

Operations with Integers

Family Letter

Dear Family,

In this module, *Operations with Integers*, students will draw on their prior knowledge of addition, subtraction, multiplication and division and apply it to operations with both positive and negative integers. By building fluency with computation, they will be better prepared to study more advanced mathematical concepts in later courses, without being weighed down by the lack of these skills.

What Did Students Learn Previously?

In previous grades, students learned how to compute with positive integers. They also learned about absolute value, opposites and ordering numbers. For example, they learned that $-9 < -5$ because $|-9| > |-5|$.

What Will Students Learn in This Module?

Add, Subtract, Multiply or Divide Integers

- Students will draw on their knowledge of rational numbers to develop understanding of addition of integers and finding **additive inverses**. They use this understanding to gain fluency in adding multiple signed numbers.
- Students will draw on their knowledge of integers and subtraction to develop understanding of and build fluency in subtraction of integers. They will gain an understanding of finding the distance between two integers.
- Students will draw on their knowledge of the multiplication of whole numbers to develop understanding of multiplication of integers. They build fluency by multiplying two integers with different signs, multiplying two integers with the same signs, and multiplying groups of 3 or more integers.
- Students will draw on their knowledge of the division of whole numbers to develop understanding of division of integers. They build fluency by dividing two integers with different signs and dividing two integers with the same signs.

Apply Integer Operations

- Students will draw on their knowledge of operations with integers and the order of operations to develop fluency in applying the **order of operations** to integers.
- For example, using the order of operations to solve $2\left(\frac{-80}{4}\right) - 14$ the student would divide first resulting in $2(-20) - 14$. Then the student would multiply, resulting in $-40 - 14$. Lastly, the student would subtract resulting in -54 .

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 an integer and its additive inverse is zero.
Distributive Property	To multiply a sum by a number, multiply each addend of the sum by the number outside the parentheses.
Multiplicative Identity Property	The product of any number and one is the number.
Multiplicative Property of Zero	The product of any number and zero is zero.
opposites	Two integers are opposites if they are represented on the number line by points that are the same distance from zero, but on opposite sides of zero. The sum of two opposites is zero.
order of operations	The rules to follow when more than one operation is used in a numerical expression. 1. Evaluate the expressions inside grouping symbols. 2. Evaluate all powers. 3. Multiply and divide in order from left to right. 4. Add and subtract in order from left to right.

How You Can Provide Support

1. 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.
2. 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)