Integers, Rational Numbers, and the Coordinate Plane Family Letter

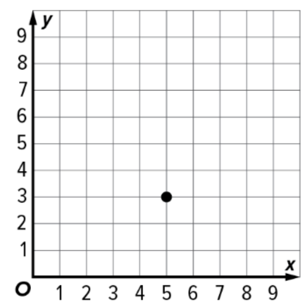
Dear Family,

In this module, ***Integers, Rational Numbers, and the Coordinate Plane***, students draw on their knowledge of whole numbers and number lines to develop understanding of integers, rational numbers, and the coordinate plane. Having a solid understanding of these concepts will prepare students for their future as they encounter integers and rational numbers in their everyday life and will be better prepared to study more advanced mathematical concepts in later courses.

What Did Students Learn Previously?

In elementary grades, students learned to compare and order whole numbers. They also learned to plot whole numbers on the number line, and graph points with whole-number coordinates in the first quadrant of the coordinate plane.

For example, the coordinate plane shows the point (5, 3) graphed in the first quadrant.



What Will Students Learn in This Module?

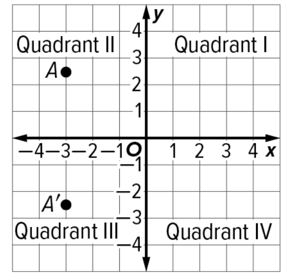
Integers

- Students will understand how to use **integers** to represent quantities, find **opposites** of **integers**, use **opposites** to understand **absolute value**, and compare and order **integers**. Using horizontal and vertical number lines can help to understand these concepts.
- **Absolute value** is represented by the symbol $|\;|$ around a number. **Absolute value** is the distance between a number and zero on a number line. So, although $-25 > -30$, $|-25| < |-30|$.

Rational Numbers

- Students will reason about **rational numbers** by using a number line. Rational numbers include **integers** as well as fractions, decimals and percents. When ordering **rational numbers**, write the numbers in the same form, then use the signs of the numbers, place value, or a number line to compare the numbers.

The Coordinate Plane



- Students will identify ordered pairs, points, and **quadrants**, and graph ordered pairs and **reflections** of points on the coordinate plane.
- The *x*- and *y*-axis divide the coordinate plane into four **quadrants**. Point *A* (−3, 2.5) is graphed in Quadrant **II**, and its reflection across the *x*-axis, A′ (−3, −2.5) is graphed in Quadrant **III** as shown.

What Vocabulary Terms Will Students Use?

Term	Definition
absolute value	The distance between a number and zero on a number line.
integer	Any number from the set {..., –3, –2, –1, 0, 1, 2, 3, ...}, where "..." means *continues without end.*
negative integer	An integer less than zero.
opposite	Integers are opposites when they are the same distance from zero on a number line, in opposite directions.
positive integer	An integer greater than zero.
quadrants	The four regions in a coordinate plane separated by the x-axis and y-axis.
rational number	Any number that can be written as a fraction $\frac{a}{b}$, where a and b are integers, and $b \neq 0$.
reflection	The mirror image produced by flipping a figure across a line.

How You Can Provide Support

1. Support your child's understanding of rational numbers by asking them to explain how rational numbers are used in everyday life.
   - *Consumerism:* Discuss the budget for a trip to the grocery store. Have your child compare the actual total cost to the budget by using a rational number to represent the amount and explaining the meaning in context. For further enrichment, have your child first estimate the total cost of the items needed.
   - *Weather:* Research or track your local temperatures, precipitation, or barometric pressure for a week and compare to the average for your area. Have your child represent the differences with rational numbers and explain their meanings in context.
2. Encourage your child to have a positive, growth-oriented attitude towards mathematics and their learning.
   - Encourage them to ask questions – both at home and in class. Sometimes, an answer to a question will generate more questions. That's how you know they are learning!
   - Encourage your child to embrace challenges and remind them that every challenge is an opportunity to learn something new.
   - Celebrate successes – both small and large.
3. Contact me to arrange a time to discuss the specifics of your child's performance and how we can work together to help them succeed in this module.

Sincerely,

(Teacher's Name)

(Email/Phone)