**ML#1: Graphing and Solving 1- and 2-Step Inequalities (Unit 3 Math 7+)**

|  |  |  |  |
| --- | --- | --- | --- |
| Symbol | Phrases | Symbol | Phrases |
| < |  | > |  |
| ≤ |  | ≥ |  |

1. Vocabulary

Inequality Solution Set

II. Graphing and Writing Inequalities

|  |  |
| --- | --- |
| An open circle represents these signs: | A closed circle represents these signs: |

**Steps to graph the inequalities:**

1. Select type of circle to use by looking at the inequality symbol
2. Determine which direction to shade in arrow by using the inequality symbol

|  |  |
| --- | --- |
|  | **2.** |

**Write an inequality for each situation.**

|  |  |
| --- | --- |
| **1.** There are fewer than 25 students (s) in the class. | **2.** There are at most 31 days (d) in month. |
| **3.** There are at least 15 dogs (d) in the park. | **4.**  -1 0 1 2 3 4 5 6 |

III. Solving an Inequality

Check This Out Activity Results:

|  |  |  |  |
| --- | --- | --- | --- |
| When you add or subtract a… | | When you multiply or divide an… | |
| POSITIVE (+) number in an inequality… | NEGATIVE (-) number to/from an inequality, | an inequality by a POSTIVE (+) number, | an inequality by a NEGATIVE (-) number, |

Steps to solve an inequality:

1. Solve like any other 1- or 2-step equation
2. Apply sign rule

**Use addition or subtraction to solve each inequality. Graph the solution.**

|  |  |
| --- | --- |
| Ex 1 | Ex2 |
| Ex 3 5a - 9 > 11 | Ex 4 -2m + 4 ≤ 34 |

WORD PROBLEM – *Write and solve an inequality for the problem*.

1. The amount of food and equipment a group of hikers can carry must be less than 536 pounds. The group must carry 336 pounds of equipment as well as 25 pounds of food for each hiker. What is the greatest number of hikers who can go on the expedition?

Practice for Mini-lesson #1 (math 7+)

II. **Graphing and Writing inequalities.**

Graph the inequality**.**

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

Write the inequality, then graph the solution.

|  |
| --- |
| **3.** More than 18 people (p) in the room had brown  hair. |
| **4.** No more than 50 people (p) were on the bus. |
| **5.** There is no less than $282 (d) in the bank. |
| **6.**  -7 -8 -6 -5 -4 -3 |

1. **Solving an Inequality.**

Solve each inequality. Graph the solution.

|  |  |  |  |
| --- | --- | --- | --- |
| 1) | 2) | 3) | 4) |
| 5) | 6) | 7) -10 ≥ – 6 | 8) 17 + < 14 |
| 9) -9 > - + 6 | 10) | 11) 6 - x > 3 | 12) 7 - x ≥ -12 |

**Match the inequality to the graph**:

|  |  |  |
| --- | --- | --- |
| \_\_\_\_ 1. x – (-3) 0  \_\_\_\_ 2. –x -3  \_\_\_\_ 3. 1  \_\_\_\_ 4. -2x -6 |  |  |
| C. | D. |

WORD PROBLEMS – *Write and solve an inequality for each problem*.

1. On a trip to the beach, you want to travel at least 260 miles in 4 hours of driving. Write and solve an inequality to find out what your average speed must be.
2. Nine more than half the number *n* is no more than -8. Find *n*

**Check This Out!**

|  |  |  |  |
| --- | --- | --- | --- |
| Adding/subtracting a positive number | | Adding/subtracting a negative number | |
| 9 **>** 6  + 3 + 3    Does the **>** sign still work? | 9 **>** 6  - 3 - 3    Does the **>** sign still work? | 9 **>** 6  + **ˉ**3 + **ˉ**3    Does the **>** sign still work? | 9 **>** 6  -  **ˉ**3 - **ˉ**3    Does the **>** sign still work? |
| Multiplying/Dividing by a POSITIVE number | | Multiplying/Dividing by a NEGATIVE number | |
| 9 **>** 6  x 3 x 3    Does the **>** sign still work? | 9 **>** 6  3 3    Does the **>** sign still work? | 9 **>** 6  x **ˉ**3 x **ˉ**3    Does the **>** sign still work? | 9 **>** 6  **ˉ**3 **ˉ**3    Does the **>** sign still work? |

**Check This Out!**

|  |  |  |  |
| --- | --- | --- | --- |
| Adding/subtracting a positive number | | Adding/subtracting a negative number | |
| 9 **>** 6  + 3 + 3    Does the **>** sign still work? | 9 **>** 6  - 3 - 3    Does the **>** sign still work? | 9 **>** 6  + **ˉ**3 + **ˉ**3    Does the **>** sign still work? | 9 **>** 6  -  **ˉ**3 - **ˉ**3    Does the **>** sign still work? |
| Multiplying/Dividing by a POSITIVE number | | Multiplying/Dividing by a NEGATIVE number | |
| 9 **>** 6  x 3 x 3    Does the **>** sign still work? | 9 **>** 6  3 3    Does the **>** sign still work? | 9 **>** 6  x **ˉ**3 x **ˉ**3    Does the **>** sign still work? | 9 **>** 6  **ˉ**3 **ˉ**3    Does the **>** sign still work? |