Warm Up

9/12

Check your ACE #4 with the answer key and your group.

Remember Answer Keys can be found on my website.



Do you have any questions?

Homework Questions?

Page 16, #'s 4

4. During the medal ceremonies at a track meet, the top athletes stand on platforms made from stacked wooden boxes. The number of boxes depends on the number of medal winners.



a. Copy and complete the table below.

Medal Platforms

Number of Medalists	1	2	3	4	5	6	7	8
Number of Boxes	1	3	6					

- b. Make a graph of the (number of medalists, number of boxes) data.
- c. Describe the pattern of change shown in the table and graph.
- **d.** Each box is 1 foot high and 2 feet wide. A red carpet starts 10 feet from the base of the platform and covers all the risers and steps.



Copy and complete the table below.

Carpet for Platforms

Number of Steps	1	2	3	4	5	6	7	8
Carpet Length (ft)								

- e. Make a graph of the (number of steps, carpet length) data.
- **f.** Describe the pattern of change in the carpet length as the number of steps increases. Compare this pattern to the pattern in the (number of medalists, number of boxes) data.





Just by looking at the table we can tell this is not a linear relationship.

Nonlinear

even though the y-values change according to a pattern



Solving Equations

Solving for x

The equation is a balance:



Always want to Keep the balance even. Inverse Operations:

What operation will undo the effects of another?

Addition - Subtraction Subtraction - Addition Multiplication - Division Division - Multiplication Solving for x - The ultimate goal is to have the variable on one side of the equal sign and a constant on the other.

We use inverse operations and properties of equality to undo what is happening to "x".

Variable: a letter that represents an unknown value

Constant: a number

What is the Property of Equality?

Two sides of an equation remain equal after applying the same operation on each side of the equal sign.

Doing the same thing to both sides.



$$x - 10 = 4$$

+10 +10
 $x = 14$

$$\frac{3x}{3} = \frac{15}{3}$$
Division bar
$$\frac{3x}{3} = \frac{15}{3}$$

$$\frac{15}{3} = \frac{5}{3}$$

Same thing though messier 3x = 15 ÷3 ÷3 X = 5

$$\frac{-2x}{-2} = \frac{14}{-2}$$
$$x = -7$$

 $\frac{\lambda}{1} \left(\frac{x}{2}\right) = 5(\lambda) \qquad \begin{cases} \lambda \\ \lambda \\ \lambda \\ \lambda \\ \lambda \\ \chi = 10 \end{cases} \qquad \begin{cases} \lambda \\ \lambda \\ \lambda \\ \lambda \\ \lambda \\ \chi \\ \chi \\ \chi \end{cases}$

$$(3)_{\overline{1}} \frac{1}{3} x = 10 (3)$$

 $x = 30$

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

$$3\left(\frac{x}{3}\right) = (10)^{3}$$

X= 30

What if there are more operations involved?

$$5x + 3 = 13$$

Like before, we want to **UNDO** whatever is happening to "x" so we have only one "x" left.

Let's start "peeling things away" from x.

Remember: Whatever we do to one side of the equation we need to do the same to the other side to keep the balance even.

$$5x + 3 = 13$$

- 3 - 3
 $5x = 10$
5 5
 $x = 2$

$$5x + 3 = 13 - x$$

$$+x + x$$

$$6x + 3 = 13$$

$$-3 -3$$

$$6x = 10$$

$$6x = 10$$

$$5x + 3 = 10$$

$$5x + 3 = 13$$

$$-3 -3$$

$$-3 -3$$

$$5x + 3 = 13$$

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$$5x + 3 = 13 - x$$

$$-3 - 3$$

$$5x = |0 - x|$$

$$+x + x$$

$$\frac{6x}{6} = |0|$$

$$\frac{6x}{6} = |0|$$

$$x = \frac{10}{6}$$

$$x = \frac{5}{3}$$

As things get more complicated, you will want to combine like terms as much as you can before using properties of equality.

1.
$$\frac{7+5r+3+5=1+7r}{5r+15} = \frac{1+7r}{1+7r} > \frac{1}{14} = \frac{2}{3}r}{\frac{7}{3} = \frac{7}{3}}$$

$$-4 + 6k + 8k = -4 - 7k$$

$$-4 + 14 K = -4 - 7K$$

$$\frac{+7K}{+7K}$$

$$\frac{+7K}{-4 + 31 K = -4}$$

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

$$\frac{-4 + 4}{-31 K = 0}$$

$$\frac{-4 + 2}{-31 - 2}$$

$$K = 0$$

2.

$$8n - 7 = 7n - 14$$

$$\frac{+7}{8n} = 7n - 7$$

$$\frac{-7n}{n} = -7$$

$$8n - 7 = 7n - 14$$

$$\frac{+14}{14} = \frac{+14}{14}$$

$$\frac{+14}{8n + 7} = 7n$$

$$\frac{-7n}{7n} = 7n$$

$$\frac{-7n}{7n} = 7n$$

$$\frac{-7n}{7n} = 7n$$

$$\frac{-7}{7n} = 7n$$

3.

Procedure for solving for x (so far):

- Combine like terms (if any) on each side.
- Use properties of equality to isolate x.

Don't forget to:

- Show all work
- Use transformation lines.

-7.	<i>b</i> – 14 :	= -5b - 4b	5
	16-14	= -96	
+ 7	'b	+76	
	-14 = -2	-2b -2	
	7=	b	

4.

Finish up the Practice Problems in your notebook.