Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**11.1A NOTES – Writing Inequalities**

*Objective: write and graph inequalities; use substitution to check whether a number is a solution of an inequality. Preparing for Standard 7.EE.4b HW: 11.1A pg 468\_ #6-15 ALL*

TEXTBOOK: <https://static.bigideasmath.com/protected/content/pe/ca/adv2_11.pdf>

*Read the statement. Circle each number that makes the statement true, and then answer the questions.*

1. *Why the number included or not included. 2) Write four other numbers that make the statement true.*



An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a mathematical sentence that compares expressions. It contains the symbols \_\_\_\_\_\_\_, \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_, or \_\_\_\_\_\_\_\_. To write an inequality, look for the following phrase to determine where to place the inequality symbol.

|  |  |  |
| --- | --- | --- |
| **SMYBOL** | **MEANING** | **WORD PHRASES** |
| $$<$$ | Is less than | Fewer than, below, is under, shorter than, smaller than, lower than, beneath, a better deal |
| $$>$$ | Is greater than | More than, exceed, above, over, larger than, increased, higher than |
| $$\leq $$ | Is less than or equal to | At most, no more than, maximum, up to |
| $$\geq $$ | Is greater than or equal to | At least, no less than, minimum  |

***Writing Inequalities***

|  |
| --- |
| **Inequality Word Statements:** *Write each statement with an inequality.*1. A number “x” is no more than -3.45. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. The product of 3 and (3x + 1) is at least 35. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. The minimum value of 2x + 1 is 13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. When “x” is divided by 3 the quotient is more than 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. 10 is more than a number “m” times 50. \_\_\_\_\_\_\_\_\_\_\_\_
6. A number “b” minus 4.3 is less than -9.8 . \_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. A number “m” multiplied by -3.5 is at least $\frac{2}{5}.$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. A number “m” times five is at most fifteen. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. A number “x” minus negative seven is less than or equal to five. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. The difference between a number “r” and seven is less than zero. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. The sum of a number “w” and seven is greater than or equal to fifteen. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
12. A number “x” is no less than fifteen. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
13. Twice a number “x” is less than twenty. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
14. The sum of a number “m” and nine is larger than thirty. \_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a value that makes the inequality true. An inequality can have more than one solution. The set of all solutions of an inequality is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

***Tell whether each x value is a solution of following inequalities:***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |
| --- | --- | --- |
| **Value of x** | $$x+12>7$$ | **Is the inequality true?** |
| -2 |  |  |
| -8 |  |  |
| 5 |  |  |

 |

|  |  |  |
| --- | --- | --- |
| **Value of x** | $$\frac{x}{6}>-3$$ | **Is the inequality true?** |
| 2 |  |  |
| -3 |  |  |
| -24 |  |  |

 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**11.1B NOTES Graphing Inequalities**

*Objective: graph and identify equation and inequalities as points and rays on a number line.*

*HW: textbook: 11.1B pg 468\_#17-25 ALL*

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of an inequality shows all of the solutions of the inequality on a number line.

* An open circle \_\_\_\_\_\_\_\_\_ is used when a number is not a solution
* A closed circle \_\_\_\_\_\_\_\_\_ is used when a number is a solution.
* An arrow to the left or right shows that the graph continues in that direction.

|  |  |  |  |
| --- | --- | --- | --- |
| $$<$$**Open Circle** | $$>$$**Open Circle** | $$\geq $$**Closed Circle** | $$\leq $$**closed Circle** |

Draw a graph for each inequality.

|  |  |
| --- | --- |
| 1. | 2. |
| 3. | 4. |
| 5.  | 6. |
| 7.  | 8. |

Write an inequality for each graph.

|  |  |
| --- | --- |
| 1. | 2. |
| 3. | 4. |
| 5. | 6. |

**WARM-UP**

Tell whether the given value is a solution of the inequality. Write TRUE or FALSE after you solve each problem.

|  |  |  |
| --- | --- | --- |
| 1. $2k-4<7; k=5$
 | 1. $\frac{w}{4}\geq w-12; w=20$
 | 1. $8-y>2y; y=-1$
 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_

