Standard Form of Linear Equations
Notes

Name: _____

Write the equation for STANDARD FORM: $Ax + By = C$

A, B, C must be integers and A must be positive

Write each of the following equations in standard form.

1) $y = -\frac{1}{4}x + 2$

$4(y) = \left(-\frac{1}{4}x + 2\right)4$

$4y = -x + 8$

$+x \quad +x$

$x + 4y = 8$

2) $y = 5x + 8$

$-5x \quad -5x$

$-1(-5x + y) = (8)-1$

$5x + -y = -8$

$\frac{2}{8} \div \frac{-10}{1} = \frac{-4}{1}$

3) $y - 4 = -2(x + 5)$

$y - 4 = -2x + 10$

$+4 \quad +4$

$y = -2x + 14$

$+2x \quad +2x$

$2x + y = 14$

4) $y + 3 = \frac{2}{5}(x + -10)$

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

$-3 \quad -3$

$y = \frac{2}{5}x + -7$

$-\frac{2}{5}x \quad -\frac{2}{5}x$

$-5\left(-\frac{2}{5}x + y\right) = (-7)-5$

$2x + -5y = 35$

Graph the equation of the line using the x-intercept and y-intercept.

5) $-2x + 4y = 16$

x-intercept: (-8, 0) (where $y = 0$)

y-intercept: (0, 4) (where $x = 0$)

$-2 \cdot 0 + 4y = 16$

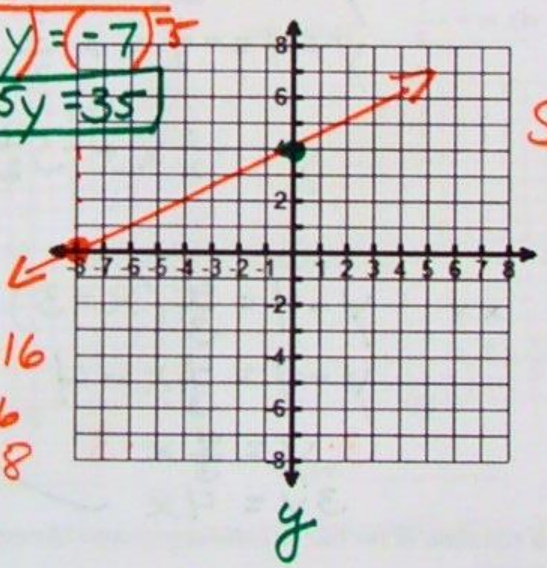
$4y = 16$

$y = 4$

$-2x + 4(0) = 16$

$-2x = 16$

$x = -8$



Slope: $\frac{4}{8} = \frac{1}{2}$

What is the formula for calculating slope?

slope, m = $\frac{y_2 - y_1}{x_2 - x_1}$

Write the equation for POINT-SLOPE FORM: $y - y_1 = m(x - x_1)$ m = slope (x_1, y_1) = a point

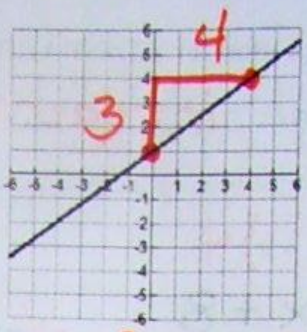
Write the equation for SLOPE- INTERCEPT FORM: $y = mx + b$ m = slope, b = y-intercept

Write the equation of the line in slope intercept form with the given slope and y-intercept.

6) slope: -2
y-int: (0,3)

m = -2 b = 3 6 $y = -2x + 3$

7) **Write the equation of the line shown in *slope- intercept* form.**



Slope: $\frac{3}{4}$ y – int : 1 or (0, 1)

7. $y = \frac{3}{4}x + 1$

Write an equation in *point slope and slope intercept form* of a line that passes through the given point and has the given slope *m*.

