

AIM: 6-1 Where do we see inequalities in the real-world?

Name _____

Date _____

Math 6 - Period _____

Warm-up: Log-in to SOCRATIVE to submit your answers to the questions below.

Use the symbols $<$ and $>$ to compare the sentences below.

- 1) The score after 2 goals is $<$ the score after 3 goals.
- 2) The cost to download 10 songs is $>$ the cost to download 2 songs.
- 3) The outside temperature in summer is $>$ the outside temperature in winter.
- 4) The height of a 1st grade student is $<$ the height of a 6th grade student.

----- Where have you seen inequalities in real-life? 



Let's Investigate: What is an inequality?

Definition A mathematical sentence indicating that two quantities are <u>not</u> equal.	Symbols $>$ - greater than $<$ - less than \geq - greater than or equal to \leq - less than or equal to
Example $x + 6 > 13$ "A number increased by six is greater than thirteen."	Nonexample $x + 6 = 13 \rightarrow$ Equation "A number increased by six is equal to thirteen."

*Extension: What are the possible values for x in the example and non-example?

Any # greater than 7
(infinite solutions)

$x = 7$
(one solutions)

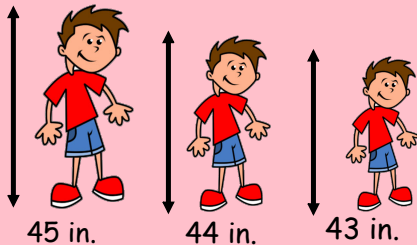
Inequalities in the Real-World



\geq

You must be at least 44 inches tall to ride the Space Mountain roller coaster in Disney World.

Which of the triplets can ride?



Question

Turn and talk!

Hint

Let x = the height of each roller coaster rider

Equation
 $x = 44\text{in.}$

Inequality
 $x \square 44\text{in.}$

Inequality
 $x \square 44\text{in.}$

Translating Inequalities: Word and Symbol Sort

Place the words from the word-bank in the proper columns below.

Word Bank			
Greater Than ✓	At Most ✓	Less Than ✓	Exceeds ✓
Fewer Than ✓	Minimum ✓	More Than ✓	At Least ✓
Maximum ✓	No More Than ✓		No Less Than
Greater Than or Equal To ✓		Less Than or Equal To	

① <	② >
<ul style="list-style-type: none"> • <u>Fewer than</u> * <u>Less than</u> 	<ul style="list-style-type: none"> * <u>Greater than</u> • <u>Exceeds</u> • <u>More than</u>
③ ≤	④ ≥
<ul style="list-style-type: none"> • NO MORE THAN • <u>Maximum</u> • <u>At most</u> * <u>Less than or equal to</u> <p style="color: green; font-size: 1.2em;">The <u>maximum</u> weight in an elevator is 1,000 lbs.</p>	<ul style="list-style-type: none"> • NO LESS THAN * <u>Greater than or equal to</u> • <u>Minimum</u> • <u>At least</u> <p style="color: red; font-size: 1.2em;">You must be a <u>minimum</u> of 44 in. to go on the ride.</p>

Writing Inequalities

When writing an inequality, the variable should always be on the left side.
If it isn't, rewrite the inequality and Switch the direction of the sign.

Examples: $6 < x$ can be rewritten as $x > 6$
 $-2 > x$ can be rewritten as $x < -2$

We can write inequalities to model real-world situations and algebraic expressions. *Remember the variable is written first*

Examples: a) The mountain, m is at least 985 feet tall $m \geq 985$

b) The maximum amount of m money you spend on clothing is \$100. $m \leq 100$



Now You Try! Write an inequality for each sentence below. Highlight the key words.

- The sum of x and 4 is greater than or equal to 3. $x + 4 \geq 3$
- Swim practice, p will be no more than 35 laps. $p \leq 35$
- Joseph ran for less than 5 miles, m . $m < 5$
- More than 800 fans attended the opening game, g . $g > 800$
- The temperature, t in February was at most 6°F. $t \leq 6$
- Each package, p exceeds 2 ounces. $p > 2$

Reflection Questions:

1. James says you can rewrite $1 < m$ as $m > 1$. Do you agree? Why or why not?



I agree, because when you rewrite $1 < m$, you get $m > 1$.

2. How is $x < 5$ different from $x \leq 5$? Explain.

Any number less than 5
(does not include 5)

Any number less than or equal to 5.
(includes 5)

3. Write a story that: $x \geq 10$

I have at least 10 dollars in my wallet.

EXIT TICKET Class Poll

Who can ride on *Space Mountain*? USE YOUR HEIGHT STICK TO DETERMINE WHICH PERSON CAN RIDE THE COASTER.

Check all who apply AND write an inequality to represent each person's height.

- Minion _____
- Boxer Man _____
- Yoda _____
- Tom Brady _____
- None of the above