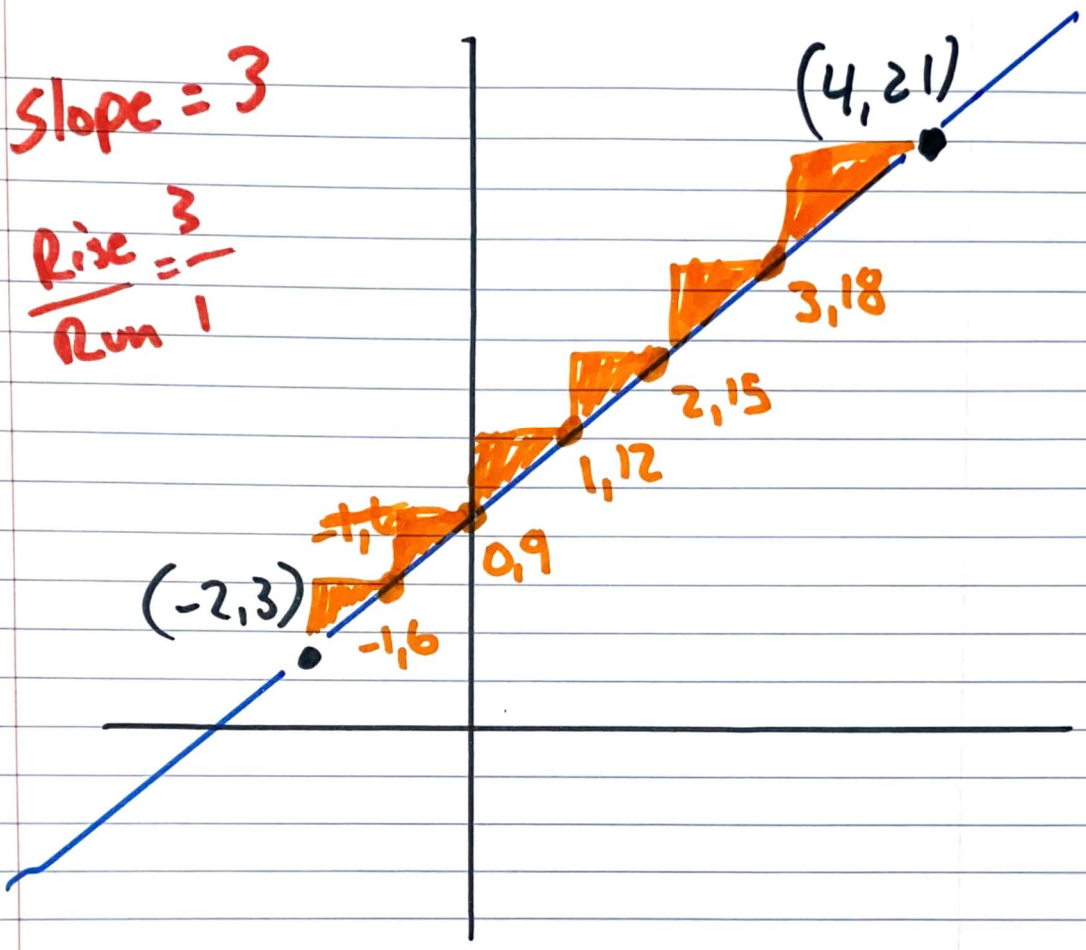
Run = 6

$$\frac{\text{Rise}}{\text{Run}} = \frac{18}{6} = 3$$

Slope = 3

Slope = 3

$\frac{\text{Rise}}{\text{Run}} = \frac{3}{1}$



We used the triangle 3 over 1 to build the line!

But there's Another Way!

A line includes $(-2,3)$ and $(4,21)$.
Which does it also include? $(0,9)$ or $(0,12)$

We already calculated Slope as 3

So let's use $\frac{y_2 - y_1}{x_2 - x_1}$

$(-2,3)$ $(0,9)$
$x_1\ y_1$ $x_2\ y_2$

Remember! $0-(-2)$ is the same as $0+2$!

$$\frac{9-3}{0-(-2)} = \frac{6}{2} = 3$$

It works! $(0,9)$ is correct!