

Bell Work:

In Standard form ($Ax + By = C$), what two points on the graph does this form give us?

$x + y$ intercepts
 $(x, 0)$ $(0, y)$

In point slope form ($y - y_1 = m(x - x_1)$), what does m , x_1 , and y_1 mean?

$m = \text{slope}$ $(x_1, y_1) = \text{given point}$

More About Linear Equations

Write an equation of each line.

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

1. slope 6; through (0, 4)

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

$$y - 4 = 6x$$

$$y = 6x + 4$$

2
9. slope -5; through (9, -1)

$$y + 1 = -5(x - 9)$$

$$y + 1 = -5x + 45$$

$$y = -5x + 44$$

Write in point-slope form an equation of the line through each pair of points. To start, substitute values for (x_1, y_1) and (x_2, y_2) into the slope formula.

3. $(2, 7)$ and $(-4, 1)$

$$\frac{7-1}{2-(-4)} = \frac{6}{6} = 1$$

$$y-7 = 1(x-2)$$

$$y-1 = 1(x+4)$$

$$4. \left(\frac{3}{4}, \frac{5}{2}\right) \text{ and } \left(-\frac{7}{8}, \frac{3}{2}\right) \quad \frac{\frac{3}{2} - \frac{5}{2}}{-\frac{7}{8} - \frac{6}{8}} = \frac{-\frac{2}{2}}{-\frac{13}{8}}$$

$$-\frac{2}{2} \cdot \frac{8}{-13} = \frac{-16}{-26} = \frac{8}{13}$$

$$y - \frac{5}{2} = \frac{8}{13} \left(x - \frac{3}{4}\right)$$

$$Ax + By = C$$

Write an equation of each line in standard form with integer coefficients. To start, multiply each side by the least common denominator of all fractional coefficients.

$$5 \text{ 9. } \left(y = -\frac{4}{3}x + \frac{5}{6} \right) \cdot 6$$

$$\begin{array}{l} 3 = 3 \cdot 2 \\ 6 = 6 \cdot 1 \end{array}$$

$$6y = -\frac{24}{3}x + \frac{30}{6}$$

$$6y = -8x + 5$$

$$6y + 8x = 5 \quad \rightarrow \quad 8x + 6y = 5$$

6

Reasoning The line $y + 4 = \frac{3}{4}(x - 8)$ contains point $(a, 2)$. Find a . Show your work.

$$2 + 4 = \frac{3}{4}(a - 8)$$

$$\frac{3}{4} \cdot 8 = \frac{24}{4}$$

$$6 = \frac{3}{4}a - 6$$

$$(4) 12 = \frac{3}{4}a (4)$$

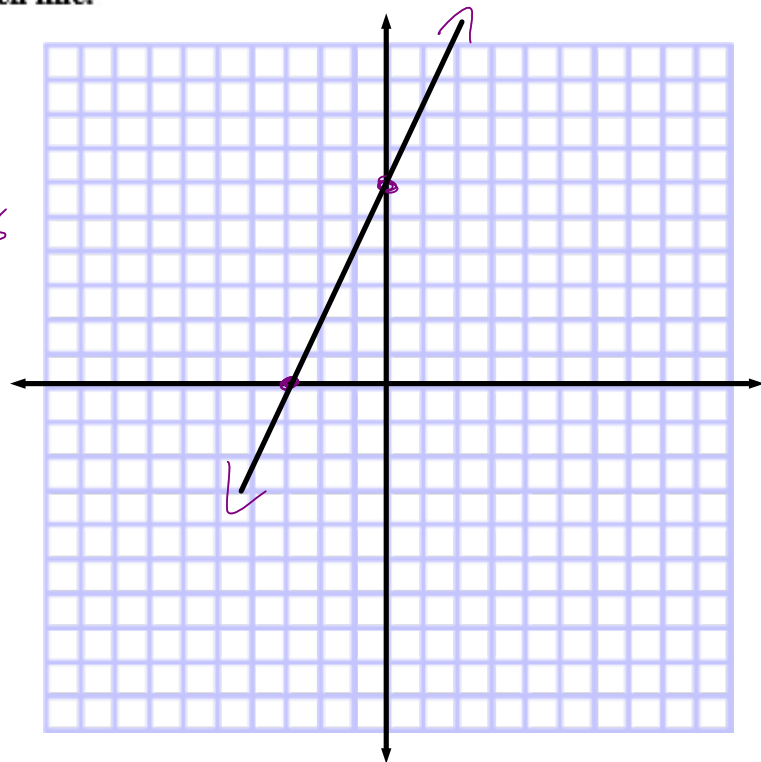
$$48 = 3a$$

$$a = 16$$

Find the intercepts and graph each line.

7. $-2x + y = 6$

<p>x-int $-2x + 0 = 6$ $-2x = 6$ $x = -3$ $(-3, 0)$</p>	<p>y-int $-2(0) + y = 6$ $y = 6$ $(0, 6)$</p>
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Write an equation in slope-intercept form for each line.

8 7. the line parallel to $y = 4x - 1$ through $(2, 7)$

$$m = 4$$

$$y - 7 = 4(x - 2)$$

$$y - 7 = 4x - 8$$

$$y = 4x - 1$$

9 10. the line perpendicular to $y = -\frac{1}{3}x + 5$ through $(6, 3)$

$$m = -\frac{1}{3} \rightarrow m = \frac{3}{1} = 3$$

$$y - 3 = 3(x - 6)$$

$$y - 3 = 3x - 18$$

$$y = 3x - 15$$

