Name_____ Date _____

Mr. Tallman Math 7

Do Now

Solve the following equations. Only check questions 1 and 3.

1) $x - 7 = 12$

$+7 \quad +7$

$x = 19$

Check

$19 - 7 = 12$

$12 = 12$ ✓

2) $12 + x = -8$

$-12 \quad -12$

$x = -20$

$-8 - 12$

$-8 + (-12)$

-20

3) $-6 + y = -30$

$+6 \quad +6$

$y = -24$

Check

$-6 + 4 = -30$

$-6 + (-24) = -30$

$-30 = -30$ ✓

4) $8 + n = -10$

$-8 \quad -8$

$n = -18$

$-10 - 8$

$-10 + (-8)$

-18

Fill in the blank to complete each equation.

5) $\_8\_ \cdot 6 = 48$ 6) $30 \div \_-6\_ = -5$ 7) $3 \cdot \_-9\_ = -27$

Lesson #10 – Solving One Step Equations involving Multiplication and Division

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

Algebraic Equations are equations that involve both numbers and variables.

Examples of **Algebraic Equations**:

$6x = 36$ $\frac{x}{3} = 12$

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

Multiplication Property of Equality: If A = B, then $A \cdot B = B \cdot A$

Example 1) Solve and check: $\frac{3}{1}\left(\frac{x}{3}\right) = (9)3$

$x = 27$

Check

$\frac{x}{3} = 9$

$\frac{27}{3} = 9$

$9 = 9$ ✓

Division Property of Equality: If $A = B, then \frac{A}{C} = \frac{B}{C}$

Example 2: Solve and Check: $-8y = 48$

$\frac{-8y}{-8} = \frac{48}{-8}$

$y = -6$

Check

$-8y = 48$

$-8(-6) = 48$

$48 = 48$ ✓

Example 3)

Part A) Brett solved the equation $-9x = 63$. ~~What mathematical property did Sean use to find the solution~~?

$\frac{-9x}{-9} = \frac{63}{-9}$

$x = -7$

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

Example 4) Maria solved the equation $\frac{x}{10} = 80$ and found that $x = 8$. Is James correct? If he is not correct, solve the equation and find the correct value of x.

No.

$10\left(\frac{x}{10}\right) = (80)10$

$x = 800$

Example 5) Josh saved $10 dollars a week for a certain number of weeks in order to pay for a new video game. The video game costs $60.

Part A) Write an equation that models this situation. Be sure to include a let statement. Let x = # of weeks $10x = 60$

Part B) Solve your equation from part A to determine how many weeks Josh saved money.

$\frac{10x}{10} = \frac{60}{10}$

$x = 6$ weeks

Now, You Try!

Solve and Check each equation.

6) $\frac{5x}{5} = \frac{25}{5}$

$x = 5$

$5x = 25$

$5(5) = 25$

$25 = 25$ ✓

7) $4\left(\frac{y}{4}\right) = (-7)4$

$y = -28$

$\frac{y}{4} = -7$

$\frac{-28}{4} = -7 \quad -7 = -7$ ✓

8) $2\left(\frac{n}{2}\right) = (20)2$

$n = 40$

$\frac{n}{2} = 20$

$\frac{40}{2} = 20 \quad 20 = 20$ ✓

9) $\frac{-6g}{-6} = \frac{54}{-6}$

$g = -9$

$-6g = 54$

$-6(-9) = 54$

$54 = 54$ ✓

10) $\frac{8b}{8} = \frac{64}{8}$

$b = 8$

$8b = 64$

$8(8) = 64$

$64 = 64$ ✓

11) $-6\left(\frac{h}{-6}\right) = (11)-6$

$h = -66$

$\frac{h}{-6} = 11$

$\frac{-66}{-6} = 11 \quad 11 = 11$ ✓

12) $4\left(\frac{f}{4}\right) = (9)4$

$f = 36$

$\frac{f}{4} = 9$

$\frac{36}{4} = 9 \quad 9 = 9$ ✓

13) $\frac{-49}{7} = \frac{7s}{7}$

$s = -7$

$-49 = 7s$

$-49 = 7(-7)$

$-49 = -49$ ✓

14) Hannah solved the equation $-5x = -45$ and said that $x = -9$. Is Hannah correct? If not, correct her error by solving the equation.

No. $\frac{-5x}{-5} = \frac{-45}{-5}$

$x = 9$

15) Jordan wants to sign up for a certain music streaming service. That music streaming service costs $9 per month for unlimited streaming without ads. After a certain number of months, Jordan paid $81 and then canceled his subscription. Write and solve an equation to determine for how many months his subscription was active. Be sure to include a let statement.

Let x = # of months

$\frac{9x}{9} = \frac{81}{9}$

$x = 9$ months