Packet 14: Rational Numbers on the Number Line

Dear Parents/Guardians,

Packet 14 introduces integers and signed rational numbers. Lesson 1 introduces integers and explores them on a number line. In lesson 2, students explore opposites and absolute value using real world situations. In lesson 3, students apply their integer work to solve and graph problems involving rational numbers.

Integers

The integers are the whole numbers and their opposites.

Examples of Integers									Not Integers (Still Rational Numbers)							
-125	14	0	3	-5	1	-1	12		1.2	-4.33	33 <u>5</u>	-	$-\frac{1}{4}$	-0.5	$-\frac{5}{2}$	
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Students will locate integers on number lines, both vertical and horizontal. Using number lines, students will compare and order integers.



On a horizontal number line, values increase as we move from left to right. • Since 7 is further to the right than -8, we can say that 7 is greater than -8. 7 > -8On a horizontal number line, values decrease as we move from right to left.

• Since -9 is further to the left than -7, we can say that -9 is less than -7. -9 < -7

Direction and Distance on the Number Line

Students will show direction and distance on a number line with arrows.



Opposites and Absolute Value

The <u>opposite</u> of a number is its additive inverse. When you add opposites, the sum is always 0.

 $5 + (-5) = 0 \rightarrow 5$ and -5 are opposites.

-3.2 + 3.2 = 0 \rightarrow -3.2 and 3.2 are opposites.

It is important to note that 0 is its own opposite.



Geometrically, opposites are located equal distance (on opposite sides) from 0 on a number line.

For example, -9 is nine spaces to the left of 0, and 9 is nine spaces to the right of 0. Therefore, -9 and 9 are opposites.

The <u>absolute value</u> of a number is the distance from the number to 0 on a number line. The distance is always greater than or equal to 0. We can represent the absolute value of any number x as |x|.





How to represent rational numbers on a number line Lessons 14.1 and 14.3

How to write inequalities to compare rational numbers Lessons 14.1 and 14.3

How to use arrows to represent distance and direction Lesson 14.1

How to find the opposite and absolute value of rational numbers Lessons 14.2 and 14.3

How to graph solutions to inequalities on number lines Lesson 14.3

Additional Resources

Resource Guide (RG) Part 2, pages 41-44

Graphing Inequalities: http://youtu.be/nif2PKA9bXA