Standard A.REI.3 **3.4 Inequalities with Special Solutions** Unit 4 Day 2

There is a time when solving inequalities that our variables cancel out. In these special cases, our inequality statements are either \_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| True Statements | False Statements |
| Solution: All Real Numbers  Example: 9 < 25 | Solution: No Solution  Example: 9 < -25 |
| **THE GOLDEN RULE STILL APPLIES:** When multiplying or dividing by a negative, be sure to **flip** the inequality symbol! | |

**Example 1:** Determine the solutions of the following inequalities.

1. 10 – 8a > 2(5 – 4a)
2. 6m – 5 > 7m + 7 – m
3. 9 + 5n < 5n – 1
4. 8 + 6x > 7x + 2 – x

**All Mixed Up**: Solve each of the following for x. If there is no solution, write *no solution*. If there are infinitely many solutions, write *all real numbers*.

1. 7 + 6a > 19
2. 2(t + 2) – 3t > –1
3. 6z – 15 < 4z + 11
4. 18x – 5 < 3(6x – 2)

**Practice Problems**

**Directions**: Solve each inequality as indicated, giving the solution in both symbolic and number line form. Show all work and solutions on paper.

##### Use a graph and table to solve.

1. 3(*x* + 4) – 5(x – 1)

#### Use algebraic properties to solve. (Justify solutions by graphs and tables.)

1. 
2. 
3. 
4. 
5. 5(*x* + 3) – 2x 
6. 3(3*x* + 1) – (x – 1)  6(x + 10)



**Challenge:** 4(2x + 1) < 2( x – 1) + 6(x + 2)