

Homework Qs

Note Title

8/26/2015

1.6 # 47) Simplify.

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

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

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

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

$$= -\frac{2}{1}x \left(\frac{2}{2}\right) - \frac{1}{2}x - \frac{1}{1}\left(\frac{2}{2}\right) - \frac{5}{2}$$

$$= -\frac{4}{2}x - \frac{1}{2}x - \frac{2}{2} - \frac{5}{2}$$

$$= \boxed{-\frac{5}{2}x - \frac{7}{2}}$$

Example: Simplify.

$$\frac{1}{3}(-4x + \frac{2}{5}) - \frac{3}{2}(\frac{1}{4}x - \frac{1}{5} + 7x^2)$$

$$= \frac{1}{3}(-4x) + \frac{1}{3}(\frac{2}{5}) - \frac{3}{2}(\frac{1}{4}x) - \frac{3}{2}(-\frac{1}{5}) - \frac{3}{2}(7x^2)$$

$$= -\frac{4}{3}x + \frac{2}{15} - \frac{3}{8}x + \frac{3}{10} - \frac{21}{2}x^2$$

$$= -\frac{4}{8}x - \frac{3}{8}x + \frac{2}{15} + \frac{3}{10} - \frac{21}{2}x^2$$

$$= -\frac{4}{8}x \left(\frac{8}{8}\right) - \frac{3}{8}x \left(\frac{8}{8}\right) + \frac{2}{15} \left(\frac{2}{2}\right) + \frac{3}{10} \left(\frac{2}{2}\right) - \frac{21}{2}x^2$$

$$= -\frac{32}{24}x - \frac{9}{24}x + \frac{4}{30} + \frac{9}{30} - \frac{21}{2}x^2$$

$$= \boxed{-\frac{41}{24}x + \frac{13}{30} - \frac{21}{2}x^2}$$

1.6 # 60) $0.08x + 0.07(10,000 - x)$

$$= 0.08x + 0.07(10,000) + 0.07(-x)$$

$$= 0.08x + 700 - 0.07x$$

$$= \boxed{0.01x + 700} \quad \text{or} \quad 0.01x + 700.00$$

$$\begin{array}{r} 10,000 \\ .07 \\ \hline 700.00 \end{array}$$

Chapter 2: Solving Linear Equations and Inequalities

2.1: The Additive Property of Equality

An equation is a mathematical statement consisting of two algebraic expressions connected with an equals sign. ($=$)

A solution to an equation is a value of the variable(s) that makes the equation true. To solve an equation means to find the solutions.

Linear Equation: variables to 1st power only.

Example: Is -3 a solution to $2x - 4 = 2$?

$$2x - 4 = 2$$

$$x = -3 \Rightarrow 2(-3) - 4 = 2$$

$$-6 - 4 = 2$$

$$-10 = 2 \quad \text{False}$$

No, -3 is not a solution.

Is 3 a solution to $2x - 4 = 2$?

$$x = 3 \Rightarrow 2(3) - 4 = 2$$

$$6 - 4 = 2$$

$$2 = 2 \quad \text{True}$$

Yes, 3 is a solution.

Additive Property of Equality

If $a=b$, then $a+c=b+c$.

This means we can add (or subtract) the same quantity from both sides.

Example:

Solve.

$$x - 5 = 11$$

+5 +5

$$x = 16$$

Solution Set: $\{16\}$

xyz have you write

$$x = \boxed{16}$$

Never write: $\{x=16\}$

Example: Solve. $2x - 7 = 6 + 3x$

-2x -2x

$$-7 = 6 + x$$

-6 -6

$$-13 = x$$

Solution Set:

$$\{-13\}$$

Check it: $2x - 7 = 6 + 3x$

$$x = -13 \Rightarrow 2(-13) - 7 = 6 + 3(-13)$$

$$-26 - 7 = 6 - 39$$

$$-33 = -33 \quad \checkmark \text{ or}$$

If you put the x 's on left side,

$$2x - 7 = 6 + 3x$$

-3x -3x

$$-x - 7 = 6$$

+7 +7

$$-x = 13$$

$$x = -13$$

$$\{-13\}$$

Example: Solve.

$$\frac{3}{2}x + \frac{4}{5} = \frac{1}{2}x - \frac{5}{6}$$

$$\frac{3}{2}x - \frac{1}{2}x = -\frac{5}{6} - \frac{4}{5}$$

$$\frac{2}{2}x = -\frac{5}{6} \left(\frac{5}{5}\right) - \frac{4}{5} \left(\frac{6}{6}\right)$$

$$1x = -\frac{25}{30} - \frac{24}{30}$$

$$x = -\frac{49}{30}$$

$$\boxed{\left\{-\frac{49}{30}\right\}}$$

2.2: The Multiplicative Property of Equality

Example: What value of x solves $4x=12$?

$$\text{Try } x=3: 4(3)=12$$

$$12=12 \checkmark$$

$$\{3\}$$

Multiplicative Property of Equality

If $a=b$, then $ac=bc$ for all $c \neq 0$.

This means we can multiply (or divide) both sides by the same non zero number.

Ex: Solve $4x=12$

$$\frac{4x}{4} = \frac{12}{4}$$

$$1x = 3$$

$$x = 3$$

$$\text{Sol'n Set: } \boxed{\{3\}}$$

Ex: Solve

$$-4x - 2 = 46$$

$$-4x = 46 + 2$$

$$-4x = 48$$

$$\frac{-4x}{-4} = \frac{48}{-4}$$

$$x = -12$$

$$\{-12\}$$

Ex: Solve:

$$\frac{2}{7}x = 5$$

multiply both
sides by 7:

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

$$2x = 35$$

$$\frac{2x}{2} = \frac{35}{2}$$

$$x = \frac{35}{2}$$

$$\left\{ \frac{35}{2} \right\}$$

OR

$$\frac{2}{7}x = 5$$

$$\frac{\frac{2}{7}x}{2/7} = \frac{5}{2/7}$$

$$\frac{1}{2} \left(\frac{2}{1} x \right) = \frac{5}{1} \cdot \frac{7}{2}$$

$$x = \frac{35}{2}$$

$$\left\{ \frac{35}{2} \right\}$$

Ex:

$$-\frac{3}{5}x = \frac{4}{9}$$

multiply both sides
by $-\frac{5}{3}$

$$\left(-\frac{5}{3}\right) \left(-\frac{3}{5}x\right) = \frac{4}{9} \left(-\frac{5}{3}\right)$$

$$1x = -\frac{20}{27}$$

$$\left\{ -\frac{20}{27} \right\}$$