**Solving One Step Equations – Guided Notes**

An\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a mathematical sentence with an \_\_\_\_\_\_\_\_\_\_\_\_\_sign.

The following are all considered to be equations:

Ex) 9 + 2 = 11

Ex) x + 7 = 37

Ex) a + (-3) = 2a + 5

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an equation is a value for a \_\_\_\_\_\_\_\_\_\_\_\_\_ that makes an equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

You substitute a number for a variable to determine whether the number is a \_\_\_\_\_\_\_\_\_\_\_\_of the equation.

**Important Rules for Solving Equations**

Rule #1) When you solve an equation, your goal is to get the \_\_\_\_\_\_\_\_\_\_\_\_ alone by itself on \_\_\_\_\_\_\_\_\_\_\_\_ of the equation. In other words, you are trying to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ the variable.

Rule #2) When you are solving for a variable, you MUST use inverse \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to isolate the variable on one side of the equation.

\*\*Rule #3) Whatever you do to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an equation, you must do to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the equation. In other words, you must keep the equation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*Think of solving an equation like lifting weights. If you add or subtract weight from one side of the barbell, you must add or subtract the same amount of weight from the other side of the barbell to keep it balanced.*

**Checking your solutions**

**Examples**

Directions: Is the given number a solution for the equation? Please show how you arrived at your

answer by replacing the number where the variable is at. If both sides are equal, then you have found your solution.

Ex) 170 + x = 200, for x=30 Ex) 3 = 12 – a, for a=6

Ex) 9 – m = 3, for m=6 Ex) 8 + t = 2t, for t=3

**Solving One Step Equations – Guided Notes**

An\_equation\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is a mathematical sentence with an \_\_equal\_\_\_\_\_\_\_\_\_\_\_sign.

The following are all considered to be equations:

Ex) 9 + 2 = 11

Ex) x + 7 = 37

Ex) a + (-3) = 2a + 5

A \_solution\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an equation is a value for a \_variable\_\_\_\_\_\_\_\_\_\_\_\_ that makes an equation \_\_\_true\_\_\_\_\_\_\_\_\_\_\_\_\_.

You substitute a number for a variable to determine whether the number is a \_\_solution\_\_\_\_\_\_\_\_\_\_of the equation.

**Important Rules for Solving Equations**

Rule #1) When you solve an equation, your goal is to get the \_variable\_\_\_\_\_\_\_\_\_\_\_ alone by itself on \_\_one side\_\_\_\_\_\_\_\_\_\_ of the equation. In other words, you are trying to \_isolate\_\_\_\_\_\_\_\_\_\_\_\_\_ the variable.

Rule #2) When you are solving for a variable, you MUST use inverse \_operation\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to isolate the variable on one side of the equation.

\*\*Rule #3) Whatever you do to \_\_one side\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an equation, you must do to the \_\_\_other side\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the equation. In other words, you must keep the equation \_\_balanced\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

*Think of solving an equation like lifting weights. If you add or subtract weight from one side of the barbell, you must add or subtract the same amount of weight from the other side of the barbell to keep it balanced.*

**Checking your solutions**

**Examples**

Directions: Is the given number a solution for the equation? Please show how you arrived at your

answer by replacing the number where the variable is at. If both sides are equal, then you have found your solution.

Ex) 170 + x = 200, for x=30 Ex) 3 = 12 – a, for a=6

170 + 30 = 200 3 = 12 - 6

200 = 200 √ 30 is a solution 3 ≠ 6 6 is NOT a solution

Ex) 9 – m = 3, for m=6 Ex) 8 + t = 12, for t=3

9 – 6 = 3 8 + 3 = 12

3 = 3 √ 6 is a solution 11 ≠ 12

**Vocabulary/Language of discipline**

**Expression:** A combination of variables, numbers, and symbols representing a mathematical relationship

**Equation:** A statement that two mathematical expressions are equal

**Inverse Operation:** Operations that do the exact opposite of each other

**Notes/Rules/Steps/Procedures**

**Inverse Operations One Step Equations**

Addition and Subtraction Only one operation to perform

Multiplication and Division

**Hints**

Equations must stay balanced

Do it to both sides

You want the variable **alone**

**One-Step Equation**

26 + x = 35 Identify the current operation (addition) and its inverse

26**-26** + x = 35**-26** Take the inverse of the operation on **both** sides

0 + x = 9 Solve for x (or any variable)

**Solving One Step Equations involving Addition and Subtraction:**

1). x+89=123 Addition is seen, the inverse of addition is subtraction. Subtract 89 from both sides.

2). y-45=237 Subtraction is seen, the inverse of subtraction is addition. Add 45 to both sides.

3).76+x=344 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_both sides.

4). y-92=78 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_both sides

5). 99+x=233 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_both sides

6) 17 + x = 32 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_both sides

7) 83 = x – 27 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_both sides.

8) 28 = x +19 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse operation is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_both sides

**One-Step Equation**

2x = 6 Identify the current operation (multiplication) and its

inverse (division)

2x = 6Take the inverse of the operation on **both** sides (divide by 2)

2 2

X = 3 Solve for x (or any variable)

**Solving One Step Equations involving Multiplication and Division:**

1). 7x=126 Multiplication is seen, the inverse of multiplication is division. Divide each side by 7.

2). x = 12 Division is seen, the inverse operation

2 of division is multiplication. Multiply both sides by 2.

3). 11z=253 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

4). 9x=135 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

5). 18y=108 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

6). 5y=420 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

7).  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

8).  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

9).  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

10).  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

11).  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

12) 45y=540 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is seen, the inverse

operation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ both sides by\_\_\_\_\_\_.

**Substitute your solution into where the variable is, add or subtract and check your answers.**

1. x+89=123 2. y-45=237 3. 76+x=344 4. y-92=78 5. 99+x=233

**Substitute your solution into where the variable is, multiply or divide and check your answers.**

1). 7x=126 2. x = 12 3.11z=253 4. 9x=135 5. 18y=108