Name:_____ Period:_____ Date:_____

How Can 18 equal 30?

Task 1
Manuel was solving an equation (his work is shown below) and ended up with 18 = 30, so he assumed he must be wrong. Study his work, **justify his steps** and answer the questions that follow.

Equation 1: $4x + 18 = 4(8 + x) - 2$

Manuel's Work:
$$4x + 18 = 4(8 + x) - 2 \qquad \text{given}$$
$$4x + 18 = 32 + 4x - 2 \qquad \text{Distribute}$$
$$4x + 18 = 30 + 4x \qquad \text{Combine like terms}$$
$$18 = 30 \qquad \text{Subtract } 4x \text{ to both sides}$$

a) Is Manuel's work mathematically correct? __yes__

b) If not, what was incorrect? _____

c) What does his answer, 18 = 30, tell him about the solution of the linear equation?

18 will never equal 30

18 = 30 is not a true statement

4x +18 does not equal 4(8 +x) -2

There are no solutions for x

There are no x values to make

18 = 30

I know 6=6, but who took my x?

Task 1

Sarah was solving an equation (her work is shown below) and ended up with 6 = 6, so she assumed she must be wrong. Study her work, **justify her steps** and answer the questions that follow.

Equation 1: $x + 2(x + 3) = 3(x + 2)$

Sarah's Work:

$$x + 2(x + 3) = 3(x + 2) \qquad \text{given}$$
$$x + 2x + 6 = 3x + 6 \qquad \text{Distribute}$$
$$3x + 6 = 3x + 6 \qquad \text{Combine like terms}$$
$$6 = 6 \qquad \text{Subtract } 3x \text{ to both sides}$$

a) Is Sarah's work mathematically correct? _Yes_

b) If not, what was incorrect? _____

c) What does her answer, $6 = 6$, tell her about the solution of the linear equation?

$6 = 6$ is a true statement

All x-values will make the statement true

The statement is always true

x has infinitely many solutions