

# Lesson 4.1

## Writing and Graphing Inequalities

### Essential Question

How can you use a number line to represent solutions of an inequality?

## 4.1 Notes

out your spiral notebooks!

An **inequality** is a mathematical sentence that compares expressions. It contains the symbols  $<$ ,  $>$ ,  $\leq$ , or  $\geq$ . To write an inequality, look for the following phrases to determine where to place the inequality symbol.

Inequality Symbols				
Symbol	$<$	$>$	$\leq$	$\geq$
Key Phrases	• is less than	• is greater than	• is less than or equal to	• is greater than or equal to
	• is fewer than	• is more than	• is at most • is no more than	• is at least • is no less than

**Example 1:** $\geq$ 

A number  $q$  plus 5 is greater than or equal to  $-7.9$ . Write this word sentence as an inequality.

$$q + 5 \geq -7.9$$

Write the word sentence as an inequality.

1. A number  $x$  is at most  $-10$ .

$$x \leq -10$$

2. Twice a number  $y$  is more than  $\frac{5}{2}$ .

$$2y > \frac{5}{2}$$

**Example 2:**

Tell whether  $-2$  is a solution of each inequality.

a.  $y - 5 \geq -6$

$$-2 - 5 \geq -6$$

$$-7 \geq -6$$

No!

b.  $-5.5y < 14$

$$-5.5(-2) < 14$$

$$11 < 14$$

Yes!

Tell whether  $-5$  is a solution of the inequality.

3.  $1 - 2p \leq -9$

$$1 - 2(-5) \leq -9$$

$$1 + 10 \leq -9$$

$$11 \leq -9$$

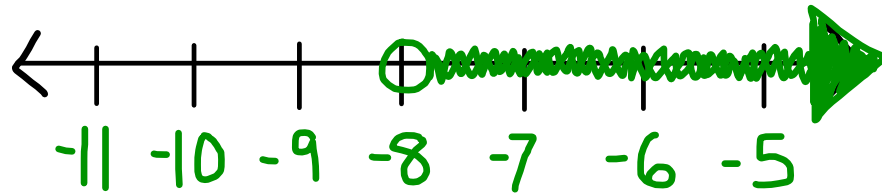
No!

4.  $n \div 2.5 \geq -3$

$$(-5) \div 2.5 \geq -3$$

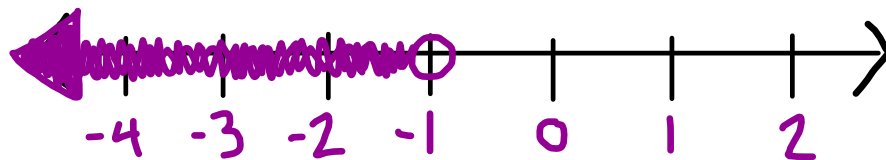
$$-2 \geq -3$$

Yes!

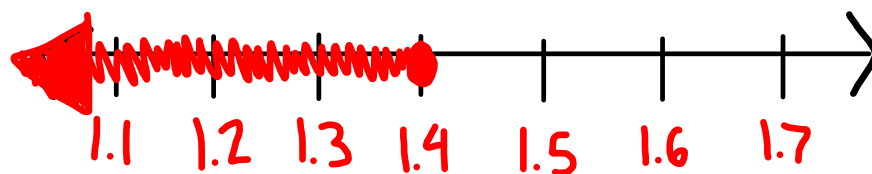
**Example 3:**Graph  $y > -8$ .

Graph the inequality on a number line.

5.  $x < -1$



6.  $s \leq 1.4$



7.  $-\frac{1}{2} < t$

