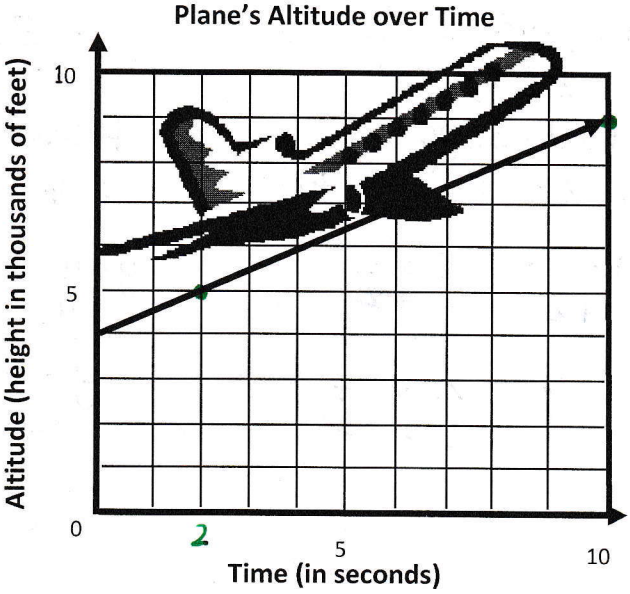
$m = \frac{y_2 - y_1}{x_2 - x_1}$

Writing Equations from 2 Points

Unit 3
Lesson 6

1. **After flying at a constant altitude, a pilot decides to zoom upward. The graph shows the change in altitude each second.**



a. What ordered pair shows the altitude at 2 seconds? $(2, 5000)$ x_1 y_1

b. What ordered pair shows the altitude at 10 seconds? $(10, 9000)$ x_2 y_2

c. Identify the slope. What does it represent in this situation?

$m = \frac{9000 - 5000}{10 - 2} = \frac{4000}{8} = 500$ ft per sec, rate its going up

d. Write the equation in point–slope form and convert to slope–intercept form.

$y - y_1 = M(x - x_1)$

$y - 5000 = 500(x - 2)$

$y - 5000 = 500x - 1000$

$+5000 \quad +5000$

$y = 500x + 4000$

e. Identify the y–intercept. What does it represent in this situation?

$b = 4000$, starting height

f. After how many seconds will the altitude be 13,000 feet?

$y = 13000$

$13000 = 500x + 4000$

$-4000 \quad -4000$

$\frac{9000}{500} = \frac{500x}{500}$

$18 = x$ seconds

g. What will the altitude of the plane be after 30 seconds?

$x = 30$

Sub. $y = 500(30) + 4000$

$y = 15000 + 4000$

$y = 19{,}000$ ft.

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad y - y_1 = m(x - x_1)$

Find the slope and write the equation for the line through the given two points in point–slope form. Convert to slope–intercept form for your final answer.

(–2, 2) and (3, 7)

$x_1\ y_1 \quad x_2\ y_2$

① Find slope

$m = \frac{7-2}{3-(-2)} = \frac{5}{5} = 1$

② Point-Slope

$y - 2 = 1(x - (-2))$

$y - 2 = x + 2$

$+2 \quad +2$

$y = x + 4$

(0, 4) and (–1, 10)

$x_1\ y_1 \quad x_2\ y_2$

① Find slope

$m = \frac{10-4}{-1-0} = \frac{6}{-1} = -6$

② Point-Slope

$y - 4 = -6(x - 0)$

$y - 4 = -6x + 0$

$+4 \quad +4$

$y = -6x + 4$

(7, –4) and (7, 7)

$x_1\ y_1 \quad x_2\ y_2$

① Find slope

$m = \frac{7-(-4)}{7-7} = \frac{11}{0}$

m = undefined

~~HOY~~ VU X

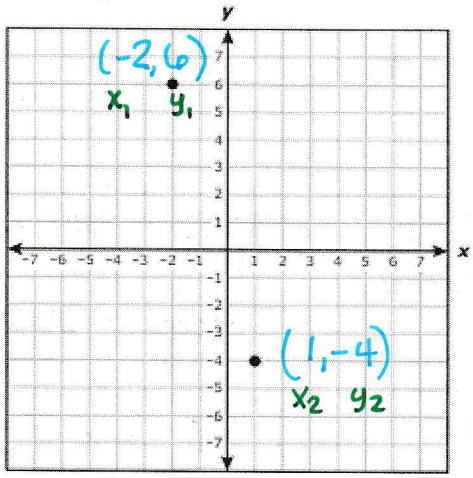
$X = \#$

Look at x-value of points

$x = 7$

Practice STAAR Question

Two points are plotted on the grid.



$m = \frac{-4-6}{1-(-2)}$

$m = \frac{-10}{3}$

Which equation in slope-intercept form best represents the line that passes through these two points?

A $y = -\frac{2}{3}x - \frac{11}{3}$

B $y = -\frac{11}{3}x - \frac{2}{3}$

C $y = -\frac{2}{3}x - \frac{10}{3}$

D $y = -\frac{10}{3}x - \frac{2}{3}$