

Warm Up

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

1. What is the slope and point on the line for the following equations:

$$y - 5 = 3(x - 2) \quad m = 3 \quad (2, 5)$$

$$y + 4 = \frac{1}{2}(x + 4) \quad m = \frac{1}{2} \quad (-4, -4)$$

2. Is $(1, -7)$ on the line $y - 9 = -4(x + 3)$?

$$\begin{aligned} -7 - 9 &= -4(1 + 3) \\ -16 &= -16 \end{aligned} \quad \text{yes}$$

3. Find the x and y intercepts of the following equation: $9x - 3y = 81$

$$9x = 81$$

$$x = 9$$

$$-3y = 81$$

$$y = -27$$

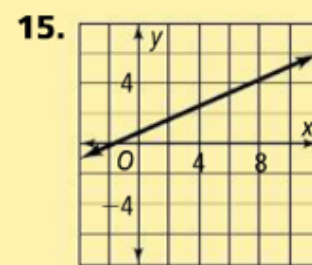
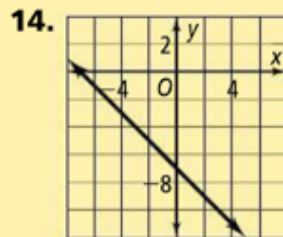
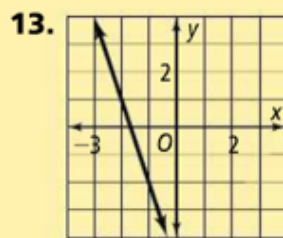
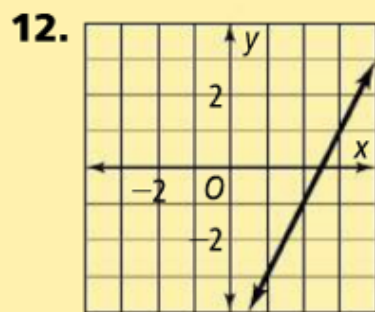
Homework Check:

8. $y + 4 = 6(x - 3)$

9. $y - 2 = -\frac{5}{3}(x - 4)$

10. $y + 7 = \frac{4}{5}(x + 2)$

11. $y = -1(x - 4)$



16–18. Answers may vary. Samples are given.

16. $y - 3 = \frac{4}{3}(x - 1)$

17. $y - 1 = -\frac{3}{4}(x - 1)$

18. $y - 2 = \frac{3}{4}(x - 1)$

Writing linear equations

Find an equation of a line in slope intercept form when the slope is $5/2$ and $(-2, 9)$ is a point on the line.

$$y - 9 = \frac{5}{2}(x + 2)$$

$$y = mx + b$$

$$y - 9 = \frac{5}{2}x + 5$$

$$y = \frac{5}{2}x + 14$$

Find an equation of a line in slope intercept form when the slope is -8 and $(-2, -3)$ is a point on the line.

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

$$y + 3 = -8(x + 2)$$

$$y = -8x - 19$$

Finding an equation when you are given two points.

1. Find the slope
2. Put the equation in point slope form
3. Simplify to make slope intercept form.

Find an equation of the line that passes through the points:

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

Step 1: Find the slope

$$\frac{-8-1}{5-2} = \frac{-9}{3} = -3$$

Step 2: Make a point slope form equation

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

$$\underline{y - 1 = -3(x - 2)}$$

Step 3: Convert to slope intercept form

$$y - 1 = -3x + 6$$

$$\underline{y = -3x + 7}$$

$$y = mx + b$$

Find an equation of the line that passes through the points:

$$(9, -4) (15, -8)$$

$$\frac{-8+4}{15-9} = -\frac{4}{6} = -\frac{2}{3} = m$$

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

$$y + 4 = -\frac{2}{3}(x - 9)$$

$$y + 4 = -\frac{2}{3}x + 6$$

$$\begin{array}{r} -4 \\ -4 \end{array} \quad \begin{array}{r} -4 \\ -4 \end{array}$$

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

Write an equation for the following table

X	Y
2	9
5	2
8	-5
11	-12

$(2, 9)$ $(5, 2)$

$$y - 9 = -\frac{7}{3}(x - 2)$$

$$y - 9 = -\frac{7}{3}x + \frac{14}{3}$$

$$+9$$

$$y = -\frac{7}{3}x + \frac{41}{3}$$

~~$$+ \frac{14}{3} \left(\frac{27}{3} \right)$$~~

Find an equation of the line that passes through the points:

$$(-5, 9) \quad (-9, 4)$$

$$\frac{4-9}{-9+5} = \frac{-5}{-4} = \frac{5}{4} = m$$

$$y-9 = \frac{5}{4}(x+5)$$

$$y-9 = \frac{5}{4}x + \frac{25}{4}$$

$$+9 \qquad \frac{36}{4}$$
$$y = \frac{5}{4}x + \frac{61}{4}$$

Find an equation of the line that passes through the points:

$(7, 9)$ $(7, 5)$

