

Section 9.1

Representing Inequalities

Learning Targets:

1. Represent single variable linear inequalities **verbally**, **graphically** and **algebraically**.
2. Understanding what a **boundary point** is for a linear inequality.

Representing Inequalities:

- 1. Verbally (with words)**
- 2. Graphically (on a number line)**
- 3. Algebraically (using mathematical symbols)**

Representing Inequalities:

1. **Verbally (with words)**

all numbers less than or equal to 0.75

2. **Graphically (on a number line)**

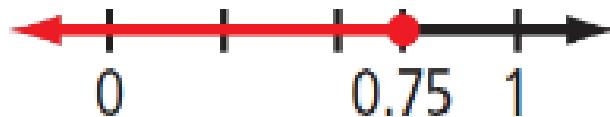
3. **Algebraically (using mathematical symbols)**

Representing Inequalities:

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2. Graphically (on a number line)



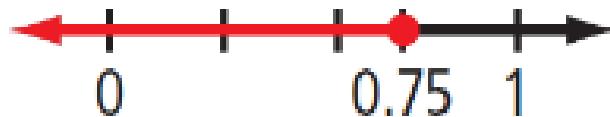
3. Algebraically (using mathematical symbols)

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2. Graphically (on a number line)



3. Algebraically (using mathematical symbols)

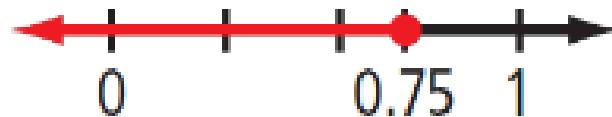
$$x \leq 0.75$$

Representing Inequalities:

1. Verbally (with words)

all numbers less than or equal to 0.75

2. Graphically (on a number line)



The inequality represented here has a "*boundary point*" of 0.75

3. Algebraically (using mathematical symbols)

$$x \leq 0.75$$

Boundary Points:

The boundary point for a linear inequality is the value that separates all of the numbers that are less than a certain value from all of the numbers that are greater than a certain value.

When solving an inequality, the boundary point may or may not be a part of the solution. What does that look like graphically?

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when $>$ or $<$ is used



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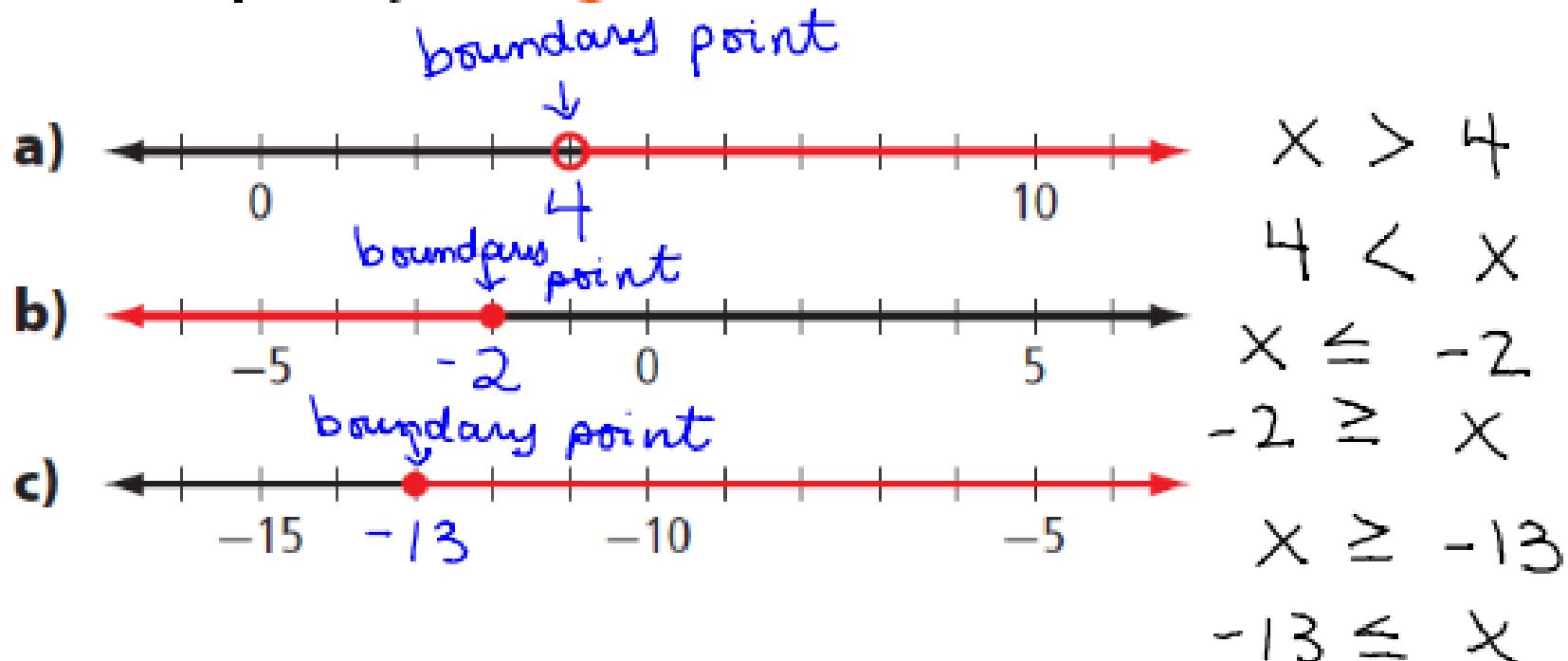
when \geq or
 \leq is used

