Algebra 1 Mathematician: _____
Unit 2 Linear Equations Period:_____
2.2 – Solving Linear Equations with Variables on Both Sides

LEVEL: EMERGING

Directions: Fill in the blank and or respond to the question below.

1) An equation that is true for all values of the variable is called a(n) _____.

2) *Explain* why the equation $4x + 3 = 4x + 1$ has no solution.

SOLVING EQUATIONS: Directions: Solve the equation. Check your solution.

3) $8t + 5 = 6t + 1$

4) $8c + 5 = 4c - 11$

5) $10b + 18 = 8b + 4$

6) $9a = 6(a + 4)$

7) $3(d + 12) = 8 - 4d$

8) $2(2d - 6) = 4 - 4d$

MULTIPLE CHOICE: What is the solution of the equation?

9) $8x + 2x = 15 - 10$
   a) -2
   b) 0.5
   c) 2
   d) 5

10) $4y + y + 1 = 7(y - 1)$
   a) -4
   b) -3
   c) 3
   d) 4

LEVEL: PROFICIENT

11) *Describe* the steps you would use to solve the equation $3(2z - 5) = 2z + 13$.

Answers:1) *identity* 2) *A number plus* 3 *can'tbe equal to itself plus* 1. *IF you solve the equation, you get* $0 = 2$. 3) $t = -2$ 4) $c = -4$ 5) $b = -7$
6) $a = 8$ 7) $d = -4$ 8) $d = 2$ 9) *B* 10) *D*
11) *SAMPLE ANSWER*: First, I would distribute the 3 to 2z and -5 to get 6z – 15 = 2z + 13. Then, I would put all of my variable terms on the left side of the equal sign by subtracting 2z from both sides to get 4z – 15 = 13. Afterwards, I would bring my constant terms to the right side of the equal sign by adding 15 to both sides to get 4z = 28. To isolate z, I would have to use the inverse operation of multiplication and divide both sides by 4. That would give me my answer for z, which is equal to 7.

LEVEL: PROFICIENT (cont.)

SOLVING EQUATIONS: Directions: Solve the equation, if possible.

12) $w + 3 = w + 6$

13) $16d = 22 + 5d$

14) $22x + 70 = 17x - 95$

15) $12y + 6 = 6(2y + 1)$

16) $5(1 + 4m) = 2(3 + 10m)$

17) $2(3g + 2) = \frac{1}{2}(12g + 8)$

LEVEL: MASTERY

SOLVING EQUATIONS: Directions: Solve the equation, if possible.

18) $3x - 4 = 2x + 8 - 5x$

19) $-15c + 7c + 1 = 3 - 8c$

20) $-0.25(4v - 8) = 0.5(4 - 2v)$

21) A local campground charges members of the camping association \$40 per night for a campsite and non-members \$35 per night for a campsite in addition to a registration fee of \$45. After how many nights of camping is the total cost the same for member as for non-members?

22) If the difference between twice a number and the number itself is equal to the number, what is the number?

Answers:

12) No Solution *13)* $d = 2$ *14)* $x = -33$ *15) Identity* *16) No Solution* *17) Identity* *18)* $x = 2$

19) No Solution *20) Identity* *21)* $\$45 + \$35x = 40x; x = 9$ *months* *22)* $(2x - x) = x; x$ *can be equal to any value (identity)*