In this investigation your group will analyze properties of inequalities and discover some interesting results.

First, write two additional examples of an inequality: **\_\_\_\_2 < 10\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_**

Choose an announcer and write his/her name here\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Choose a recorder and write his/her name here\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Choose two walkers and write the names here\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

***Announcer:*** (read anything bold and italic out loud to the group).

***This investigation helps you understand the tricky exception to solving inequalities***.

***We need to make a number line on the floor with marks from – 10 to 10.***

***I will call out operations for the walkers to act out on the number line!***

***The recorder will make notes in our Investigation Chart after each move.***

***As a trial, act out the first operation in the table.***

***Walker A simply stands at 2 on the number line, and Walker B stands at 4.***

***As a group, decide the appropriate inequality symbol that describes the relative position of***

***Walker A and B on the number line. Be sure you have written a true inequality.***

***After we finish the chart we are not done! We also need to answer the questions on the back.***

|  |  |  |  |
| --- | --- | --- | --- |
| Operation | Walker A’s Position | Inequality | Walker B’s Position |
| Starting Number | 2 |  | 4 |
| Add 2 |  |  |  |
| Subtract 3 |  |  |  |
| Add – 2 |  |  |  |
| Subtract – 4 |  |  |  |
| Multiply by 2 |  |  |  |
| Subtract 7 |  |  |  |
| Multiply by – 3 |  |  |  |
| Add 5 |  |  |  |
| Divide by – 4 |  |  |  |
| Subtract 2 |  |  |  |

1. What happens to the walkers’ relative positions on the number line when the operation adds or subtracts a positive number?

A negative number?

Does anything happen to the direction of the inequality symbol?

1. What happens to the walkers’ relative positions on the number line when the operation multiplies or divides by a positive number?

Does anything happen to the inequality symbol?

1. What happens to the walkers’ relative positions on the number line when the operation multiplies or divides by a negative number?

Does the inequality symbol change directions?

1. Which operations on an inequality reverse the inequality symbol?

What types of real numbers mixed with these operations will reverse the direction of the inequality?

1. What was the big idea of this investigation?

What did you like or dislike?

What were some good qualities of how your group worked together?