Name:_____        Date:_____

Notes
Algebra Section 5.4
Pages 311-316

**Goal:** "You will write equations in standard form"

<div align="center">

**STANDARD FORM!**

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+-------------------------------------------------+
|                                                 |
|                                                 |
|                                                 |
+-------------------------------------------------+

A is always the _____ of ____.      B is always the _____ of ____.

C is always the _____.

You always want A to be _____ and not a _____ or _____.


**1. Write equivalent equations in standard form:**

Example:                                                          $2x - 6y = 4$

You can divide both sides by the same common factor.



You can multiply both sides by the same number.



All three of these equations are in _____ _____ and all of them are _____.

Try These:
$\quad\quad$ **1)** $x - y = 3$ $\quad\quad\quad\quad\quad\quad\quad\quad$ **2)** $x + 4y = 3$




**You may need to multiply or divide both sides so that A is not negative.**
Example:

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

A (the coefficient of $x$ is a negative)
Multiply both sides of the equation by -1

Try These:

$-3x + 2y = -4$ $\qquad\qquad$ $-x - 4y = 2$ $\qquad\qquad$ $-2x - 3y = -5$

**You may need to multiply or divide both sides so that A is not a fraction.**

Example:

$$\frac{1}{3}x + 2y = 1$$

A (the coefficient of $x$ is a fraction)
Multiply both sides of the equation by 3
(the denominator of A)

Try These:

$\frac{1}{4}x + y = -2$ $\qquad\qquad$ $\frac{2}{5}x - 3y = 3$ $\qquad\qquad$ $\frac{2}{3}x - 5y = -1$

**You may need to multiply or divide both sides so that A is not a decimal.**

Example:

$$0.6x + 3y = 4$$

A (the coefficient of $x$ is a decimal)
Multiply both sides of the equation by 10
(to clear the decimal)

Try These:

$0.4x + y = -2$ $\qquad\qquad$ $1.3x - 2y = 1$ $\qquad\qquad$ $0.55x - 2y = -3$

**You may need to multiply or divide both sides so that A is not a negative and a fraction/decimal.**

Example:

$$-\frac{1}{3}x + 3y = -1$$

A (the coefficient of $x$ is a fraction and negative)
Multiply both sides of the equation by -3
(to get rid of the fraction and negative)

Try These:

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

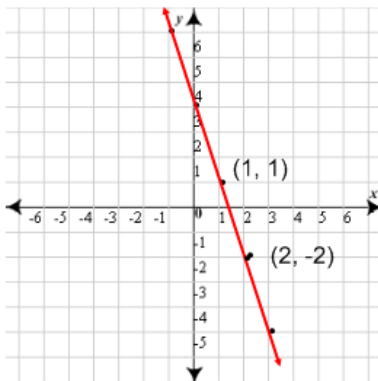$$-\frac{1}{5}x - y = 5$$ 

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

$$-0.3x + 2y = -4$$ 

$$-2.4x - y = 3$$ 

$$-0.22x + 5y = 1$$

**Write equations in standard form with given information.**

**Ex:**



Find the _____

Find the _____

Write the equation using _____ and _____

Rewrite the equation in _____ _____.

Try These: (Make sure A is a positive whole number)

**1)** Passes through $(3, -1)$ $(2, -3)$ 

**2)** Passes through $(2, 2)$ $(4, -2)$

**Complete an equation in standard form**
**For each equation use the information to find the missing coefficient. Then write the equation in standard form.**
**Ex:** $Ax + 3y = 2$, passes through the point $(-1, 0)$

$x=$_____ $y=$_____

Plug them in and solve for A.

Write the equation in standard form.

Try These:

**1)** $-4x + By = 7$, passes through the point $(-1, 1)$        **2)** $Ax + 4y = 6$, passes through the point $(2, 0)$

**3)** $Ax + y = -3$, passes through the point $(2, 11)$

**Ex:** Your class is taking a trip to the public library. You can travel in small and large vans. A small van holds 8 people and a large van holds 12 people. One possible way your class could get there is to fill 15 small vans and 2 large vans.

   a. Write an equation to model all of the possible combinations of small and large vans your class could take.

   b. Graph the equation.

   c. Use your graph to find more possible combinations of vans.



\# of large vans

2  4  6  8  10 12 14 16 18 20

\# of small vans
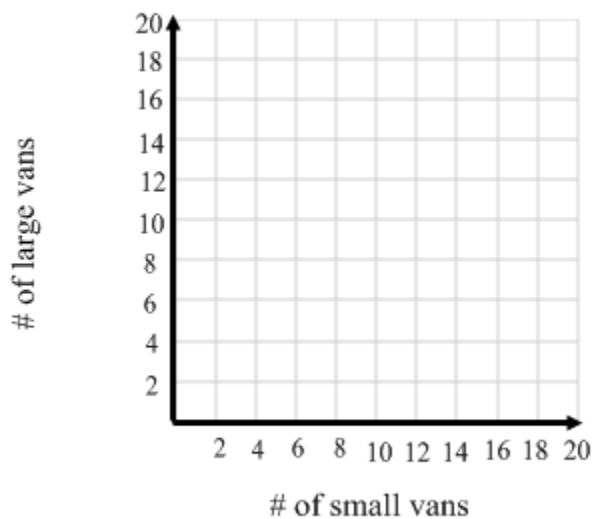
**Ex:** At a flea-market t-shirts cost $4.50 and shorts cost $6. You have enough money that if you wanted to you could buy exactly 12 t-shirts and 9 pairs of shorts.

   a. Write an equation to model all of the possible combinations of t-shirts and shorts that you can buy.

   b. Graph the equation.

   c. List the possible combinations of t-shirts and shorts you can buy.



\# of shorts

4  8  12  16  20  24  28 32 36 40

\# of T-shirts