

Warm Up

2/14

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Solve for x:

$$\frac{1}{2}x + 3 = 7$$

$$\frac{1}{2}x = 4$$

Dividing by a fraction can be difficult to wrap your head around.

$$\frac{2}{2} \cdot \frac{1}{2}x = \frac{4}{2} \cdot \frac{2}{2}$$
$$x = 8$$

$$\frac{4}{\frac{1}{2}} = 4 \div \frac{1}{2} = 4 \cdot 2 = 8$$

If we have $\frac{1}{2}$ of an x, we can multiply by 2 to get a whole x.

$$\frac{1}{2}x + 3 = 7$$

$$\left(\frac{2}{1}\right) \frac{1}{2}x = 4 \left(\frac{2}{1}\right)$$
$$x = 8$$

Rewrite $\frac{1}{2}x$ so we can see it is really x being divided by 2. We know we can "undo" that by multiplying by 2.

$$\frac{1}{2}x + 3 = 7$$

$$\frac{1}{2}x = 4$$
$$\left(\frac{2}{1}\right) \frac{x}{2} = 4 \left(\frac{2}{1}\right)$$
$$x = 8$$

If we would rather not work with fractions we can "clear" the denominator by multiplying everything by 2 and then solve.

$$2 \left[\frac{1}{2}x + 3 = 7 \right]$$
$$x + 6 = 14$$

$$x = 8$$

B Write each equation in $y = mx + b$ form.

1. $x - y = 4$

2. $2x + y = 9$

3. $8x + 4y = -12$

4. $c = ax + dy$

To put an eq in slope-intercept form you are isolating y .

Answers:

B. 1. $y = x - 4$

2. $y = -2x + 9$

3. $y = -2x - 3$

4. $y = \frac{c - ax}{d}$

$$\begin{array}{r} c = ax + dy \\ -ax \quad -ax \\ \hline -ax + c = dy \end{array}$$

$$y = -\frac{a}{d}x + \frac{c}{d}$$

Ⓒ Write each equation in $Ax + By = C$ form.

1. $y = 5 - 3x$

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

3. $x = 2y - 3$

4. $fy + 3 = gx - 15$

Variables on one side, # on the other

Answers:

1. $3x + y = 5$

2. ~~$3x + 4y = 1$~~
 $3x - 4y = -1$

3. $x - 2y = -3$

4. $gx - fy = 18$

Writing Linear Equations

Write the slope-intercept form of the equation of each line.

1) $3x - 2y = -16$

$$\begin{aligned} & \frac{-3x \quad -3x}{-2y} = \frac{-3x - 16}{-2} \\ & y = \frac{3}{2}x + 8 \end{aligned}$$

2) $13x - 11y = -12$

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

4) $x - 3y = 6$

5) $6x + 5y = -15$


6) $4x - y = 1$

7) $11x - 4y = 32$

8) $11x - 8y = -48$

Mixed Equations

Name: _____ Date: _____

 Solve the equations. Complete \bigcirc 's first, \square 's second, and \triangle 's last.

$$\square (1) -45 = 3(2x - 3)$$

$$\square (2) -3(3x - 4) = 57$$

$$\square (3) 17 = 7x - 2(3x - 4)$$

$$\bigcirc (4) 14 - 2x = 3x - 6$$

$$\bigcirc (5) -10 + x = 8 - 2x$$

$$\bigcirc (6) 4 - 3x = -2x - 3$$

$$\triangle (7) -6 = \frac{-5x - 2}{2}$$

$$\triangle (8) \frac{4x - 2}{3} = 6$$

$$\square (9) -2x + 3(x + 4) = 4$$

$$\square (10) 39 = -5x - 2(-6x - 2)$$

Homework

Finish classwork