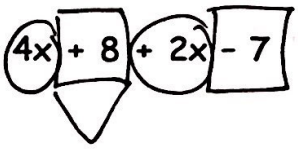
AIM: 3-3 I will be able to solve one-step equations using multiplication and division!

Name _____ Date Key

Mrs. Ashley Math 6 - Period 6

Warm-up:

C 1) Simplify the expression (what are the like terms?)



6x + 1

a) 6x + 15

b) 6x - 1

c) 6x + 1

d) 2x + 1

C 2) Which of the following is true about the equation: **x - 5 = 13**?

a) To find the value of x, subtract 13 from each side.

b) To find the value of x, add 13 to each side.

c) To find the value of x, add 5 to each side.

d) To find the value of x, subtract 5 from each side.

Let's Investigate: How do we use inverse operations when **multiplying** or **dividing** equations?

Find the value of x for each equation below.
Share and compare your answers with your partner.

1. $3x = 24$

$X = 8$

2. $\frac{x}{2} = 8$

$X = 16$

RECALL: Steps to Solving Equations

1) Draw a '**WALL**' through the equal sign to separate the left and the right side.

2) Isolate the variable by performing the inverse operation. In other words, get the variable *alone* on one side of the equal sign by performing the opposite operation.

3) SOLVE for the unknown variable.

4) 3-STEP CHECK:
   - -Rewrite **original** equation.
   - -**Substitute** your answer into the equation for the missing value.
   - -Show both sides are **equal**.

Inverse Operations - Opposite operations that undo each other.

Addition ↔ Subtraction (ZERO out) Z

Multiplication ↔ Division (CANCEL out to 1) /

1) **Solve:**	**Inverse Operation:**	**3-Step Check:**
$\frac{7}{1} \cdot \frac{b}{7} = 13 \cdot \frac{7}{1}$ $\frac{7b}{7} = 91$ $b = 91$	× by 7 or $\frac{7}{1}$	1) $\frac{b}{7} = 13$ 2) $\frac{91}{7} = 13$ 3) $13 = 13$ ✓ 13 / 7|91 / -7↓ / 21 / -21 / 0
2) Solve:	**Inverse Operation:**	**3-Step Check:**
$\frac{9w}{9} = \frac{126}{9}$ $w = 9\overline{)126}$ 14 -9↓ / 36 / -36 / 0 $w = 14$	÷ by 9	1) $9w = 126$ 2) $9(14) = 126$ 3) $126 = 126$ ✓ 3 14 × 9 / 126

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3) **Solve:** $\frac{x}{5} = 55$ $x \div 5 = 55$ $\cdot 5 \quad \cdot 5$ $x = 275$	**Inverse Operation:** x by 5 on both sides	**3-Step Check:** 1) $\frac{x}{5} = 55$ 2) $\frac{275}{5} = 55$ 3) $55 = 55$ ✓ $5\overline{)275}$ $-25\downarrow$ 25
4) **Solve:** $\frac{4p}{4} = \frac{24.8}{4}$ $p = 6.2$ $4\overline{)24.8}$ $-24\downarrow$ 08 -8 0	**Inverse Operation:** $\div$ by 4 on both sides	**3-Step Check:** 1) $4p = 24.8$ 2) $4 \cdot 6.2 = 24.8$ 3) $6.2 \times 4 = 24.8$ ✓
5) **Solve:** $\frac{b}{6} = 14$ $b \div 6 = 14$ $\cdot 6 \quad \cdot 6$ $b = 84$	**Inverse Operation:** x by 6 on both sides	**3-Step Check:** 1) $\frac{b}{6} = 14$ 2) $\frac{84}{6} = 14$ 3) $14 = 14$ ✓ $6\overline{)84}$ $-6\downarrow$ 24
6) **Solve:** $\frac{2.5x}{2.5} = \frac{22.5}{2.5}$ $x = 9$ $2.5\overline{)22.5}$ -225 0	**Inverse Operation:** $\div$ by 2.5 on both sides	**3-Step Check:** 1) $2.5x = 22.5$ 2) $2.5(9) = 22.5$ 3) $22.5 = 22.5$ ✓

FIND, EXPLAIN, and CORRECT

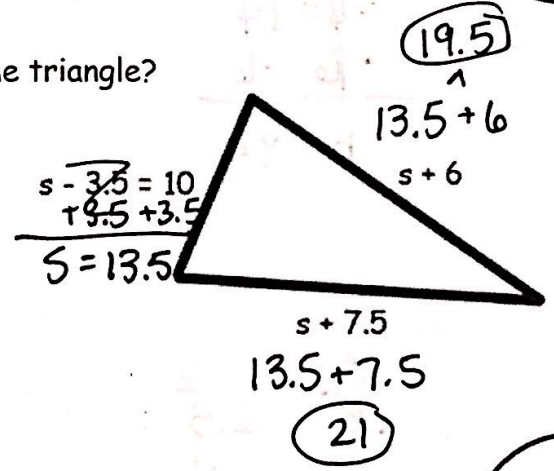
Problem and Incorrect Solution	Explanation of Errors	Correct Solution
$7h = 70$ $\cdot 7 \quad \cdot 7$ $h = 490$	Did not use inverse operation. you must ÷ by 7 on both sides.	$\frac{7h}{7} = \frac{70}{7}$ $h = 10$
$x - 9 = 30$ $-9 \quad -9$ $x = 21$	Did not use inverse operation you must +9 on both sides.	$x - 9 = 30$ $+9 \quad +9$ $x = 39$ $x = 39$

Challenge

The shortest side of the triangle is 10 units long.

a) What are the lengths of the other two sides of the triangle?

19.5 and 21



b) What is the perimeter of the triangle?

$10 + 19.5 + 21$

50.5 units

Summarize:

Explain the definition of an INVERSE OPERATION an opposite operation that 'undoes' another operation (add ↔ subtraction / multiply ↔ div