

## Inequalities Exploration Assignment

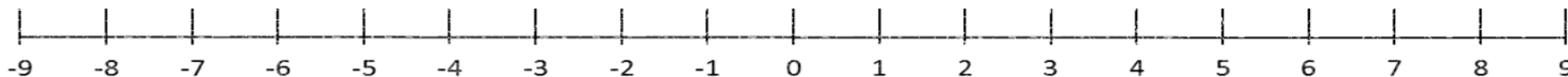
Mark the given numbers on the number line. Write an inequality to show the relationship between numbers.

$-8$  \_\_\_\_\_  $4$



Add 4. Mark the new numbers on the number line. Fill in the blanks.

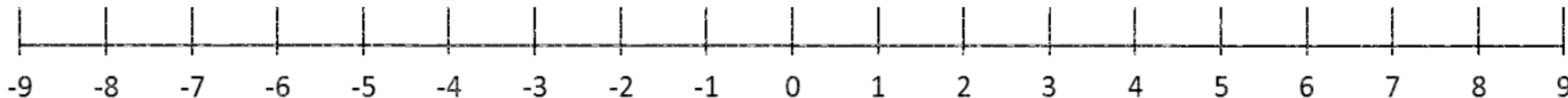
\_\_\_\_\_ < \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true. \_\_\_\_\_

Divide by 2. Mark the new numbers on the number line. Fill in the blanks.

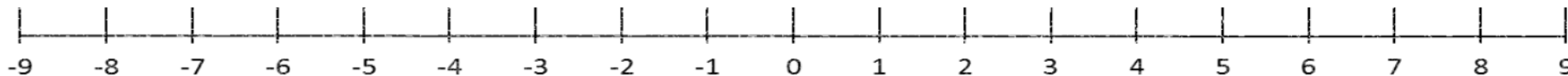
\_\_\_\_\_ < \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true. \_\_\_\_\_

Subtract by 2. Mark the new numbers on the number line. Fill in the blanks.

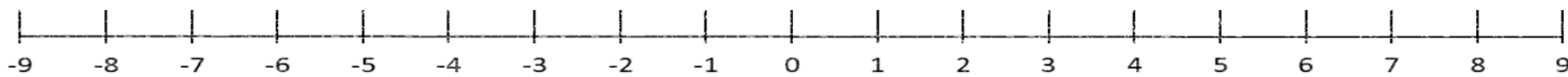
\_\_\_\_\_ < \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true. \_\_\_\_\_

Multiply by -2. Mark the new numbers on the number line. Fill in the blanks.

\_\_\_\_\_ < \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true. \_\_\_\_\_

## Inequalities Exploration Assignment

Mark the given numbers on the number line. Write an inequality to show the relationship between numbers.

$-1$  \_\_\_\_\_  $3$



Multiply by 3. Mark the new numbers on the number line. Fill in the blanks.

\_\_\_\_\_  $<$  \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true \_\_\_\_\_

Mark the given numbers on the number line. Write an inequality to show the relationship between numbers.

$3$  \_\_\_\_\_  $-6$



Divide by -3. Mark the new numbers on the number line. Fill in the blanks.

\_\_\_\_\_  $>$  \_\_\_\_\_



Is the statement still true? \_\_\_\_\_ If not, rewrite to make it true. \_\_\_\_\_

How does adding or subtracting a positive number affect the direction of the inequality symbol?

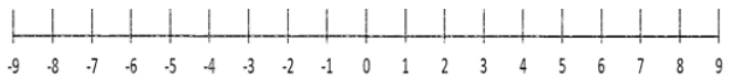
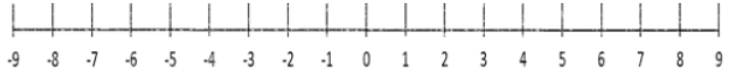
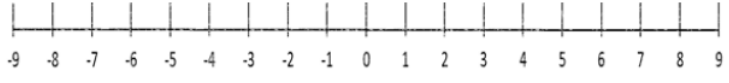
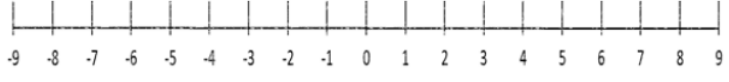
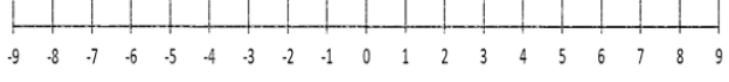
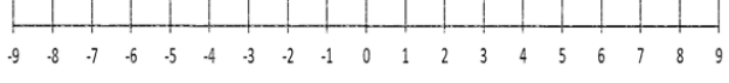
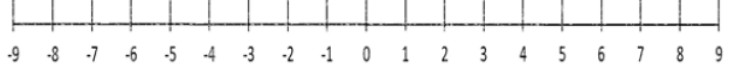
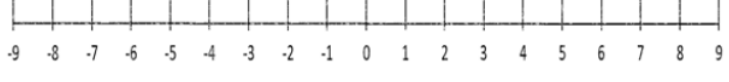
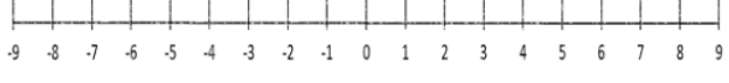
How does multiplying or dividing by a positive number affect the direction of the inequality symbol?

What computation results in the direction of the inequality symbol being reversed?

Why does the direction of the inequality symbol reverse when each side of an inequality is multiplied or divided by a negative number?

Name \_\_\_\_\_ Date \_\_\_\_\_ Per \_\_\_\_\_

## Inequalities Exploration Assignment

Inequality	Solution	Graph on the number line
$2x \geq 8$		
$x - 2 < 8$		
$\frac{8}{x} \leq 1$		
$8 > 2 + x$		
$-2x \geq 8$		
$-\frac{8}{x} \leq 1$		
$-2x > 8$		
$-\frac{4}{x} < 2$		
$x + 8 \leq 2$		

## Inequalities Exploration Assignment

You are going on a class field trip and need to choose where to go. If the whole class goes to the circus it will cost a flat fee of \$200 plus \$5 per each student. If the class goes to the modern art museum it will cost a flat fee of \$100 plus \$10 per each student.

Which trip should you choose (if you want the cheaper deal) ...

... if you have 15 students in total?

... if you have 25 students in total?

For what amount of kids would the total cost for the circus

AND the museum be equal?

### STEP ONE: CREATE YOUR ALGEBRAIC EXPRESSIONS

For this problem  $X$  will represent: \_\_\_\_\_

$Y$  will represent: \_\_\_\_\_

... now set up your equations ...

MUSEUM:

CIRCUS:

To test which is more expensive with 15 and 25 students, plug 15 and 25 in to both equations...

museum with 15 students

circus with 15 students

vs.

museum with 25 students

circus with 25 students

vs.

### STEP TWO: SET YOUR EQUATIONS EQUAL TO ONE ANOTHER

The third question asks you to determine the number of students that would make the circus and the museum cost the same amount.

Or in other words... "which value of  $X$  will make both  $Y$  values equal?"

In order to solve this we must set the equations equal to one another:

CIRCUS

$$\text{COST} = 200 + 5 \cdot (\text{student})$$

$$Y = 200 + 5X$$

vs.

MUSEUM OF MODERN ART

$$\text{COST} = 100 + 10 \cdot (\text{students})$$

$$Y = 100 + 10X$$

SOLVE FOR  $X$  TO DETERMINE THE NUMBER OF STUDENTS NEEDED FOR BOTH TRIPS TO BE EQUAL.

$$200 + 5X = 100 + 10X$$

Write an inequality: