

# Unit 4 Lesson 5: Efficiently Solving Inequalities

## 1 Lots of Negatives (Warm up)

### Student Task Statement

Here is an inequality:  $-x \geq -4$ .

1. Predict what you think the solutions on the number line will look like.
2. Select **all** the values that are solutions to  $-x \geq -4$ :
  - a. 3
  - b. -3
  - c. 4
  - d. -4
  - e. 4.001
  - f. -4.001
3. Graph the solutions to the inequality on the number line:





c. Graph the solutions to  $-2x < 6$  on the number line:



d. How are the solutions to  $2x < 6$  different from the solutions to  $-2x < 6$ ?

### 3 Which Side are the Solutions?

#### Student Task Statement

1. Let's investigate  $-4x + 5 \geq 25$ .

a. Solve  $-4x + 5 = 25$ .

b. Is  $-4x + 5 \geq 25$  true when  $x$  is 0? What about when  $x$  is 7? What about when  $x$  is -7?

c. Graph the solutions to  $-4x + 5 \geq 25$  on the number line.



2. Let's investigate  $\frac{4}{3}x + 3 < \frac{23}{3}$ .

a. Solve  $\frac{4}{3}x + 3 = \frac{23}{3}$ .

b. Is  $\frac{4}{3}x + 3 < \frac{23}{3}$  true when  $x$  is 0?

c. Graph the solutions to  $\frac{4}{3}x + 3 < \frac{23}{3}$  on the number line.



3. Solve the inequality  $3(x + 4) > 17.4$  and graph the solutions on the number line.



4. Solve the inequality  $-3\left(x - \frac{4}{3}\right) \leq 6$  and graph the solutions on the number line.

