

Slope - int form  $y = mx + b$

$y = mx + b$   
 ↑ slope    ↓ int

## Section 5.6 The Standard Form of a Linear Equation

$$Ax + By = C$$

For an equation to be in STANDARD FORM, it must:

1. have variables on the left side of the equal sign and the constant on the right side.
2. contain integer coefficients (no decimals or fractions).
3. have a positive leading (first) coefficient.  $+A$

### Examples

1. Write the equation in standard form with integer coefficients.

a.  $\left(\frac{1}{4}x + \frac{1}{3}y = 7\right)$     LCD = 12

$$3x + 4y = 84$$

b.  $(0.16x - 2y = 0.3)$

$$16x - 200y = 30$$

c.  $0.5x + 0.11 = 2.1y$      $- .5x$

$-100(-.5x + 2.1y = 0.11)$

$$50x - 210y = -11$$

d.  $(y = \frac{3}{5}x - 7)$

$$5y = 3x - 35$$

$-3x$      $-3x$

$$-1(-3x + 5y = -35)$$

$$3x - 5y = 35$$

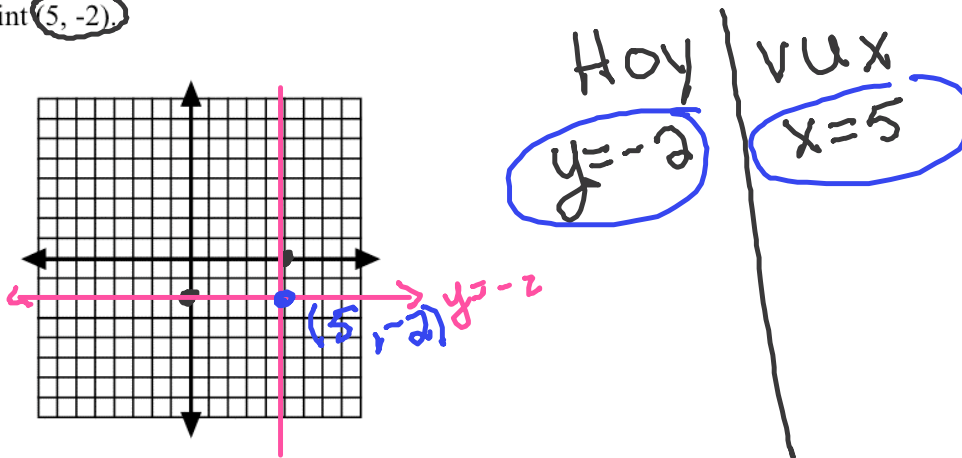
2. Write the standard form of the equation of the line passing through  $(-5, 1)$  with a slope of 3.

$m$	$b$	$y = mx + b$
$m = 3$	$1 = 3(-5) + b$ $1 = -15 + b$ $+15 +15$ $b = 16$	$y = 3x + 16$ slope-intercept form $-3x -3x$ $(-3x + y = 16)$ $3x - y = -16$

3. Write the standard form of the equation of the line passing through  $(-4, 1)$  and  $(2, -5)$ .

$m$	$b$	$y = mx + b$
$\frac{1 - (-5)}{-4 - 2}$ $m = \frac{6}{-6}$ $m = -1$	$-5 = -1(2) + b$ $-5 = -2 + b$ $+2 +2$ $b = -3$	$y = -x - 3$ $+x +x$ $x + y = -3$

4. Write an equation in standard form of the horizontal line and the vertical line that pass through the point  $(5, -2)$ .



5. You are in charge of buying oranges and apples for the school picnic. A bag of oranges costs \$4 and a bag of apples costs \$3. You have \$48 to spend.

- a. Write an equation that represents the possible combinations of bags of oranges and apples.

$4x + 3y = 48$

b. Give 3 possible combinations of bags of oranges and apples you could buy.

$x = 0$	}	$y = 0$	}	$x = 6$	}	$(0, 16)$
$3y = 48$		$4x = 48$		$4(6) + 3y = 48$		$(12, 0)$
$y = 16$		$x = 12$		$24 + 3y = 48$		$3y = 24$