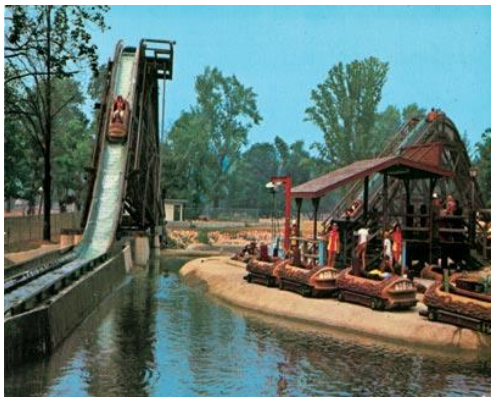
Linear Inequalities

Problem

The log ride at the PNE can hold 10 people. It also has a weight limit of 1500 lbs per log for safety reasons. There are several groups waiting to ride.



Group 1 has 4 children and 4 adults
Group 2 has 3 children and 6 adults
Group 3 has 9 children and 2 adults
Group 4 has 5 children and 5 adults

If the average adult weighs 150 lbs, the average child weighs 100 lbs and the log itself weighs 300lbs which groups will be able to go on the ride?

Can you come up with the equations (or rather inequalities) that will satisfy the conditions for the log ride?

Equation 1:

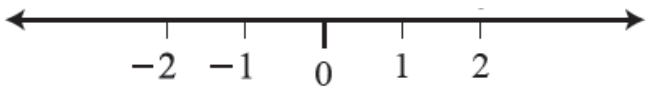
Equation 2:

Graphs of Inequalities

What is the solution to $x > 2$

What do you notice about the solution?

What would the solution look like on a number line?



Translating to Inequalities

Highlight the phrase that make the following sentences inequalities?

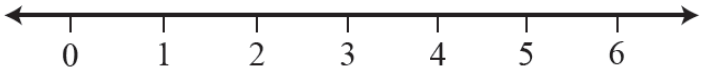
Sentence	Mathematical Statement
At most three students will not pass the next test.	
The grade 9 basketball team averages at least five 3s per game.	
You must not exceed 50 km/h driving up Taylor way	

Adding and Subtracting Linear Inequalities

if $6 > 3$ and we add 2 to both sides, does the inequality sill hold true?

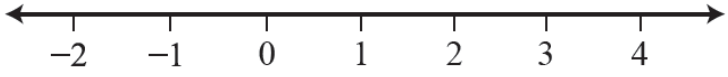
Solve and Graph

$x - 2 < 3$



Solve and Graph

$4x - 1 \geq 3x - 2$



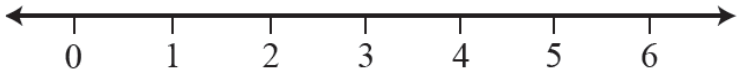
Multiplying and Dividing Linear Inequalities

If $6 > 4$ and we multiply both sides by 2, does the inequality still hold true?

What about if we multiply both sides by -2?

Therefore, when multiplying (or dividing) by a negative number, the direction of the inequality must be reversed.

Solve and graph
$3x > 6$



Solve and graph
$-3x > 6$