

Algebra 1 4.2

Write an equation of a line given a slope and a point

Write an equation of a line given two points

slope

$$m = \frac{1}{5}$$

y-intercept

6

linear equation

slope-intercept form

constraints

linear extrapolation

activity: cut & paste

whiteboards

$$y = 2x - 1$$

$$y = \frac{1}{5}x + 6$$

$$y = mx + b$$

$$y = 2 \cdot x + b$$

$$y = 2 \cdot 3 + b$$

$$5 = 2 \cdot 3 + b$$

$$5 = 6 + b$$

$$\begin{array}{r} -6 \quad -6 \\ \hline -1 = b \end{array}$$

Oct 31-7:10 PM

$$m = -3 \quad (1, 4)$$

$$4 = -3 \cdot 1 + b$$

$$4 = -3 + b$$

$$\begin{array}{r} +3 \quad +3 \\ \hline 7 = b \end{array}$$

$$7 = b$$

$$y = -3x + 7$$

Cut & paste activity

$$y=mx+b$$



Oct 31-7:55 PM

Example 1 Write an Equation Given the Slope and a Point



Write an equation of the line that passes through (2, 1) with a slope of 3.

You are given the slope but not the y -intercept.

$$\begin{array}{r} 1 = 3 \cdot 2 + b \\ 1 = 6 + b \\ -6 \quad -6 \\ \hline -5 = b \end{array} \quad \begin{array}{l} y = 3x + b \\ y = 3x - 5 \end{array}$$

Oct 31-7:45 PM

Whiteboards

Guided Practice

Write an equation of a line that passes through the given point and has the given slope.

1A. $(-2, 5)$, slope 3

1B. $(4, -7)$, slope -1

$$5 = 3 \cdot (-2) + b$$

$$5 = -6 + b$$

$$\begin{array}{r} +b \\ +6 \\ \hline \end{array}$$

$$11 = b$$

$$y = 3x + 11$$

Oct 31-7:45 PM

What do I need to know?

Example 2 Write an Equation Given Two Points

Write an equation of the line that passes through each pair of points.

a. $(3, 1)$ and $(2, 4)$

$$m = \frac{4-1}{2-3} = \frac{3}{-1} = -3$$

$$y = mx + b$$

$$1 = -3 \cdot 3 + b$$

$$1 = -9 + b$$

$$\begin{array}{r} +9 \\ +9 \\ \hline \end{array}$$

$$10 = b$$

$$\underline{y = -3x + 10}$$

$$y = mx + b$$

$$4 = -3 \cdot 2 + b$$

$$4 = -6 + b$$

$$\begin{array}{r} +6 \\ +6 \\ \hline \end{array}$$

$$10 = b$$

Oct 31-7:45 PM

b. $(-4, -2)$ and $(-5, -6)$ $m = 4$

$$-2 = 4 \cdot -4 + b \quad y = 4x + 14$$

$$\begin{array}{r} -2 = -16 + b \\ +16 \quad +16 \\ \hline 14 = b \end{array}$$

Oct 31-7:45 PM

Guided Practice

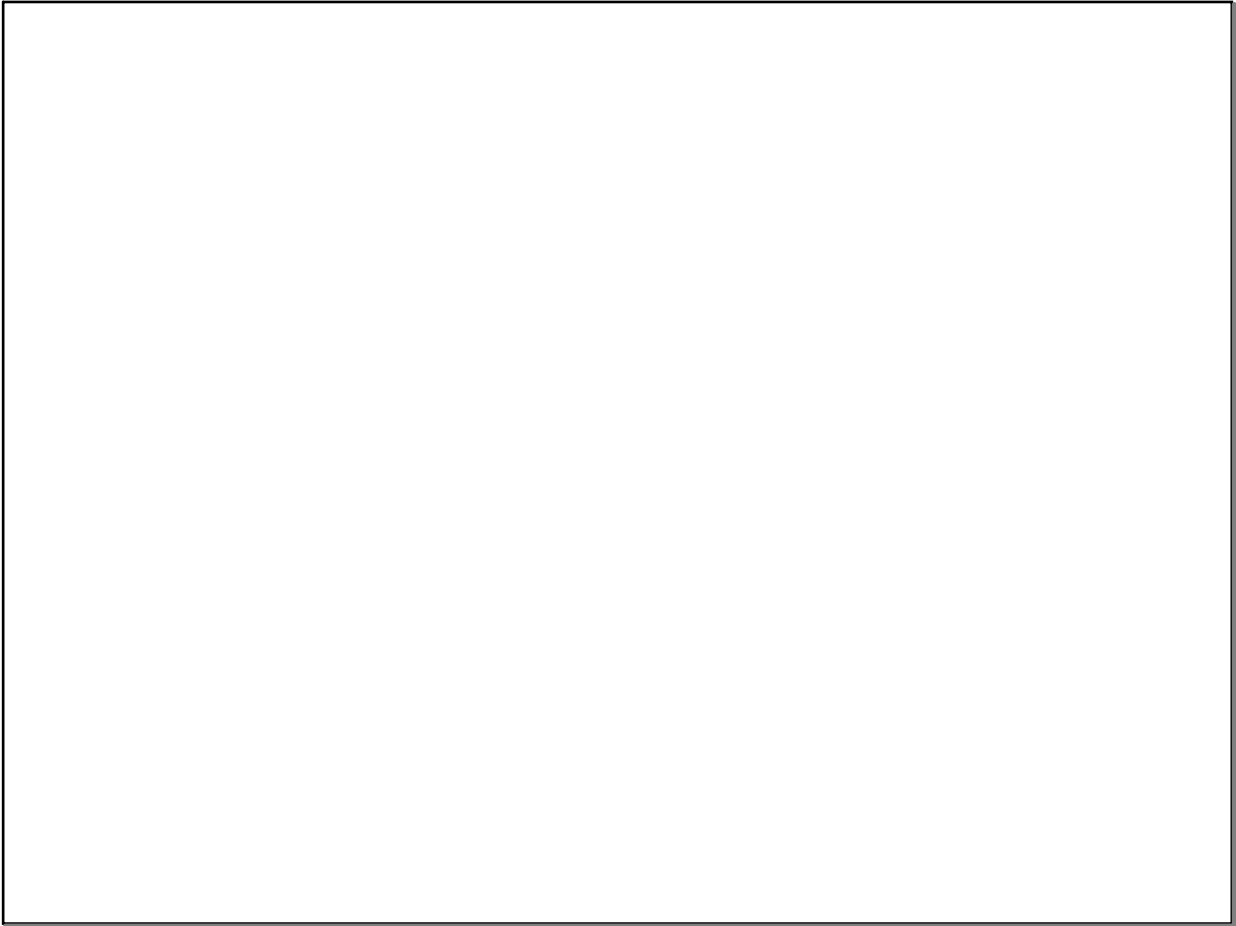
Write an equation of the line that passes through each pair of points.

2A. $(-1, 12), (4, -8)$

2B. $(5, -8), (-7, 0)$

$$\begin{array}{l} 4.2 \quad |1-3|0 \\ p.229 \quad 53-770 \end{array}$$

Oct 31-7:46 PM



Sep 26-4:14 PM