**11.2 NOTES – Solving Inequalities Using Addition and Subtraction**

*Objective: Solve Inequality Word Problems Using Addition and Subtraction. CC.SS.7.EE.4b*

*HW: 11.2 worksheet*

**Write** an inequality. **Solve** an inequality that represents x. **Graph** an inequality.

|  |  |
| --- | --- |
| 1. The perimeter is less than 28 feet.

 | 1. The base is greater than the height.

 |
| 1. The perimeter is less than or equal to 51 meters.

 | 1. The perimeter is at least 18 feet.

 |
| 1. You need at least 5000 points to earn a gift card from your bank. You currently have 2700 points.
2. Write and solve an inequality that represents the number of points you need to earn a gift card.
3. You deposit money in your savings account and earn an additional 400 points. How does this change the inequality?
 |

Solve the inequality. Graph the solution.

 1.  2. 

3. Tell whether the given value is a solution of the inequality. Write TRUE or FALSE after you solve the problem.

$$\frac{w}{4}+2w<-w+3;w=-4$$

 .

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_

**11.2 HOMEWORK**

Solve the inequality. Graph the solution.

 1.  2. 



 3.  4. 



 5.  6. 



 7. A bounce house can hold 15 children. Seven children go in the bounce house. Write and solve an inequality that represents the additional number of children that can go in the bounce house.

BACK 🡪

Write the word sentence as an inequality.

 1. A number *t* is less than or equal to 5.

 2. A number *g* subtracted from 6 is no more than 

Tell whether the given value is a solution of the inequality.

 3.  4. 

Graph the inequality on a number line.

 5.  6. 



 7.  8. 



 9. You have at most 30 games on your smart phone. Write an inequality that represents this situation.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**11.3A NOTES – Solving Inequalities Using Multiplication and Division**

*Objective: solve inequalities using multiplication or division; solve real-life problems. CC.SS.7.EE.4b*

*HW: 11.3A pg 483\_#10-23 ALL*

Solve the inequality. Graph the solution.

 1.  2.  3. $20m>-80$



 4. $3n\geq 91.5$ 5. $4x<\frac{2}{3}$ 6. 



 7. $\frac{r}{4}\leq -10$ 8. $\frac{x}{5}>2.5$ 9. $-2\geq \frac{q}{0.3}$



 10. To win a game, you need at least 45 points. Each question is worth
3 points. Write and solve an inequality that represents the number of questions you need to answer correctly to win the game.

Write the word sentence as an inequality. Solve the inequality. Graph the inequality.

|  |  |
| --- | --- |
| 1. The quotient of a number and 4 is at most 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 2. A number divided by 7 is less than -3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 3. Six times a number is at least -24. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 4. The product of 2 and a number is greater than 30. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Solve and graph an inequality that represents x.

|  |  |
| --- | --- |
| 1. | 2. |

|  |  |
| --- | --- |
| 3.**AVOCADOS.** You have $9.60 to buy avocados for a guacamole recipe. Avocados cost $2.40 each.1. Write an inequality that represents the number of avocados you can buy.
2. Solve the inequality.
3. Are there infinitely many solutions in this context? Explain.
 | 4. **SCIENCE PROJECT.** Students in a science class are divided into 6 equal groups with at least 4 students in each group for a project. 1. Write an inequality that represents the number of students in the class.
2. Solve the inequality.
 |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_ Period: \_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

**11.3B NOTES – Solving Inequalities Using Multiplication and Division**

*Objective: solve inequalities using multiplication or division; solve real-life problems. CC.SS.7.EE.4*

*HW: 11.3B worksheet*

ACTIVITY: Complete the table. Decide which graph represents the solution of the inequality.

|  |
| --- |
| **EXAMPLE 1:****EXAMPLE 2:**  |



**\*\*NOTE\*\*** $-\frac{1}{2}=\frac{-1}{2}=\frac{1}{-2}$



**YOU TRY!**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. $-\frac{x}{3}>-4$
 | 1. $0.5\leq -\frac{y}{2}$
 | 1. $-12\geq -\frac{6}{5}m$
 | 1. $-\frac{2}{5}h\leq -8$
 |



