

Operations with Integers and Rational Numbers

Family Letter

Dear Family,

In this module, *Operations with Integers and Rational Numbers*, students will use their prior knowledge of addition, subtraction, multiplication and division and apply it to operations with both positive and negative integers. They will also use their knowledge of rational numbers (fractions, decimals and integers) to understand repeating and terminating decimals and to build fluency in calculating with fractions, mixed numbers and decimals, especially as they occur in combination.

What Did Students Learn Previously?

In earlier lessons, students learned how to compute with positive integers, and performed arithmetic operations with fractions and multi-digit decimals. They also learned about absolute value, opposites, and ordering numbers.

What Will Students Learn in This Module?

Add, Subtract, Multiply or Divide Integers

- Students will add, subtract, multiply, and divide integers.
- Students will understand how the distance between two integers on a number line is related to their difference.

Fractions Written as Decimals

- Students will identify terminating and repeating decimals.
- Students will convert fractions to decimals using long division.
- Students will write repeating decimals as fractions and mixed numbers.

Add, Subtract, Multiply or Divide Rational Numbers in Different Forms

- Students will add, subtract, multiply, and divide mixed numbers by rewriting them as improper fractions.
- Students will combine fractions and decimals, either by converting fractions to decimals, or by converting decimals to fractions.
- Students will multiply and divide decimals by fractions either by converting fractions to decimals, or by converting decimals to fractions.

Simplifying Expressions Involving Rational Numbers

- Students will use the order of operations to simplify expressions involving rational numbers.

Evaluating Algebraic Expressions Involving Rational Numbers

- Students will evaluate expressions involving rational numbers by rewriting fractions as decimals or decimals as fractions.

What Vocabulary Terms Will Students Use?

| Term | Definition |
|---|--|
| absolute value | The distance the number is from zero on a number line. |
| Additive Inverse Property | The sum of any number and its additive inverse is zero. |
| additive inverses | Two integers that are opposites. The sum of a integer and its additive inverse is zero. |
| bar notation | In repeating decimals, the line or bar placed over the digits that repeat. For example, $2.\overline{63}$ indicates that the digits 63 repeat. |
| Multiplicative Identity Property | The product of any number and one is the number. |
| multiplicative inverses | Two numbers with a product of 1. The reciprocal. |
| Multiplicative Property of Zero | The product of any number and zero is zero. |
| rational number | A number that can be written in the form $\frac{a}{b}$ where a and b are integers and $b \neq 0$. |

How You Can Provide Support

1. Support your child’s understanding of operations with integers and rational numbers by showing them how these operations apply to everyday life.
 - *Budgets:* Discuss with your child how budgets can be used to manage spending by deciding in advance what portion of the monthly income should be allocated to various expenses. Then have your child create a budget. The budget they create can be for themselves, a club or sports team, or your household. When they are satisfied with their budget, have them calculate the spending limits for each category based on an estimated amount of monthly income and evaluate their reasonableness.
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)