Eureka Math Parent Guide

A GUIDE TO SUPPORT PARENTS AS THEY WORK WITH THEIR STUDENTS IN MATH.

GRADE 6
MODULE 3

GRADE FOCUS

Sixth grade mathematics is about (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) dividing more complex fractions and extending idea of rational numbers to include negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking.

- Module 1: Ratios and Unit Rates
- Module 2: Arithmetic Operations Including Dividing by a Fraction
- » **Module 3: Rational Numbers**
- Module 4: Expressions and Equations
- Module 5: Area, Surface Area, and Volume Problems
  Module 6: Statistics

LET'S CHECK IT OUT!

MODULE 3 FOCUS

In this 19-lesson module, students extend the number line (both horizontally and vertically) to include the opposites of whole numbers—negative numbers. Students also see how the number line model is extended to two-dimensions, use the coordinate plane to model, and solve real-world problems involving rational numbers.

MORE SPECIFICALLY, CHILDREN WILL LEARN HOW TO:

- Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge).
- Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*
- Understand the absolute value of a rational number as its distance from 0 on the number line.
- Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

TOPIC OVERVIEW

Topics are the lessons within a module that help children master the skills above. Here are the lessons that will guide your child through Module 3:

- Topic A: Understanding Positive and Negative Numbers on the Number Line
- Topic B: Order and Absolute Value
- Topic C: Rational Numbers and the Coordinate Plane

WORDS TO KNOW

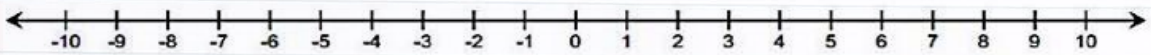
- **Absolute Value**: The absolute value of a number is the distance between the number and zero on the number line. *For example, $|3| = 3$, $|-4| = 4$, etc.*
- **Charge**: As in a *charge* to an account, or a fee *charged*, which is the amount of money a person must pay.
- **Credit**: A decrease in an expense, as in money *credited* to an account. For instance, when a deposit is made into a checking account, the money is *credited* to the account. A credit is the opposite of a debit.
- **Debit**: An increase in an expense or money paid out of an account. For instance, using a debit card to make a purchase will result in an expense, and money will be deducted from the related bank account.
- **Deposit**: The act of putting money into a bank account.
- **Elevation**: The height of a person, place, or thing above or below a certain reference level.
- **Integers**: The numbers . . . , -3, -2, -1, 0, 1, 2, 3 ,... on the number line.
- **Magnitude**: The absolute value of a measurement, given the measurement of a positive or negative quantity.
- **Negative Number**: A number less than zero.
- **Opposite**: In a position on the other side, as the negative numbers are the opposite direction from zero as the positive numbers.
- **Positive Number**: A number greater than zero.
- **Quadrants**: The four sections of the coordinate plane formed by the intersection of the axes.
- **Rational Number**: A fraction or the opposite of a fraction on the number line.
- **Withdraw**: The act of taking money out of a bank account.

SAMPLE PROBLEMS

SAMPLE 1

Order the following set of rational numbers from least to greatest, and explain how you determined their order.

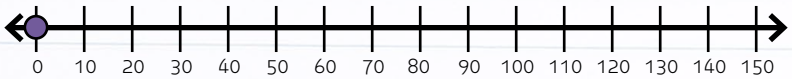
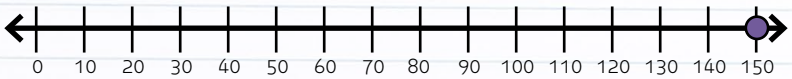
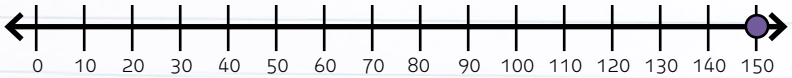
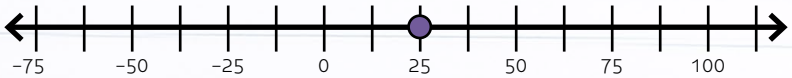
$-3, 0, -1/2, 1, -3\ 1/3, 6, 5, -1, 21/5, 4$



Solution: $-3\ 1/3, -3, -1, -1/2, 0, 1, 4, 21/5, 5, 6$.

I drew a number line and started at zero. I located the positive numbers to the right and their opposites (the negative numbers) to the left of zero. The positive integers listed in order from left to right are 1, 4, 5, 6. And since 21/5 is equal to 4 1/5, I know that it is 1/5 more than 4 but less than 5. Therefore, I arrived at 0, 1, 4, 21/5, 5, 6. Next, I ordered the negative numbers. Since -1 and -3 are the opposites of 1 and 3, they are 1 unit and 3 units from zero but to the left of zero. And $-3\ 1/3$ is even farther left, since it is 3 1/3 units to the left of zero. The smallest number is farthest to the left, so I arrived at the following order: $-3\ 1/3, -3, -1, -1/2, 0, 1, 4, 21/5, 5, 6$.

SAMPLE 2

Event	Integer	Number Line Model
Open a bank with $0.	0	
Make a $150 deposit.	150	
Credit an account for $150	150	
Make a deposit of $25	25	
A bank carge of $5	-5	
A withdrawal of $35	-35	

HOW YOU CAN HELP AT HOME

- Ask your child what they learned in school and ask them to show you an example.
- Discuss times throughout your day where you can use positive and negative numbers to represent a situation. For example, observe and discuss the temperature changes throughout the day or what it means when a football team gains/loses yards during a game.
- Ask your child to explain the difference between the opposite of a number and the absolute value of a number.
- Discuss the following questions with your child:
  - Q: Where are negative numbers located on a horizontal number line?
  - A: On a horizontal number line, negative numbers are located on the left side of zero.
  - Q: Where are negative numbers located on a vertical number line?
  - A: On a vertical number line, negative numbers are located below zero.
  - Q: What is the opposite of 2?
  - A: The opposite of 2 is -2
  - Q: What is the opposite of 0?
  - A: Zero has no opposite.
  - Q: Describe the relationship between 10 and -10.
  - A: 10 and -10 are opposites.