more than
>

at least
≥

less than
<

at most
≤

The inequality is $p < 14.2$.

3. **You must be at least 16 years old to have a driver's license.**

Words	Your age	is at least	16 years.
Variable		Let a = your age.	
Inequality	a	$\geq$	16

The inequality is $a \geq 16$.

Got It? **Do these problems to find out.**

e. $a \leq 15$

f. $b \geq 7$

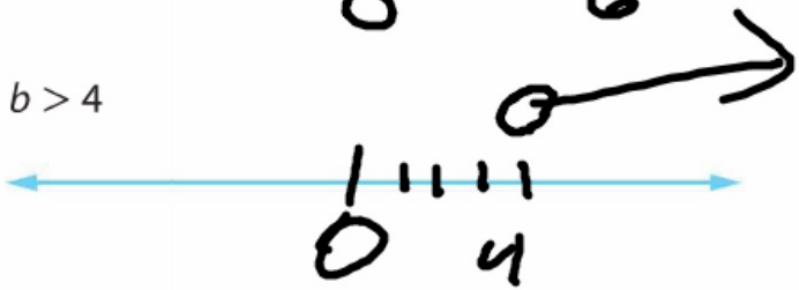
Write an inequality for each sentence. (Examples 1–3)

1. The movie will be no more than 90 minutes in length. $m \leq 90$
2. The mountain is at least 985 feet tall. $f \geq 985$

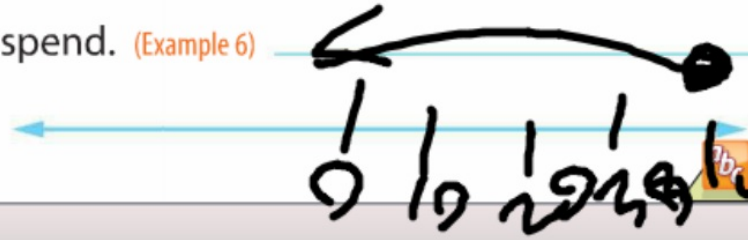
Graph each inequality on a number line. (Examples 4 and 5)

3. $a \leq 6$

4. $b > 4$



5. Tasha can spend no more than $40 on new boots. Write and graph an inequality to describe how much she can spend. (Example 6)



Rate Yourself!

How confident are you about g and graphing inequalities?

Guided Practice

Write an inequality for each sentence. (Examples 1–3)

1. The movie will be no more than 90 minutes in length. $m \leq 90$
2. The mountain is at least 985 feet tall. $m \geq 985$

Graph each inequality on a number line. (Examples 4 and 5)

3. $a \leq 6$

4. $b > 4$

5. Tasha can spend no more than $40 on new boots. Write and graph an inequality to describe how much she can spend. (Example 6) $b \leq 40$

6. **Building on the Essential Question** How can graphing an inequality help to solve it? Graphing shows multiple solutions to an inequality.

Rate Yourself!

How confident are you about writing and graphing inequalities? Shade the ring on the target.

For more help, go online to ... al Tutor.

Tutor

Independent Practice

Go

Write an inequality for each sentence. (Examples 1–3)

1. Swim practice will be no more than 35 laps. $p \leq 35$

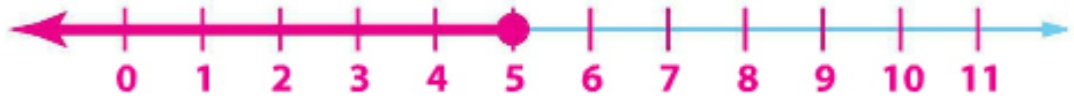
2. Kevin ran for less than 5 miles. $r < 5$

3. The occupancy of the room must be less than 437 people. $p < 437$

Graph each inequality on a number line. (Examples 4 and 5)

4. $f > 1$

5. $x \leq 5$



6. $y \geq 4$

7 A rewritable compact disc must have less than 20 songs on it. Write and graph an inequality to describe how many songs can be on the disc. (Example 6)

$s < 20$

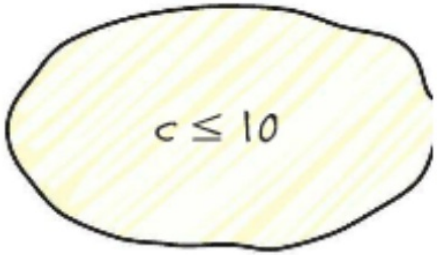
8. CCSS **Be Precise** Fill in the information in the table. The first is done for you.

Symbol	Words	Open or closed dot on number line?
>	greater than	open dot
≥	greater than or equal to	**closed dot**
<	less than	**open dot**
≤	**less than or equal to**	**closed dot**

H.O.T. Problems Higher Order Thinking

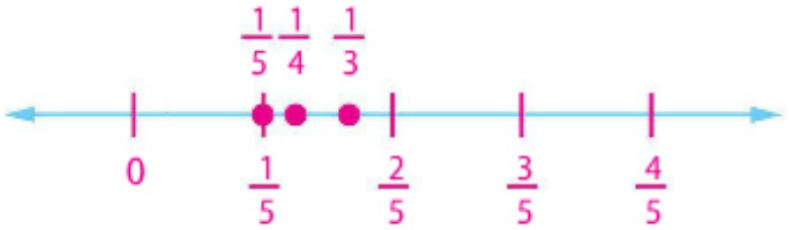
9. **Find the Error** Mei is writing an inequality for the expression *at least 10 hours of community service.* Find her mistake and correct it.

She used the incorrect symbol. "at least" means the values will be larger than 10, but include 10; $c \geq 10$



10. **Persevere with Problems** Name three solutions of the inequality $w \leq \frac{4}{5}$. Then justify your response using a number line.

Sample answer: $\frac{1}{5}, \frac{1}{4}, \frac{1}{3}$



11. **Justify Conclusions** Explain the difference between graphing an inequality with a closed dot and one with an open dot. Use examples to support your reasoning. **Sample answer: When an inequality uses the greater than or less than symbols, it does not include the number given. So, $x > 5$ and $x < 7$ do not include 5 or 7 respectively. When the greater than or equal to and less than or equal to symbols are used, the given numbers are included. So, $x \geq 5$ and $x \leq 7$ include 5 and 7, respectively.**

12. **Model with Mathematics** Graph the solution to each set of inequalities on a number line.

a. $x > 5$ and $x < 8$

b. $y \geq -2$ and $y < 7$

c. $t < 3$ or $t \geq 6$

d. $w \leq -5$ or $w \geq 0$