**YOU TRY!**

|  |  |  |  |
| --- | --- | --- | --- |
| 1. $-5z<35$
 | 1. $-2a>-9$
 | 1. $-1.5<-3n$
 | 1. $-4.2\geq -0.7w$
 |

|  |
| --- |
| **CRITICAL THINKING.** Are the solutions to the following inequalities the same? Explain why or why not.$$2x<-12 and -2x<12$$ |

Name Date

11.3B HOMEWORK

Solve the inequality.

 1.  2. 

 3.  4. 

 5.  6. 

 7.  8. 

 9.  10. 

**BACK 🡪**

Write the word sentence as an inequality. Then solve the inequality.

 11. Five times a number is not less than 15.

 12. The quotient of a number and -4 is less than 

 13. An SUV averages 16.5 miles per gallon. The maximum average number
of miles that can be driven on a full tank of gas is 363 miles. Write and solve an inequality that represents the number of gallons in a tank.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_\_\_

**11.4A NOTES – Solving Two-Steps Inequalities**

*Objective: solve multi-step inequalities; solve real-life problems. CC.SS.7.EE.4b*

HW: textbook- 11.4A pg 490\_ #3-12 ALL

|  |  |  |  |
| --- | --- | --- | --- |
| **WARM-UP**

|  |  |  |
| --- | --- | --- |
| 1. Solve for x

$$-2x<4.5$$ | 1. Solve for x

$$\frac{x}{-7}>-4$$ | 1. Solve for x.

 $3x+2=17$ |

 |

Example Problems:

|  |  |
| --- | --- |
| 1. Solve$ -5(x-4)\geq 10$.
 | 1. Solve$ -\frac{1}{3}b+4<12$.
 |
| 1. Solve the inequality

$$\frac{x}{-6}-8\leq -12$$ | 1. Solve the inequality

$$-b-2>8$$ |
| 1. Which graph represents the solution of

 $-7\left(x+3\right)\leq 28?$ |
| 1. The area of the rectangle is at most 30 square feet.

 **x – 2 ft****4 ft** |
| 1. Are the solutions to the following inequalities the same? Explain why or why not.

$$8x<-40 and -8x<40$$ |

**PRACTICE PROBLEMS**

Solve the inequality. Graph the solution.

 1.  2. 

 



 3.  4. $-2(x+1)\leq 6$

 

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_\_\_

**11.4B NOTES – Solving Two-Steps Inequalities**

*Objective: solve multi-step inequalities; solve real-life problems. CC.SS.7.EE.4b*

*HW: CH 4 Practice Test on BIM*

|  |  |
| --- | --- |
| * Area of a rectangle:
* Perimeter of a rectangle:
 | * Area of a parallelogram:

 * Area of a trapezoid:
 |

|  |
| --- |
| 1. Your weekly base salary is $150. You earn $20 for each cell phone that you sell. Write and solve an inequality that represents the number of cell phones you must sell to make it at least $630 a week.
 |
| 1. You borrow $200 from a friend to help pay for a new laptop computer. You pay your friend back $12 per week. Write and solve an inequality to find when you will owe your friend less than $60.
 |
| 1. The area of the rectangle is at least 35 square feet.

   |
| 1. The perimeter of the rectangle is at most 60 square feet.

   |

**DIRECTION: Use the given condition to circle the correct inequality that you can use to find the possible values of the variable. Solve for the missing value. Keep the answer in simplest form.**

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_

**CHAPTER 11. Inequalities PRACTICE TEST**

*Show your work for each problem.*

|  |  |
| --- | --- |
| 1. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 2. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 3. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 4. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 5. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 6. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 7. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 8. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 9. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 10. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 11. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 12. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 13. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 14. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 15. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 16. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 17. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 18. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 19. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 20. ANSWER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |