

**Infinite Solutions vs. No Solutions  
Investigation Project**

Let's investigate!

Part 1: Given the equation  $4m + 3 = 4m$ .

**Step 1:** Given the value of  $m = 2$ . Substitute 2 for  $m$  and simplify each side of the equation.

Write your answer here: \_\_\_\_\_ = \_\_\_\_\_. Is this possible? \_\_\_\_\_

**Step 2:** Select a value for  $m$ : \_\_\_\_\_. Substitute in your "m" value and simplify the equation again.

Write your answer here: \_\_\_\_\_ = \_\_\_\_\_. Again, is this possible? \_\_\_\_\_.

**Step 3:** Let's try it one more time. Select a value for  $m$ : \_\_\_\_\_. Substitute in your "m" value and simplify the equation again.

Write your answer here: \_\_\_\_\_ = \_\_\_\_\_. Again, is this possible? \_\_\_\_\_.

**Conclusion:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

(Write your conclusion and try to use the following words: no solution, not equivalent)

**You're not done yet! Now flip it over and try the back...**

Part 2: Given the equation  $2(x+3)=2x+6$

**Step 1:** Given the value of  $x=1$ . Substitute 1 for  $x$  and simplify each side of the equation.

Write your answer here: \_\_\_\_\_ = \_\_\_\_\_.

**Step 2:** Select a different value for  $x$ : \_\_\_\_\_. Substitute in your "x" value and simplify the equation again.

Write your answer here: \_\_\_\_\_ = \_\_\_\_\_.

Write your observation about Step 1 and Step 2: \_\_\_\_\_.

**Step 3:** Let's try it one more time with a different value.  $x=$  \_\_\_\_\_.

Do think the same pattern will continue with any value of  $x$ ? Why or why not?

\_\_\_\_\_.

**Conclusion:** \_\_\_\_\_

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

 (Write your conclusion and try to use the following words: Infinite, solutions, equivalent)