Name_____ Date_____

Day 1 – SOLVING EQUATIONS WITH VARIABLES ON BOTH SIDES

Goal: Get ONE variable alone on one side of = sign.

1. Use Distributive Property, if necessary.
2. Combine like terms, if necessary
3. Move one variable by adding its inverse to both sides of =.
4. Solve as usual.

1.

$12k + 15 = 35 + 2k$ Original problem

$-2k \qquad -2k$ Move variables to one side.

$10k + 15 = 35$

$-15 \quad -15$ Eliminate adding or subtracting

$\frac{10k}{10} = \frac{20}{10}$ Eliminate multiplying or dividing

$k = 2$ Solution! Remember…Check Your Answer!

2.

$3(a + 22) = 12a + 30$ Original Problem

$3a + 66 = 12a + 30$ Do the Distributive Property First!!!

$-3a \qquad -3a$ Move Variables to one Side.

$66 = 9a + 30$

$-30 \qquad -30$ Eliminate adding or subtracting

$\frac{36}{9} = \frac{9a}{9}$ Eliminate multiplying or dividing

$4 = a$ Solution! Remember…Check Your Answer!

3.

$3(x + 1) - 5 = 5x - 2$ Original Problem

$3x + 3 - 5 = 5x - 2$ Do the Distributive Property First!!!

$3x - 2 = 5x - 2$ Combine Like Terms

$-3x \qquad -3x$ Move Variables to one Side.

$-2 = 2x - 2$

$+2 \qquad +2$ Eliminate adding or subtracting

$\frac{0}{2} = \frac{2x}{2}$ Eliminate multiplying or dividing

$0 = x$ Solution! Remember…Check Your Answer!

Try These!!!

4. $5x = -7x + 6$

5. $7 - 3x = x - 4(2 + x)$

HMMM……..Take a look at the following examples:

6. $6(4x-5) = 24x - 30$

7. $5(3x+5) = 3(5x+1)$

<u>The Rules:</u>

- When you solve an equation and you end with a ***true statement***, the solution set will be: _____.

  Example:

$$3(x+2) = 3x+6$$
$$3x+6 = 3x+6$$
$$\underline{-3x \qquad -3x}$$
$$6 = 6$$

Many Solutions!

- When you solve an equation and you end with a ***false statement***, the solution set will be: _____.

$$3(x+2) = 3x+4$$
$$3x+6 = 3x+4$$
$$\underline{-3x \qquad -3x}$$
$$6 \neq 4$$

No Solutions!

Try These:

8. $2x + 5 = 2x - 3$

9. $3(x+1) - 5 = 3x - 2$

Class Practice:

10. $6x + 7 = 8x - 13$

11. $6(y + 2) - 4 = -10$

12. $4(2x - 8) = 3(2 - 3x)$

13. $4(r + 20) = 1/5(20r + 400)$

14. $-2x = -3x + 12 - 2x$

15. $8(b + 1) + 4 = 3(2b - 8) - 16$