Name: _____ Date: Aug 31e Hour: 6th

Unit 1 Day 6: Solving ONE Step Equations

Focus Question: Can I solve a one step equation using inverse operations?

A. Solve vs. Simplify

A: $4x + 6x$ B: $4x + 6$ C: $4x = 6$

1. Only one of the above can be simplified. Which one? A Explain.
Both terms have a variable

Simplify means write in fewer symbols

2. Only one of the above can be solved. Which one? C Explain.
There is an equal sign

Solve means isolate the variable

B. The Additive Identity

1. Fill in each blank: $5 + 0 =$ 5 $0 + -6 =$ -6 $a + 0 =$ a

2. Does adding zero to a number change the number? No

Zero is **the additive identity**: the number you can add to anything without changing the value.

The additive identity is created by doing the **inverse operation**. (opposite)

The inverse of addition is subtraction.

The inverse of subtraction is addition.

3. Fill in each blank $0 = -4$ + 4 $0 = 10$ − 10 $0 = -12$ + 12

The **addition property of equality** states that you can add the same number to both sides of an equation and the equality is still true. For example if a = b, then a +2 = b +2. All properties of equality are used to help us solve equations.

4. Solve the following:

$x - 8 = 10$: +8 +8 → $X = 18$

$-4 = b - 9$: +9 +9 → $5 = b$

$-5 + k = 12$: +5 +5 → $K = 17$

The **subtraction property of equality** states that you can subtract the same number on both sides of an equation and the equality is still true. For example if a = b, then a -2 = b -2.

5. Solve the following:

$y + 7 = -8$: -7 -7 → $y = -15$

$6 + r = 9$: -6 -6 → $r = 3$

$1 = h + 10$: -10 -10 → $-9 = h$

C. The multiplicative Identity

1. Fill in each blank: $1 \cdot 4 =$ 4 $\quad -3 \cdot 1 =$ -3 $\quad 1x =$ X

2. Does multiplying a number by one change the number? No

One is **the multiplicative identity**: the number you can multiply anything by without changing the value.

The multiplicative identity is created by doing the **inverse operation**.

The inverse of multiplication is division.

The inverse of division is multiplication.

3. Fill in each blank $1 = -6 \div -6$ $\quad 1 = \frac{1}{4} \div 4$ $\quad 1 = 12 \div 12$

The **multiplication property of equality** states that you can multiply the same number on both sides of an equation and the equality is still true. For example if a = b, then $a \cdot 2 = b \cdot 2$.

4. Solve the following:

1. $\frac{x}{7} = -3 \cdot 7$ $\quad x = -21$

2. $-\frac{a}{2} = -4 \cdot -2$ $\quad a = 8$

$4 \cdot 5 = \frac{f}{4} \cdot 4$ $\quad 20 = f$

The **division property of equality** states that you can divide by the same number on both sides of an equation and the equality is still true. For example if a = b, then $\frac{a}{5} = \frac{b}{5}$.

5. Solve the following:

$6h = -24$ $\quad \div 6 \quad \div 6$ $\quad h = -4$

$18 = -2w$ $\quad \div -2 \quad \div -2$ $\quad -9 = w$

$4x = 22$ $\quad \div 4 \quad \div 4$ $\quad X = 5.5$ or $\frac{22}{4} \div \frac{2}{2}$ $\quad \frac{11}{2}$

for now

high school ans.

D. Solve vs Check your solution

1. Solve $x + 8 = 12$ $\quad -8 \quad -8$ $\quad X = 4$

2. Check your solution to the previous problem

↓ Substitute

$(4) + 8 = 12$

$12 = 12$

True so $x = 4$ is correct

When you solve you have to show ALL your work to isolate the variable.

When you check your solution you substitute your answer into the equation and PROVE your solution makes the equation true.