

## Concept: Solving Inequalities

Name: \_\_\_\_\_

### COMPUTER COMPONENT

**Instructions:** In  follow the **Content Menu** path:

**Equations > Solving Inequalities**



Work through all Sub Lessons of the following Lessons **in order**:

- *Comparing Integers*
- *Inequalities*
- *Inequalities on the Number Line*
- *Solving Inequalities*
- *Solving Compound Inequalities*

Additional Required Materials: *Pencil Crayons*

NOTE: You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.



As you work through the computer exercises, you will be prompted to make notes in your notebook/math journal.

When you reach the end of the lesson *Solving Compound Inequalities* on the computer, move on to the **OFF COMPUTER EXERCISES** below.

### NOTES:

Remember:

- Negative numbers are \_\_\_\_\_ than zero and less than \_\_\_\_\_ numbers.
- \_\_\_\_\_ is less than \_\_\_\_\_ numbers but greater than \_\_\_\_\_ numbers.
- Positive numbers are greater than \_\_\_\_\_ numbers and \_\_\_\_\_ than zero.

Practice:

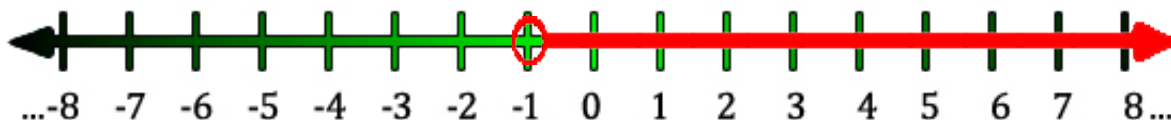
1. Mark where  $-7$  and  $-4$  are on the number line.



Fill in the inequality.

$$-7 \square -4$$

2. A graph of the inequality is given below.



Fill in the inequality:

$$x \square \underline{\hspace{2cm}}$$

3. Fill in the blanks.

\_\_\_\_\_ are mathematical \_\_\_\_\_ involving the symbols

$>$  ( \_\_\_\_\_ ),  $<$  ( \_\_\_\_\_ ),

$\geq$  ( \_\_\_\_\_ ), and

$\leq$  ( \_\_\_\_\_ ),

4. The solution to an \_\_\_\_\_ is a value that makes the inequality \_\_\_\_\_.

5. When solving an inequality you can:

- Add the \_\_\_\_\_ quantity to \_\_\_\_\_ sides
- Subtract the \_\_\_\_\_ quantity from \_\_\_\_\_ sides
- Multiply or divide \_\_\_\_\_ sides by the same \_\_\_\_\_ quantity

- If you multiply or divide \_\_\_\_\_ sides by a \_\_\_\_\_ quantity, the inequality \_\_\_\_\_ must be \_\_\_\_\_.

Remember: When one \_\_\_\_\_ or \_\_\_\_\_ by a \_\_\_\_\_ number, the inequality sign is \_\_\_\_\_.

Example:

$$6 > 3 \quad (\text{True})$$

Multiply both sides by -3       $6 \times \underline{\quad} > 3 \times \underline{\quad} \quad (\underline{\quad})$

... but by reversing the sign:       $6 \times \underline{\quad} < 3 \times \underline{\quad} \quad (\underline{\quad})$

**Compound Inequalities** are \_\_\_\_\_ inequalities joined by the terms \_\_\_\_\_.

- A compound inequality contains the terms “\_\_\_\_\_” or “\_\_\_\_\_”.
- A compound inequality with “\_\_\_\_\_” is true only if \_\_\_\_\_ of it are true.

Example: Graph  $x > -6$  and  $x \leq 1$       (*Hint: remember the open and closed dots*)



- A compound inequality with “\_\_\_\_\_” is true if \_\_\_\_\_  
\_\_\_\_\_
- of its inequalities are true.

Example: Graph  $x > 1$  or  $x \leq -5$  (Hint: remember the open and closed dots)



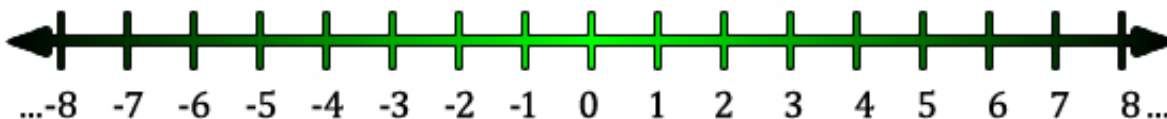
### OFF COMPUTER EXERCISES

1. Match the signs

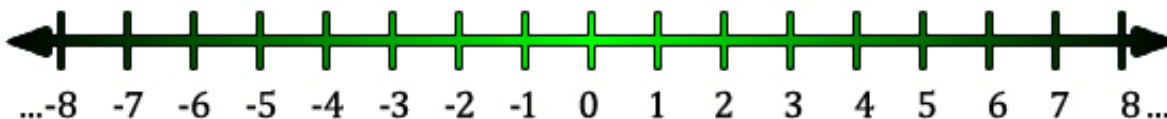
- |     |                          |        |
|-----|--------------------------|--------|
| (a) | greater than             | $<$    |
| (b) | greater than or equal to | $\leq$ |
| (c) | less than                | $\geq$ |
| (d) | less than or equal to    | $>$    |

2. Determine what values of  $x$  make each inequality true. *Graph each answer.*

(a)  $x + 3 < 5$



(b)  $\frac{x}{4} \geq -1$



(c)  $4x - 1 > 5x + 4$



(d)  $8x - 1 \leq 5x + 8$



(e)  $3x - 3 < 5x - 11$



3. For what values of  $w$  is  $\frac{w}{4} + \frac{1}{4} \geq \frac{w}{2} - \frac{5}{4}$

4. Graph the following:

(a)  $x > -2$  and  $x \leq 5$



(b)  $x \geq -2$  or  $x < 6$

