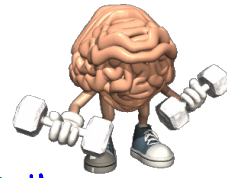


Warm Up



1) A line that passes through $(-7, 2)$ and $(3, -1)$

- a) Write an equation in point slope form:
- b) Write an equation in slope intercept form:
- c) State the x and y intercept

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

$$= \frac{(-1) - (2)}{(3) - (-7)}$$

$$m = -\frac{3}{10}$$

point $(-7, 2)$

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

$$y - 2 = -\frac{3}{10}(x - (-7))$$

$$y - 2 = -\frac{3}{10}(x + 7)$$

OR distribute through first

$$y - 2 = -\frac{3}{10}(x + 7)$$

$$y - 2 = -\frac{3}{10}x - \frac{21}{10}$$

$$10y - 20 = -3x - 21$$

$$10y - 20 = -3x - 21$$

$$10y = -3x - \frac{1}{10}$$

$$y = -\frac{3}{10}x - \frac{1}{10}$$

$$10[y - 2] = \left[-\frac{3}{10}(x + 7)\right]10$$

$$10[y - 2] = -3(x + 7)$$

$$10y - 20 = -3x - 21 + 10$$

$$\frac{10y}{10} = -\frac{3x}{10} - \frac{1}{10}$$

$$b) \quad y = -\frac{3}{10}x - \frac{1}{10}$$

c) y intercept = $-\frac{1}{10}$

Find x-intercept let $y=0$

$$y = -\frac{3}{10}x - \frac{1}{10}$$

$$0 = -\frac{3}{10}x - \frac{1}{10}$$

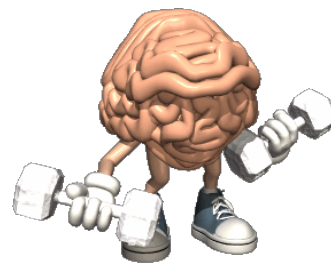
$$0 = -3x - 1$$

$$0 = -3x - 1$$

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

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

Warm Up



1) A line that passes through $(-7, 2)$ and $(3, -1)$

a) Write an equation in point slope form:

b) Write an equation in slope intercept for:

c) State the x and y intercept

Homework Solutions

1)

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

$$y - 8 = 2(x - (-1))$$

$$y - 8 = 2(x + 1)$$

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

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

$$y = 2x + 10$$

2)

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

$$y - (-3) = 4(x - 6)$$

$$y + 3 = 4(x - 6)$$

$$y + 3 = 4x - 24$$

$$y + 3 - 3 = 4x - 24 - 3$$

$$y = 4x - 27$$

3)

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

$$y - (-6) = \frac{3}{4}(x - (-1))$$

4

$$y + 6 = \frac{3}{4}(x + 1)$$

4

$$y + 6 = \frac{3x + 3}{4}$$

4 4

$$y + 6 - 6 = \frac{3x + 3}{4} - 6$$

4 4

$$y = \frac{3x + 3}{4} - \frac{24}{4}$$

4 4 4

$$y = \frac{3x - 21}{4}$$

4 4

4)

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

$$y - 1 = -3(x - (-1))$$

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

$$y - 1 = -3x - 3$$

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

$$y = -3x - 2$$

6)

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

$$x_2 - x_1$$

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

$$(-4) - (3)$$

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

$$(-4) - (3)$$

$$m = \frac{3}{-7}$$

$$-7$$

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

$$y - (-2) = \frac{3}{-7}(x - 3)$$

-7

$$y + 2 = \frac{3}{-7}(x - 3)$$

-7

$$y + 2 = \frac{-3x + 9}{7}$$

7 7

$$y + 2 - 2 = \frac{-3x + 9}{7} - 2$$

7 7

$$y = \frac{-3x + 9}{7} - \frac{14}{7}$$

7 7 7

$$y = \frac{-3x - 5}{7}$$

7 7

6.6 General Form of the Equation for a Linear Relation



LESSON FOCUS

Relate the graph of a linear function to its equation in general form.

