## Unit 4 Lesson 5: Efficiently Solving Inequalities

### 1 Lots of Negatives (Warm up)

#### Student Task Statement

Here is an inequality: .

1. Predict what you think the solutions on the number line will look like.
2. Select **all** the values that are solutions to :
   1. 3
   2. -3
   3. 4
   4. -4
   5. 4.001
   6. -4.001
3. Graph the solutions to the inequality on the number line:

* 

### 2 Inequalities with Tables

#### Student Task Statement

1. Let's investigate the inequality .

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | * -4 | * -3 | * -2 | * -1 | * 0 | * 1 | * 2 | * 3 | * 4 |
|  | * -7 |  | * -5 |  |  |  | * -1 |  | * 1 |

* 1. Complete the table.
  2. For which values of is it true that ?
  3. For which values of is it true that ?
  4. Graph the solutions to  on the number line:
  + 

1. Here is an inequality: .
   1. Predict which values of will make the inequality true.
   2. Complete the table. Does it match your prediction?

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | * + -4 | * + -3 | * + -2 | * + -1 | * + 0 | * + 1 | * + 2 | * + 3 | * + 4 |
|  |  |  |  |  |  |  |  |  |  |

* 1. Graph the solutions to  on the number line:
  + 

1. Here is an inequality: .
   1. Predict which values of will make the inequality true.
   2. Complete the table. Does it match your prediction?

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | * + -4 | * + -3 | * + -2 | * + -1 | * + 0 | * + 1 | * + 2 | * + 3 | * + 4 |
|  |  |  |  |  |  |  |  |  |  |

* 1. Graph the solutions to  on the number line:
  + 
  1. How are the solutions to different from the solutions to ?

### 3 Which Side are the Solutions?

#### Student Task Statement

1. Let’s investigate .
   1. Solve .
   2. Is true when is 0? What about when is 7? What about when is -7?
   3. Graph the solutions to  on the number line.
   * 
2. Let's investigate .
   1. Solve .
   2. Is true when is 0?
   3. Graph the solutions to on the number line.
   * 
3. Solve the inequality and graph the solutions on the number line.

* 

1. Solve the inequality  and graph the solutions on the number line.

* 



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