

4.4 Write Linear Equations in Standard Form

Remember: $Ax + By = C$ is
standard form.

- x's & y's on the same side
- usually no fractions or decimals

Rewrite each equation *in standard form.*

$$y = 8x - 4$$

$$\begin{array}{r|l} -8x & 8x \\ \hline -8x + y & = -4 \end{array}$$

$$5 \cdot (y) = \left(\frac{2}{5}x + 1\right) \cdot 5$$

$$5y = 5 \cdot \frac{2}{5}x + 5 \cdot 1$$

$$5y = \cancel{2x} + 5$$

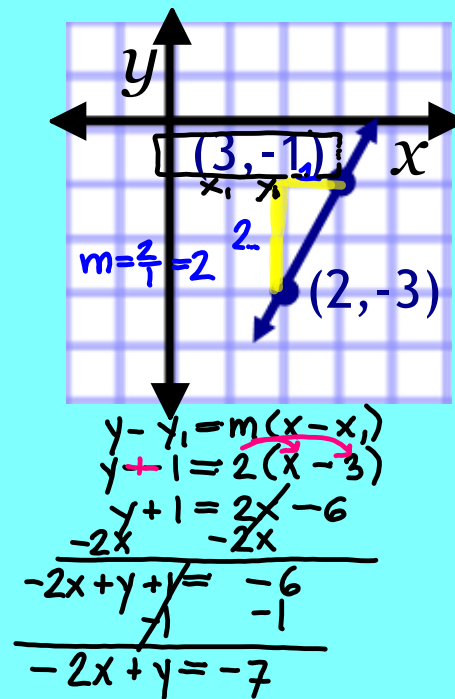
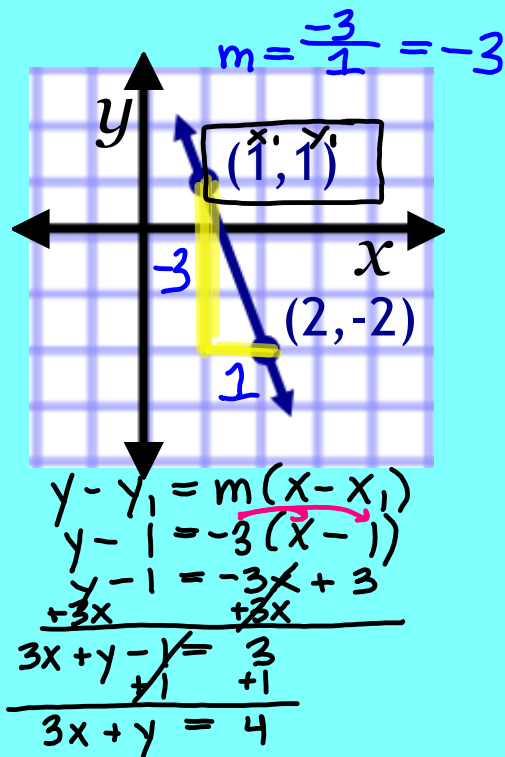
$$\begin{array}{r|l} -2x & -2x \\ \hline -2x + 5y & = 5 \end{array}$$

$$4(y + 7) = -3(x - 11)$$

$$4y + 28 = -3x + 33$$

$$\begin{array}{r|l} +3x & +3x \\ \hline 3x + 4y + 28 & = 33 \\ -28 & -28 \\ \hline 3x + 4y & = 5 \end{array}$$

Write an equation *in standard form* of each line shown.



