Packet 10: Inequalities

Dear Parents/Guardians,

In Packet 10, students write, solve and graph inequalities. They build on the work from grade 6 to include rational numbers. Students solve one-step inequalities, determining when to keep (preserve) the inequality symbol and when it must be 'flipped' (reversed) to make the inequality true. Students use inequalities to express and solve real world situations.

Graphing Inequalities

Students graph inequalities, noting changes in the wording and symbolic notation and their effect on each graph.

Words	Symbols	Graphs	
x is equal to -4.	x = -4	← ↓ ↓ ↓ −4 0	
<i>x</i> is greater than -4.	x > -4	← ↓ -4 0	
x is less than -4.	x < -4	$\leftarrow \diamond \rightarrow \rightarrow \rightarrow -4 0$	
<i>x</i> is greater than or equal to -4.	<i>x</i> ≥ -4	-4 0	
<i>x</i> is less than or equal to -4.	<i>x</i> ≤ -4	-4 0	
<i>x</i> is an integer between -5 and 1.	-5 < x < 1 (x is an integer)	← ∲●●●∳ -4 0	

To Flip or Not to Flip...

Students operate on inequalities and determine when the inequality symbol should change direction to keep the inequality true.

Begin each operation	then do this to	Steps		New inequality
with this inequality	both sides 	Left	Right	(make sure this is true)
4 < 10	Multiply by 8	4 ×8 = 32	10 ×8 = 80	32 < 80
	Multiply by -8	$4 \times (-8) = -32$	$10 \times (-8) = -80$	-32 > -80
	Divide by 2	$4 \div 2 = 2$	$10 \div 2 = 5$	2 < 5
	Divide by -2	$4 \div (-2) = -2$	$10 \div (-2) = -5$	-2 > -5



By the end of the packet, your student should know...

How to write and graph solutions to inequalities Lessons 10.1, 10,2, and 10.3

When to preserve, or reverse the inequality symbol when solving inequalities Lessons 10.1 and 10.2

Use inequalities to solve problems Lesson 10.3

Additional Resources

Resource Guide (RG) Part 1, pages 63-64

Graphing inequalities and the meaning of symbols: https://youtu.be/jrWmqEJjhLY

Why do we change direction of the inequality sign when multiplying or dividing by a negative number? https://youtu.be/8lxM5bje-ig

Notice when the original inequality was multiplied or divided by a negative value, the inequality symbol changed direction to keep the inequality true.

Solving Inequalities

Students solve and graph in<u>equalities with rational numbers.</u>

