

Sixth Grade Family Letter

Unit 1: Rational Numbers and Absolute Value

Your child's 6th grade mathematics class is about to begin a unit titled **Rational Numbers and Absolute Value**. In previous years, your child used number lines to represent whole numbers, fractions and decimals; to perform operations with whole numbers and fractions; and to represent and reason about situations. They also graphed ordered pairs with positive numbers. In this unit of study, your child will extend number lines and coordinate planes to represent positive and negative numbers. Your child will use these representations to reason about problems involving negative numbers, including comparing numbers, exploring opposites, and finding distance by reasoning about absolute value.

UNIT OBJECTIVES

- Students find and place positive and negative numbers on a number line.
- Students understand the mathematical and real-world contexts of positive, zero, and negative numbers, and their opposites.
- Students compare and order numbers by describing their relative positions on a number line, and express the comparison as an inequality.
- Students find the absolute value of numbers as their distance from zero on a number line, and use absolute value to find the distance between numbers on a number line or coordinate grid.
- Students plot ordered pairs on a four-quadrant coordinate plane.

HELPING YOUR CHILD

We want to help your child develop sound mathematical habits. As your child studies this unit, you can help encourage good mathematical habits by asking questions such as:

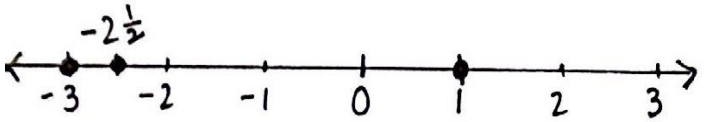
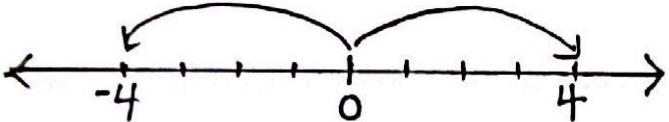
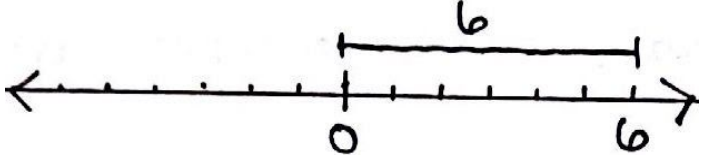
- What are some examples of situations where a negative number might be used?
- What does the x-coordinate represent in this situation? The y-coordinate?
- What is the opposite of this number?
- What does absolute value mean?
- How would you write that? How would you say that?

HAVING CONVERSATIONS ABOUT THE MATHEMATICS

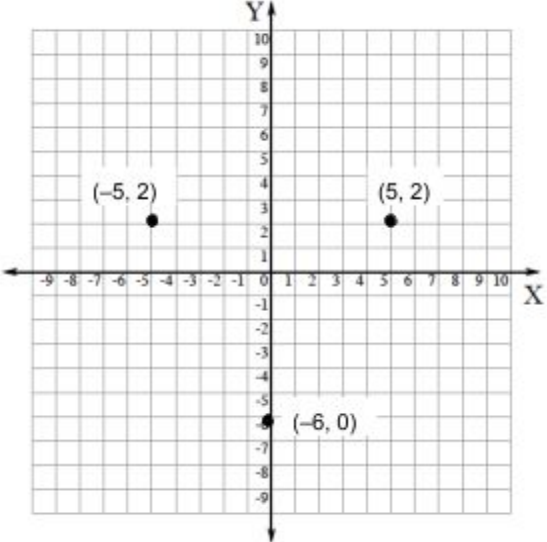
- Give your child situations and ask them to identify the type of integer that would represent the situation, for example, your height, loss of money, a credit, a debit, and temperatures below zero.
- Have your child draw the coordinate plane and name the parts of it.
- Have your child model a number and its absolute value on a number line.
- Put a point on a coordinate plane and ask your child to draw a square with a side length of 5 units. Have your child name the vertices of the square.
- Give your child several numbers and have them put them in order. For example: Put the following in order from least to greatest: 5, 3, -8, -3, 0, and $-2\frac{1}{2}$. (-8, -3, $-2\frac{1}{2}$, 0, 3, 5)

EXAMPLES OF SOME OF THE MATHEMATICS IN THE UNIT

Number lines can be used to represent, order, and compare numbers, and to show opposites and absolute value.

<ul style="list-style-type: none"> Place -3, 1, and $-2\frac{1}{2}$ on a number line. Which is greater, 1 or $-2\frac{1}{2}$? How does the number line show this? <p>1 is greater than $-2\frac{1}{2}$, because it is farther to the right on the number line.</p> $1 > -2\frac{1}{2}$	
<ul style="list-style-type: none"> What is the opposite of -4? <p>The opposite of -4 is 4.</p> $-(-4) = 4$ <p>These two numbers are the same distance from zero but in opposite directions.</p>	
<ul style="list-style-type: none"> What is the absolute value of 6? <p>The absolute value of 6 is 6, because 6 is a distance of 6 units away from 0.</p> $ 6 = 6$ <ul style="list-style-type: none"> What other number has the same absolute value? 	

Coordinate planes are two number lines (one horizontal and one vertical) taken together to consider two corresponding values at once.

<ul style="list-style-type: none"> Graph the following ordered pairs on the coordinate plane: $(-5, 2)$, $(5, 2)$, $(0, -6)$ Which point is a reflection of $(-3, 2)$ over the y-axis? What is the distance between $(-5, 2)$ and $(5, 2)$? 	
---	--