8) (-3, -4); $m = -\frac{1}{2}$

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

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

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

$\frac{3}{2} : -1\frac{1}{2}$

$-1\frac{1}{2} + -4$

8. Point-slope form $y + 4 = -\frac{1}{2}(x + 3$

Slope-intercept form $y = -\frac{1}{2}x + -5\frac{1}{2}$

Write an equation in *standard form* of a line that has the given slope and the passes through the given point.

x y

9) $m = \frac{4}{3}$, (3, 4)

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

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

$3 \cdot y = \frac{4}{3}x \cdot 3$

$3y = 4x$

$\therefore (-4x + 3y = (0) - 1$

9. $4x + -3y = 0$

Write an equation of the line in *point-slope, slope –intercept* and *standard form* that passes through the given 2 points.

x y

10.) (1, -2) and (-1, 3)

1st Slope : $\frac{-2 + \overline{3}}{1 + +1} = \frac{-5}{2}$

2nd Pick a point & write point-slope form

$y + 2 - 2 = -\frac{5}{2}(x - 1) - 2$

3rd Transform to $y = mx + b$

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

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

10. Point-slope form $y + 2 = -\frac{5}{2}(x - 1)$

Slope-intercept form $y = -\frac{5}{2}x + \frac{1}{2}$

Standard form $5x + 2y = 1$

4th Transform to standard form

$2(y) = (-\frac{5}{2}x + \frac{1}{2})2$

$2y = -5x + 1$

$+5x \quad +5x$

$5x + 2y = 1$

Standard Form of Linear Equations
Homework

Name:_____

Write each of the following equations in standard form. $Ax+By=C$

1) $y = -\frac{2}{3}x - 6$

2) $y = 2x + 7$

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

4) $y + 4 = -6(x - 2)$

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

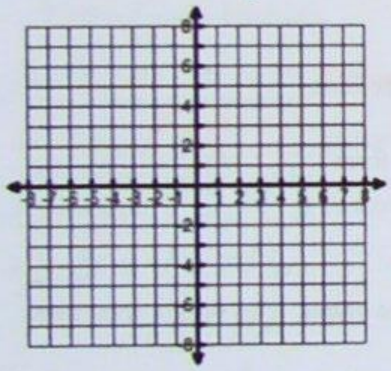
6) $y - 2 = \frac{1}{2}(x - 5)$

Graph the standard form of the equation of the line using the x-intercept and y-intercept. Identify the slope from the graph.

7) $-3x + 9y = 9$

x-intercept: (___, 0)

y-intercept: (0, ___)

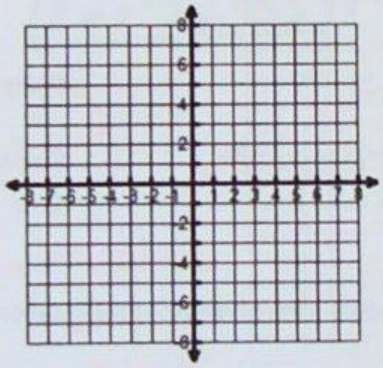


Slope: _____

8) $x + 4y = -8$

x-intercept: _____

y-intercept: _____

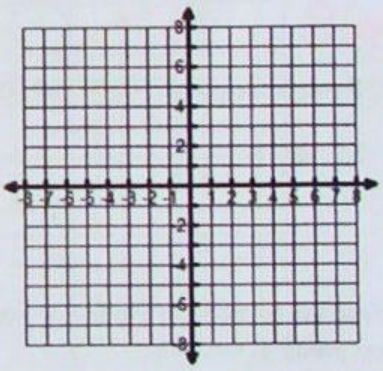


Slope: _____

9) $2x - 6y = -12$

x-intercept: _____

y-intercept: _____



Slope: _____

Write the equation of the line in slope intercept form and standard form given information about the graph.

10) slope is 2 and the y-intercept is -4

Slope intercept form_____

Standard form _____

11) through the points (1, -3) and (4, 3)

Slope intercept form_____

Standard form _____