

TOPIC 1

Use Rational Number Operations

In this topic, students learn about operations with integers, and then extend that learning to expressions with negative fractions and decimals. Students will also solve problems with rational numbers.

CONNECT THE MATH

Operations with fractions and decimals are common in many daily activities, especially in measurement. Recipes and nutritional information on food packaging often use fractions, as do many tools, including wrenches and screws. Decimals are not only used in financial transactions, but the odometer and radio in a car often use displays with decimals. The play bar on videos can show hours, minutes, and seconds, yielding another opportunity to talk about parts of a whole and the amount of time elapsed or remaining.

Look for opportunities to point out fractions, mixed numbers, and decimals in your daily routines, and talk about what actions would represent thinking about a number as a negative amount.





LESSON 1-1

Relate Integers and Their Opposites

An integer and its opposite are the same distance from 0 on a number line and have a sum of 0.

LESSON OBJECTIVES

- Understand how integers and their opposites are related.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Represent Real World Situations Using Integers?](#)
- [How Do You Find the Absolute Value of Positive and Negative Numbers?](#)

You can use these search terms and phrases to help your student find additional help

online:

- representing change with integers
- combining opposite quantities
- representing integers on a number line
- absolute value



LESSON 1-2

Understand Rational Numbers

Rational numbers expressed as fractions can be written in decimal form.

LESSON OBJECTIVES

- Identify rational numbers and write them in decimal form.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Turn a Fraction into a Terminating Decimal?](#)
- [What's a Rational Number?](#)

Review Key Vocabulary

Review key vocabulary from this lesson in your student's glossary:

- [repeating decimal](#)
- [terminating decimal](#)

You can use these search terms and phrases to help your student find additional help online:

- writing fractions in decimal form

- writing decimals as mixed numbers



LESSON 1-3

Add Integers

Adding integers requires adding or subtracting their absolute values and understanding the sign of the sum.

LESSON OBJECTIVES

- Add positive and negative integers.
- Model integer addition in real-life applications.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [What Are the Rules for Using Absolute Values to Add Integers?](#)
- [How Do You Add Integers Using a Number Line?](#)

Review Key Vocabulary

Review key vocabulary from this lesson in your student's glossary:

- [additive inverse](#)

You can use these search terms and phrases to help your student find additional help online:

- adding integers
- adding negative integers
- using a number line to add
- additive inverses

- opposite integers

LESSON 1-4

Subtract Integers

Subtracting a number is the same as adding that number's additive inverse.

LESSON OBJECTIVES

- Understand subtraction of integers as adding the additive inverse,
 $p - q = p + (-q)$.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Subtract Integers Using a Number Line?](#)

You can use these search terms and phrases to help your student find additional help online:

- subtracting integers
- subtracting negative integers
- using a number line to subtract integers

LESSON 1-5

Add and Subtract Rational Numbers

Adding and subtracting integers is related to adding and subtracting other rational

numbers.

LESSON OBJECTIVES

- Add and subtract positive and negative rational numbers.
- Use number lines to model addition and subtraction as a movement or distance between rational numbers.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Write a Fraction as a Decimal?](#)
- [How Do You Add Mixed Fractions with the Same Denominator?](#)

You can use these search terms and phrases to help your student find additional help online:

- adding rational numbers with the same signs
- adding rational numbers with different signs
- subtracting rational numbers with the same signs
- subtracting rational numbers with different signs



LESSON 1-6

Multiply Integers

The sign of a product is determined by the signs of the factors in a multiplication expression.

LESSON OBJECTIVES

- Multiply positive and negative integers.
 - Apply integer multiplication to real-life applications.
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HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Multiply and Divide Numbers with Different Signs?](#)

You can use these search terms and phrases to help your student find additional help online:

- multiplying integers
 - multiplying a negative integer by a negative integer
 - multiplying a positive integer by a negative integer
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LESSON 1-7

Multiply Rational Numbers

The same properties used to multiply integers also apply when multiplying rational numbers.

LESSON OBJECTIVES

- Find the product of rational numbers.
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HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Multiply and Divide Numbers with Different Signs?](#)
- [How Do You Multiply Decimals?](#)

You can use these search terms and phrases to help your student find additional help online:

- multiplying a negative number and a positive number
- multiplying two negative numbers



LESSON 1-8

Divide Integers

The sign of a product is determined by the signs of the factors in a multiplication expression.

LESSON OBJECTIVES

- Understand how to divide integers by applying the rules of multiplying integers.
- Determine equivalencies among integer quotients.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Figure Out the Sign of a Product or Quotient?](#)
- [How Can You Tell if Two Expressions Are Equivalent?](#)

You can use these search terms and phrases to help your student find additional help online:

- dividing integers
- dividing integers with different signs

- writing equivalent expressions



LESSON 1-9

Divide Rational Numbers

Dividing rational numbers is similar to dividing integers. The sign of the quotient depends on the signs of the dividend and the divisor.

LESSON OBJECTIVES

- Understand how the signs of integers in a multiplication sentence relate to the signs in a related division sentence.

HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [What Are Multiplicative Inverses?](#)
- [How Do You Simplify a Fraction Over a Fraction?](#)

Review Key Vocabulary

Review key vocabulary from this lesson in your student's glossary:

- [complex fraction](#)

You can use these search terms and phrases to help your student find additional help online:

- dividing a negative number by a positive number
- dividing a positive number by a negative number
- dividing a negative number by a negative number



LESSON 1-10

Solve Problems with Rational Numbers

Problems involving rational numbers can be solved by making sense of the quantities and their relationships to each other.

LESSON OBJECTIVES

- Decide which operations to use to solve problems with rational numbers.
 - Use precision when solving problems with rational numbers.
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HOW CAN YOU HELP WITH HOMEWORK

Review Lesson Content

Watch and share these video tutorials with your student:

- [How Do You Determine Which Operations to Use in a Word Problem?](#)
- [How Do You Multiply Mixed Numbers?](#)

You can use these search terms and phrases to help your student find additional help online:

- using the Distributive Property with negative numbers
- using the Order of Operations with negative numbers