Write an equation *in standard form* of the line that passes through $(-3, 4)$ and $(-1, 1)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 4}{-1 - (-3)} = \frac{-3}{2}$$

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

$$2 \cdot (y - 4) = \left[-\frac{3}{2}(x + 3) \right]$$

$$2(y - 4) = -3(x + 3)$$

$$2y - 8 = -3x - 9$$

$$+3x \quad +3x$$

$$3x + 2y - 8 = -9$$

$$+8 \quad +8$$

$$3x + 2y = -1$$

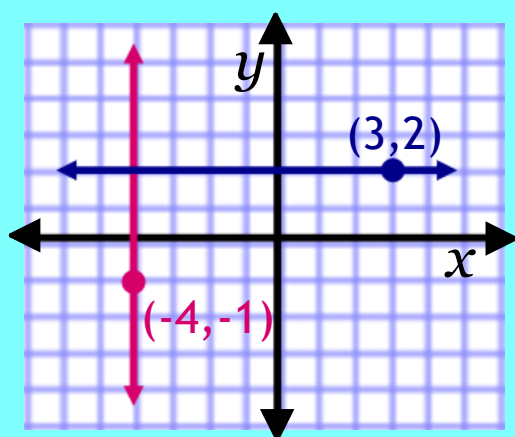
A candle that is originally 10 inches long will burn at a rate of .5 inches per hour. $m = -.5$
 Write an equation *in standard form* that models this situation.

$$y = mx + b \quad \begin{array}{l} \text{y-int} \\ \text{slope} \end{array}$$

$$10 \cdot (y) = (-.5x + 10) \cdot 10$$

$$\begin{array}{r} 10y = -5x + 100 \\ +5x \quad +5x \\ \hline 5x + 10y = 100 \end{array}$$

Write an equation *of the specified line*.



a) the blue line

$$y = 2$$

b) the red line

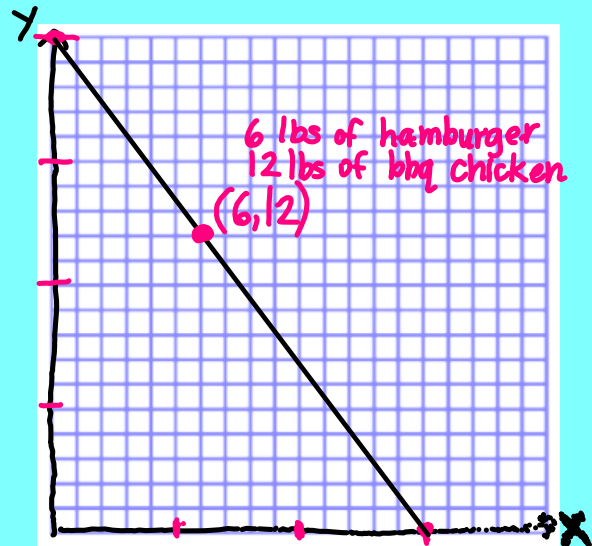
$$x = -4$$

Denise is planning for a family picnic. She is grilling out hamburgers (at \$4 per pound) and barbecue chicken (at \$3 per pound). If she has \$60 to spend...

- Write an equation to represent this. $4x + 3y = 60$
- Graph the equation.
- Explain what the intercepts of this graph mean.
- Find another point on the graph and explain its meaning.

$$\begin{array}{l} \text{x-int} \\ 4x + 3(0) = 60 \\ 4x = 60 \\ \frac{4x}{4} = \frac{60}{4} \\ x = 15 \\ y = 0 \\ \downarrow \\ \text{only buying} \\ 15 \text{ lb of} \\ \text{hamburger} \end{array}$$

$$\begin{array}{l} \text{y-int} \\ 4(0) + 3y = 60 \\ 3y = 60 \\ \frac{3y}{3} = \frac{60}{3} \\ y = 20 \\ x = 0 \\ \downarrow \\ \text{only buying} \\ 20 \text{ lb of} \\ \text{bbq chicken} \end{array}$$



T-shirts at a flea market cost \$5 each and shorts cost \$6 each. Tamara has \$90 to spend.

- Write an equation in standard form that models the possible combinations of T-shirts & shorts she can buy. $5x + 6y = 90$
- Graph the equation.
- List three possible combinations.

$$\begin{array}{l} 5x + 6y = 90 \\ -5x = -5x \\ \hline 6y = -5x + 90 \\ \frac{6y}{6} = \frac{-5x + 90}{6} \\ y = -\frac{5}{6}x + 15 \\ m = -\frac{5}{6} \\ \text{y-int} = 15 \end{array}$$