- a closed circle shows that the boundary point is included in the solution



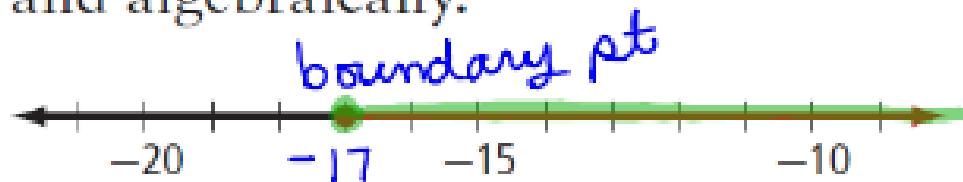
Example:

Label the boundary point on each graph and write the inequality in **algebraic** form.



Example:

Express the inequality shown on the number line verbally and algebraically.



All numbers that are greater than or equal -17 .

$$x \geq -17$$

Example:

Express the inequality shown on the number line algebraically.

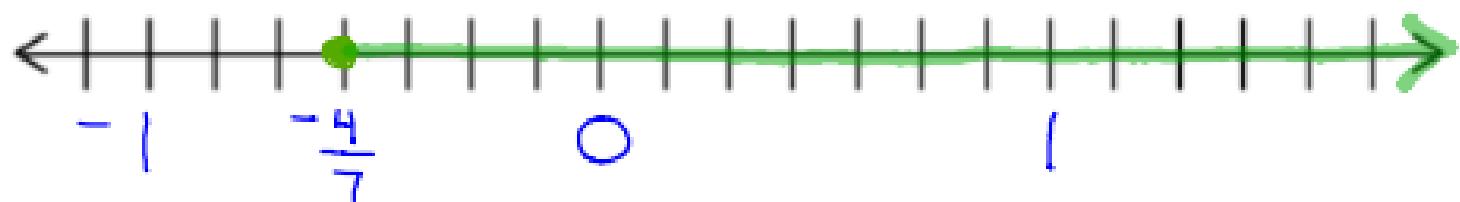


$$x < 2.3$$

$$2.3 > x$$

Example:

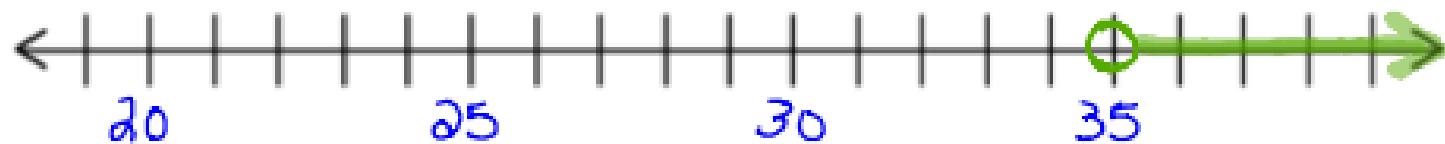
Express the inequality $x \geq -\frac{4}{7}$ graphically.



Example:

Express the inequality $35 < n$ graphically.

$$n > 35$$



You Try:

Express the inequality shown on the number line algebraically.



Represent the inequality $n < -12$ on a number line.



You Try:

Express the inequality shown on the number line algebraically.



$$x > -136$$

Represent the inequality $n < -12$ on a number line.



Check your understanding questions:

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#6, 7, 9, 10, 11, 12