

**Thursday - 8/21/14**

1. Get out your flipbook from yesterday
2. Complete the Warm Up (see below)
3. Solving Equations notes
4. Kahoot!

S.P. - See board  
Quiz tomorrow!  
(1.1 - 1.3)

**Think About it Thursday**

Make a list of key words that can be used to represent a mathematical operation.

*For example: increased by indicates addition*

Try to find some words for +, -, \*, /

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**1.3 - Solving Equations**

**Content Standards**

A.CED.1 Create equations and inequalities in one variable and use them to solve problems.

**Objectives**

- Translate verbal expressions into algebraic expressions and equations, and vice versa
- Solve equations using the properties of equality.

**Vocab**

- equation
- solution

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**EXAMPLE 1** Verbal to Algebraic Expression

**A.** Write an algebraic expression to represent the verbal expression *7 less than a number*.

$n - 7$  ★

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**EXAMPLE 1** Verbal to Algebraic Expression

**B.** Write an algebraic expression to represent the verbal expression *the square of a number decreased by the product of 5 and the number*.

$n^2 - 5n$  ★

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**EXAMPLE 2** Algebraic to Verbal Sentence

**A.** Write a verbal sentence to represent  $6 = -5 + x$ .

*The sum of -5 and a number is six*

**Answer:** Six is equal to -5 plus a number.

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**Record in flipbook**

**KeyConcept** Properties of Equality

Property	Symbols	Examples
Reflexive	For any real number $a$ , $a = a$ .	$b + 12 = b + 12$
Symmetric	For all real numbers $a$ and $b$ , if $a = b$ , then $b = a$ .	If $18 = -2n + 4$ , then $-2n + 4 = 18$ .
Transitive	For all real numbers $a$ , $b$ , and $c$ , if $a = b$ and $b = c$ , then $a = c$ .	If $5p + 3 = 48$ and $48 = 7p - 15$ , then $5p + 3 = 7p - 15$ .
Substitution	If $a = b$ , then $a$ may be replaced by $b$ and $b$ may be replaced by $a$ .	If $(6 + 1)x = 21$ , then $7x = 21$ .

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**EXAMPLE 3 Identify Properties of Equality**

**A. Name the property illustrated by the statement.**  
 $a - 2.03 = a - 2.03$   
**Answer:** Reflexive Property of Equality

**B. Name the property illustrated by the statement.**  
 If  $9 = x$ , then  $x = 9$ .  
**Answer:** Symmetric Property of Equality

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KeyConcept	
<b>Addition and Subtraction Properties of Equality</b>	
<b>Symbols</b>	For any real numbers, $a$ , $b$ , and $c$ , if $a = b$ , then $a + c = b + c$ and $a - c = b - c$ .
<b>Examples</b>	If $x - 6 = 14$ , then $x - 6 + 6 = 14 + 6$ . If $n + 5 = -32$ , then $n + 5 - 5 = -32 - 5$ .
<b>Multiplication and Division Properties of Equality</b>	
<b>Symbols</b>	For any real numbers, $a$ , $b$ , and $c$ , $c \neq 0$ , if $a = b$ , then $a \cdot c = b \cdot c$ and $\frac{a}{c} = \frac{b}{c}$ .
<b>Examples</b>	If $\frac{m}{8} = -7$ , then $8 \cdot \frac{m}{8} = 8 \cdot (-7)$ . If $-2y = 12$ , then $\frac{-2y}{-2} = \frac{12}{-2}$ .

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**EXAMPLE 4 Solve One-Step Equations**

**A. Solve  $m - 5.48 = 0.02$ . Check your solution.**  
 $+5.48 \quad +5.48$   
 $m = 5.5$

**B. Solve  $18 = \frac{1}{2}t$ . Check your solution.**  
 $t = 36$

**C. What is the solution to the equation  $\frac{2}{3}x = 10$ ?**  
 $\frac{2}{3}x = 10 \cdot \frac{3}{2}$   
 $\frac{2}{2}x = \frac{30}{2}$   
 $x = 15$

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**EXAMPLE 5 Solve a Multi-Step Equation**

**Solve  $53 = 3(y + 2) + 2(3y + 1)$ .**

$53 = 3y + 6 + 6y + 2$

$53 = -3y - 4$   
 $+4 \quad +4$

$57 = -3y$   
 $\frac{57}{-3} = \frac{-3y}{-3}$

$y = -19$

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**EXAMPLE 6 Solve for a Variable**

**GEOMETRY** The formula for the surface area  $S$  of a cone is  $S = \pi r l + \pi r^2$ , where  $l$  is the slant height of the cone and  $r$  is the radius of the base. Solve the formula for  $l$ .  $\rightarrow$  isolate  $l$

$S = \pi r l + \pi r^2$   
 $-\pi r^2 \quad -\pi r^2$   
 $\frac{S - \pi r^2}{\pi r} = \frac{\pi r l}{\pi r}$   
 $\frac{S - \pi r^2}{\pi r} = l$

$*18 = 12l + 6$   
 $-6 \quad -6$   
 $\frac{12}{12} = \frac{12l}{12}$   
 $l = 1$

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**STANDARDIZED TEST EXAMPLE 7**

If  $4g + 5 = \frac{4}{9}$ , what is the value of  $4g - 2$ ?

**A**  $-\frac{41}{36}$       **B**  $-\frac{41}{9}$   
**C**  $-\frac{59}{9}$       **D**  $-\frac{67}{7}$

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