Name: _____ Period: _____ Date: _____

MODULE 3

Lesson 12 – 13: Properties of Inequalities & Inequalities

I. **DIRECTION:** Complete the following chart by placing the correct inequality symbol in the first column, then determine the new inequality in the 3rd column using an operation in the 2nd column and determine if the inequality symbol is preserved or reversed.

INEQUALITY (<, >)	OPERATION	NEW INEQUALITY	PRESERVED OR REVERSED?
1. –4 ____ 4	Add 1 to both sides		
2. 3 ____ 2	Multiply both sides by –2		
3. –3 ____ –6	Divide both sides by 3		
4. 4 ____ –1	Multiply both sides by 2		
5. 7 ____ 5	Subtract 4 from both sides		

II. Fill in the blanks with the word "**PRESERVED**" or "**REVERSED**" to make each statement true.

1. When both sides of an inequality are added or subtracted by a number, the inequality symbol stays the same, and the inequality symbol is said to be _____.
2. When both sides of an inequality are multiplied or divided by a positive number, the inequality symbol stays the same, and the inequality symbol is said to be _____.
3. When both sides of an inequality are multiplied or divided by a negative number, the inequality symbol switches from < to > or from > to <. The inequality symbol is _____.

III. **DIRECTION:** Match each problem to the inequality that models it. One choice will be used twice.

1. The difference of twice a number and 5 is at most 10.
2. The difference of twice a number and 5 is at least 10.
3. The difference of twice a number and 5 is less than 10.
4. The difference of twice a number and 5 is greater than 10.

a. $2x - 4 \geq 10$
b. $2x - 4 < 10$
c. $2x - 4 > 10$
d. $2x - 4 \leq 10$

IV. **DIRECTION:** Recall that the symbol ≠ means not equal to. If x represents a positive integer, state whether each of the following statements is **always true**, **sometimes true**, or **false**.

_____1. $x > 0$

_____2. $x < 0$

_____3. $x > -5$

_____4. $x > 1$

_____5. $x \geq 1$

_____6. $x \neq 0$

_____7. $x \neq -1$

_____8. $x \neq 5$

LIVEWORKSHEETS