9.1 – Representing Inequalities

A Linear inequality compares linear expressions that may not be equal.

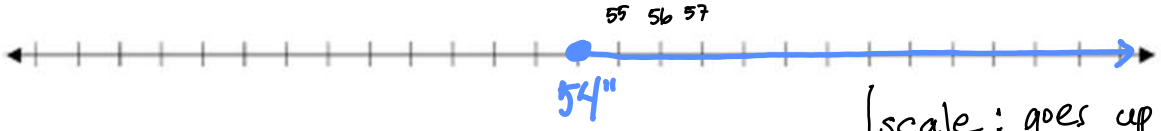
x≥-3 means that **x** is greater than or equal to **-3**

Inequalities can be expressed verbally, graphically, and algebraically.

Inequality	Meaning
a>b	***a*** is greater than ***b***
a<b	***a*** is less than ***b***
a≥b	***a*** is greater than or equal to ***b***
a≤b	***a*** is less than or equal to ***b***
a≠b	***a*** is not equal to ***b***

Example 1: The Queen City Exhibition has height requirements for certain rides. To go on one ride, the Mega Drop, riders must be at least 54" tall.

- **Graphically**: Use a number line to graph the allowable heights. Choose a scale that is convenient with the range of values you have chosen. Mark the minimum allowable height on the line – this is called a boundary point.



scale: goes up by 1 each time.
It depends on student what scale they want to use as long as it makes sense

- **Algebraically**: minimum req: 54" so 54" onwards are all solutions

  Let x = person's height in inches

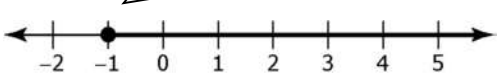
  $x \geq 54$" (x is greater than or equal to 54")

- **Verbally**:

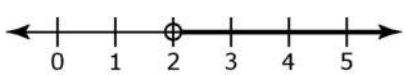
  Rider's must be greater than or equal to 54 inches to ride the Mega Drop.

A boundary point separates the values less than from the values greater than a specified value. It may or may not be a possible value.

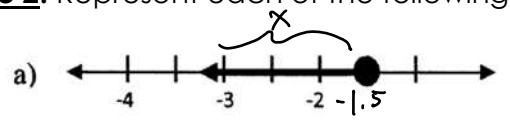
A **Closed circle** shows that the boundary point is included in this solution

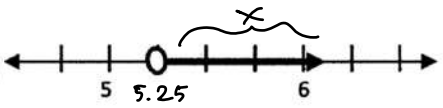


An **Open circle** shows that the boundary point is not included in this solution



Example 2: Represent each of the following algebraically and verbally.

a) 

b) 

Algebraically: $x \leq -1.5$

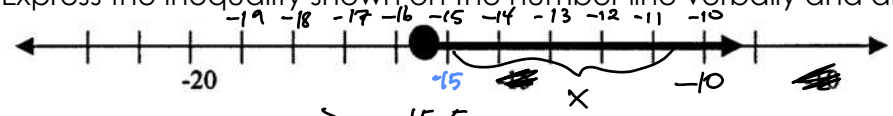
Verbally: x is less than or equal to -1.5

Algebraically: $x > 5.25$

Verbally: x is greater than 5.25

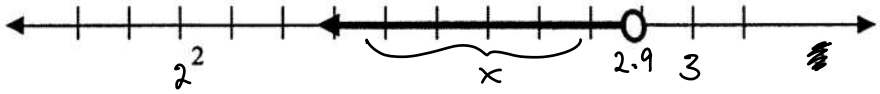
Example 3:

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



$x \geq -15.5$

b) Express the inequality shown on the number line algebraically.



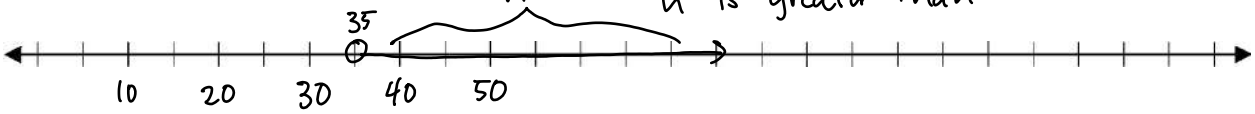
$x < 2.9$

c) Express the inequality **x ≥ -4/7** verbally: x is greater than or equal to $-\frac{4}{7}$

d) Express the inequality **35< *n*** graphically

35 is less than n

n is greater than 35



Representing Double Inequalities

Example 4: The Kiddie Swing at the QCX has the following height requirement: minimum 32" and maximum 42". Represent the situation with an inequality. Show it verbally, graphically, and algebraically.

Verbally: the height requirement is greater than or equal to 32" and less than or equal to 42"

Algebraically: $x \geq 32''$ and $x \leq 42''$ or $32 \leq x \leq 42''$

Graphically: 

Assignment: Pages 347-349 #s 5, 7, 9, 11, 13, 15, 17, 19, 23