

Name _____

Date _____

Mr. Tallman

Math 7

Do Now

Matching Column: Match the EXPRESSION with the correct PROPERTY.

- | | |
|--------------------------------|--|
| 1) $a + b = b + a$ | Zero Property of Multiplication |
| 2) $a \cdot 0 = 0$ | Additive Inverse Property |
| 3) $a(b + c) = ab + ac$ | Commutative Property |
| 4) $a + (-a) = 0$ | Distributive Property |
| 5) $(a + b) + c = a + (b + c)$ | Associative Property of Addition |

Fill in the blank to complete each equation.

5) 7 + 5 = 12

6) 18 - 10 = 8

7) 3 - 7 = -4

Lesson #9 - Solving One Step Equations involving Addition and Subtraction

Equations are mathematical sentences in which two **expressions** are equal.

Algebraic Equations are equations that involve both numbers and variables.

Examples of **Algebraic Equations**:

$2x + 6 = 1$

$x + 3 = -12$

$a + b = 21$

We use different mathematical properties in order to solve an equation for a given variable.

Addition Property of Equality: If $A = B$, then $A + C = B + C$

Example 1) Solve and check: $x - 5 = 13$

$$\begin{array}{r} x - 5 = 13 \\ + 5 \quad + 5 \\ \hline x = 18 \end{array}$$

Check

$x - 5 = 13$

$18 - 5 = 13$

$13 = 13 \checkmark$

Subtraction Property of Equality: If $A = B$, then $A - C = B - C$

Example 2: Solve and Check: $x + 10 = 26$

$$\begin{array}{r} x + 10 = 26 \\ -10 \quad -10 \\ \hline x = 16 \end{array}$$

Check

$$\begin{array}{l} x + 10 = 26 \\ 16 + 10 = 26 \\ 26 = 26 \checkmark \end{array}$$

Example 3)

Part A) Sean solved the equation $x - 7 = 17$. What mathematical property did Sean use to find the solution?

Part B) Solve and check the equation from Part A.

$$\begin{array}{r} x - 7 = 17 \\ +7 \quad +7 \\ \hline x = 24 \end{array}$$

Example 4) James solved the equation $x - 8 = -12$ and found that $x = -20$. Is James correct? If he is not correct, solve the equation and find the correct value of x .

Not correct.

$$\begin{array}{r} x - 8 = -12 \\ +8 \quad +8 \\ \hline x = -4 \end{array}$$

Example 5) Tom owed his friend \$15. He paid his friend back some money. After he paid his friend back some money, he only owed his friend \$9.

Part A) Write an equation that models this situation. Be sure to include a let statement.

$$-15 + x = -9$$

Let x = amount he paid back.

Part B) Solve your equation from part A to determine how much money Tom paid back.

$$\begin{array}{r} -15 + x = -9 \\ +15 \quad +15 \\ \hline x = 6 \end{array}$$

Now, You Try!

Solve and Check each equation.

6) $n - 8 = 8$ $+8$ $+8$ $n = 16$	$n - 8 = 8$ $16 - 8 = 8$ $16 = 16 \checkmark$	7) $s + 10 = 5$ -10 -10 $s = -5$	$s + 10 = 5$ $-5 + 10 = 5$ $5 = 5 \checkmark$
8) $-6 + h = 12$ $+6$ $+6$ $h = 18$	$-6 + h = 12$ $-6 + 18 = 12$ $12 = 12 \checkmark$	9) $k - 7 = -20$ $+7$ $+7$ $k = -13$	$k - 7 = -20$ $-13 - 7 = -20$ $-13 + (-7) = -20$ $-20 = -20 \checkmark$
10) $t - 13 = 11$ $+13$ $+13$ $t = 24$	$t - 13 = 11$ $24 - 13 = 11$ $11 = 11 \checkmark$	11) $-5 + p = -14$ $+5$ $+5$ $p = -9$	$-5 + p = -14$ $-5 + (-9) = -14$ $-14 = -14 \checkmark$
12) $4 = -9 + g$ $+9$ $+9$ $13 = g$	$4 = -9 + g$ $4 = -9 + 13$ $4 = 4 \checkmark$	13) $-14 = y - 6$ $+6$ $+6$ $y = -8$	$-14 = y - 6$ $-14 = -8 - 6$ $-14 = -8 + (-6)$ $-14 = -14 \checkmark$

14) Jamie solved the equation $x + 7 = 9$ and said that $x = 16$. Is Jamie correct? If not, correct her error by solving the equation.

No, She is
Not correct.

$$\begin{array}{r} x + 7 = 9 \\ -7 \quad -7 \\ \hline x = 2 \end{array}$$

15) The temperature in the morning at MAMS was 70°F . The temperature increased by a certain amount and at the end of 9th period, the temperature was 81° . Set up and solve an equation to determine how much the temperature increased. Be sure to write a let statement.

Let $x =$ temperature increase.

$$\begin{array}{r} 70 + x = 81 \\ -70 \quad -70 \\ \hline x = 11 \end{array}$$