Make Connections

A softball team may field any combination of 9 female and male players. There must be at least one female and one male on the field at any time. What are the possible combinations for female and male players on the field?



Linear Equations

**Slope
Intercept Form**

$$y = mx + b$$

**Point Slope
Form**

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

Two other forms of Linear Equations

Standard

$$Ax + By = C$$

is a positive number

- Where A, B and C are integers

Example:

$$2x + 7y = 10$$

$$2x + 7y - 10 = 0$$

General

$$Ax + By + C = 0$$

General Form of the Equation of a Linear Relation

$Ax + By + C = 0$ is the general form of the equation of a line, where A is a whole number, and B and C are integers.

Example:

$$2x + 7y - 10 = 0$$

Point - Slope to General Form

Method 1: distribute through

$$y - 3 = \frac{2}{5} (x + 6)$$

$$y - 3 = \frac{2x}{5} + \frac{12}{5}$$

$$\overset{(s)}{y} - \overset{(s)}{3} = \frac{\cancel{2}x}{\cancel{5}} + \frac{12}{\cancel{5}} \overset{(s)}{}$$

$$5y - 15 = 2x + 12$$

$$5y - 15^{+15} = 2x + 12^{+15}$$

$$5y \overset{-5y}{\leftarrow} = 2x + 27$$

$$0 = 2x - 5y + 27$$

$$\boxed{0 = Ax + By + C}$$

← Denominators
→ we want them to go away
so do opp of ÷
↳ multiplies all terms by denominator

← take to general form
↳ move all terms to 1 side
(hint move to side where 'x' is +)

Point - Slope to General Form

LHS RHS

Method 2: Get rid of denominator by multiplying each side by denominator

$$5[y - 3] = \left[\frac{2}{5}(x + 6) \right] 5$$

$$5(y - 3) = 2(x + 6)$$

$$5y - 15 = 2x + 12 + 15$$

$$0 = 2x - 5y + 27$$

You try

Point - Slope to General Form

$$y + 6 = \frac{-3}{7}(x - 2)$$

$$y + 6 = \frac{-3}{7}x + \frac{6}{7}$$

$$7y + 42 = -3x + 6 - 6$$

$$7y + 36 = -3x + 3x$$

$$3x + 7y + 36 = 0$$

Remember # in front of x must be \oplus

a lot left it like this

$$-3x - 7y - 36 = 0$$

Slope Intercept to General Form

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

$$3y = -2x + 12$$

$$3y - 12 = -2x + \cancel{12}$$

$$3y - 12 = -2x + 2x$$

$$2x + 3y - 12 = 0$$

General Form
 $Ax + By + C$

Slope Intercept
 $y = mx + b$

$$7x - 2y + 18 = 0$$

$$7x - 2y = -18$$

$$-2y = -7x - 18$$

$$y = \frac{7}{2}x + 9$$

step 1) Locate y and take it to the side so it is positive

1) Bring constant to RHS

2) Bring 'x' term to RHS

3) Divide by # in front of y to isolate y (But all terms need that)

The illustration shows a chalkboard with a red border. At the top, there is a yellow ruler, a small photo of a person, a yellow pencil, and a white eraser. The word "Homework" is written in white on the chalkboard. Below it, the text "Page 384-385:" is written. Underneath that, the text "Questions: 4,5(a,b), 12(a,b), 18(a,b)" is written. To the right of this text, there are handwritten green notes: "Ax+By=C" with a downward arrow pointing to "y = mx+b". At the bottom of the chalkboard, there is a blue pencil, a red apple, a white glue stick, and a blue crayon. A book titled "Math" is also visible on the left side.

Homework

Page 384-385:
Questions: 4,5(a,b), 12(a,b), 18(a,b)

$Ax + By = C$
 $y = mx + b$