1.) Find the exact solution for each equation.

a. $2x + 11 - 6(x - 8) - 3x + 21 = 46$

$$2x + 11 - 6x + 48 - 3x + 21 = 46$$
$$-7x + 80 = 46$$
$$-7x = -34$$
$$x = \frac{34}{7}$$

b. $\frac{2}{3}(6m - 21) + 29 = -42$

$$4m - 14 + 29 = -42$$
$$4m + 15 = -42$$
$$4m = -57$$
$$m = \frac{-57}{4}$$

2.) Simplify the following expressions.

a. $18 \left(\frac{5}{9} - \frac{5}{6}R \right)$

$$10 - 15R$$

b. $\frac{5 \cdot 3}{16 \cdot 3} + \frac{9 \cdot 4}{12 \cdot 4} - \frac{13 \cdot 6}{8 \cdot 6}$

$$\frac{15}{48} + \frac{36}{48} - \frac{78}{48} = \frac{-27}{48}$$

Hwk #15 Answers:

21. $a = 11$

22. $x = \frac{3}{2} = 1.5$

23. $m = 46$

24. $k = 7$

25. $m = -26$

26. $a = \frac{168}{5} = 33.6$

27. $x = \frac{3}{14}$

64. a.) 1/5, 1/7
b.) 1/5t
c.) 1/7t
d.) 1/5t + 1/7t = 1; 2 11/12 h

$2\frac{11}{12}$

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64. A work crew has two pumps, one new and one old. The new pump can fill a tank in 5 hours. The old pump can fill the same tank in 7 hours.
   a. How much of a tank can be filled in 1 hour with the new pump? With the old pump?
   b. Write an expression for the number of tanks the new pump can fill in t hours. (*Hint:* Write the rate at which the new pump fills tanks as a fraction and then multiply by t.)
   c. Write an expression for the number of tanks the old pump can fill in t hours.
   d. Write and solve an equation for the time it will take the pumps to fill one tank if the pumps are used together.

$\frac{1}{5}t$ $\frac{1}{7}t$

$\frac{1}{5}t + \frac{1}{7}t = 1$

21. $\frac{a}{7}$
22. x
23. $\frac{m}{6}$
24. $\frac{2}{3}$
25. 4
26. $\frac{a}{5}$
27. $\frac{1}{2}$

1.) The perimeter of a rectangle is 54 inches. The width is five more than the length. Draw and label a rectangle using this information.
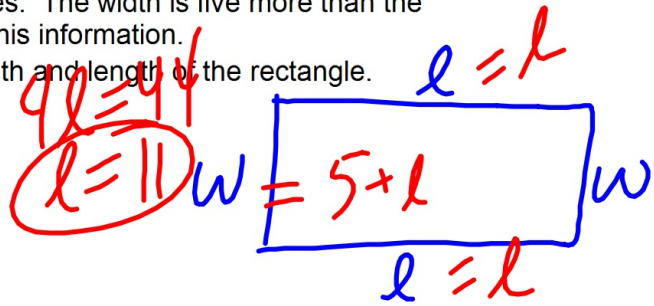Write and solve an equation to find the width and length of the rectangle.

Width = **16 inches**

Length = **11 inches**

$$98 = 44$$
$$\boxed{\ell = 11}$$

$$\ell = \ell$$
$$w = 5 + \ell$$

$$\ell + \ell + 5 + \ell + 5 + \ell = 54 \qquad w = 5 + \ell$$
$$2\ell + 2(5 + \ell) = 54 \qquad \ell = length$$
$$4\ell + 10 = 54$$

Equations with variables on Both Sides of the equal sign:

- Simplify each side first. Use Distributive Property if necessary.
- Move all the variables to one side of the equation.
- Solve.

Solve.

1.) $11c - 36 = 4c$

$$-11c \qquad -11c$$
$$-36 = -7c$$
$$c = \frac{36}{7}$$

$$11c - 36 = 4c$$
$$-4c \qquad \qquad -4c$$
$$7c - 36 = 0$$
$$7c = 36$$
$$c = \frac{36}{7}$$

2.) $3k - 2(2k + 7) = -5k - 19$

$$3k - 4k - 14 = -5k - 19$$
$$-1k - 14 = -5k - 19$$
$$+5k \qquad \quad +5k$$
$$4k - 14 = -19$$
$$4k = -5$$
$$k = \frac{-5}{4}$$

3.) $9x - 3(2x + 6) + 19 = 2x + 5 + x - 4$

$9x - 6x - 18 + 19 = 2x + 5 + x - 4$

$3x + 1 = 3x + 1$

$1 = 1$

108

4(2x + 3)°

(3x + 72)°

108
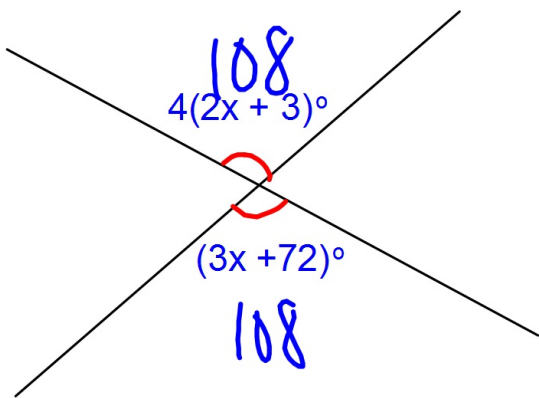
4.) Write an equation and solve it in order to find the value of x.

$4(2x+3) = 1(3x+72)$

$8x + 12 = 3x + 72$

$5x + 12 = 72$

$5x = 60$

$x = 12$

$$9x - 3(2x + 6) + 19 = 2x + 5 + x - 4$$

This equation is called an IDENTITY:

both sides are identical after you simplify.

$$3x + 1 = 3x + 1$$
$$1 = 1 \quad \text{This is a True statement}$$

No matter what you substitute for x the two sides will be identical.

We say that there are an Infinite number of solutions or that the solution is All Real Numbers.

5.) $10 + 3(R - 5) + 2R = 4R - 1 + R - 3$

$$10 + 3R - 15 + 2R = 4R - 1 + R - 3$$
$$5R - 5 = 5R - 4$$

No Solution. $-5 = -4$

$\emptyset$

$$10 + 3(R - 5) + 2R = 4R - 1 + R - 3$$

When you simplify both sides your are left with:

5R - 5 = 5R - 4

-5 = -4   this is a FALSE statement.

No matter what you subtitute for x the two sides will NEVER be identical!

This equation will NEVER be true so we say there is NO SOLUTION to this equation.

When all the variables cancel out in an equation:

It means that it doesn't matter what you substitute for the variable the equation is either going to ALWAYS be true or ALWAYS be false.

No Solution

Solution is
All Real #'s

6.)   Solve.

$$3Q - 19 + Q = 2Q + 11 - 8Q - 32$$

$$4Q - 19 = -6Q - 21$$
$$+6Q \qquad +6Q$$
$$10Q - 19 = -21$$
$$10Q = 2$$
$$Q = \frac{2}{10} \quad 1\frac{1}{5} \quad 1 \cdot 2$$

You can now finish Hwk #13

Sec 2-4

Pages 98-99

Probems 1, 2, 13-16, 22, 23, 28, 29

Due Thursday

IXLs: J.5 & J.6 - due Friday, Sept. 28th!