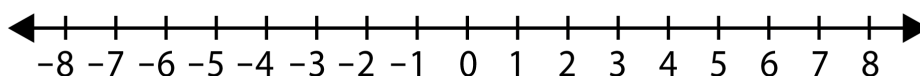


Lesson 1: Positive and Negative Rational Numbers (3 Days)

☐ Getting Started

Have you ever thought about how numbers can describe more than just how many things you have? They can also show direction, temperature, or even money owed versus money saved. Today, you'll dive into the world of positive and negative numbers—numbers greater than zero and numbers less than zero.

Let's start with a number line.



Notice how zero acts as the divider between positives and negatives. Numbers to the right of zero are positive, like having money in your bank account, and numbers to the left of zero are negative, like owing money or temperatures below freezing.

Did you know that positive and negative numbers follow specific rules when you add, subtract, multiply, or divide them? By understanding these rules, you can solve all kinds of real-world problems, from calculating changes in temperature to figuring out a budget.

Today, you'll explore these rules and practice using them to master how positive and negative numbers work together.

Stuff You Need

- glue or gluestick
- Interactive Notebook
- scissors

Ideas to Think About

- How can understanding positive and negative numbers help make sense of real-world situations?
- Why do positive and negative numbers cancel each other out when added?

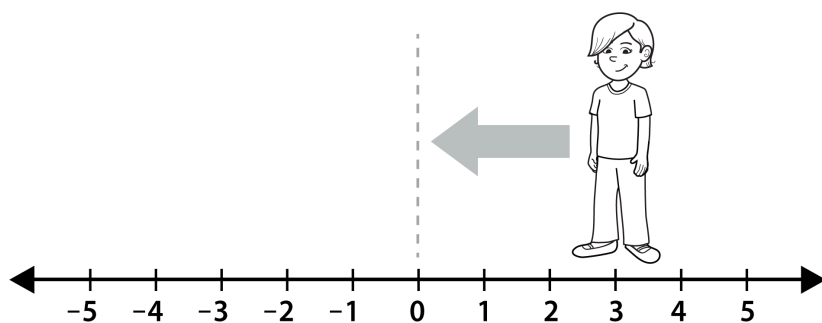
Things to Know

- When you combine an equal but opposite quantity to a given quantity, you make zero. A positive number and its negative counterpart make what we call a **zero pair**.
- When you multiply or divide two positive numbers, the answer is a positive number.
- When you multiply or divide a positive and negative number, the answer is negative.
- When you multiply or divide two negative numbers, the answer is positive.

Activities

☐ Activity 1: Combining to Make Zero

Let's start by thinking about a number line. Imagine you're standing at a certain point on the line. If you want to get back to zero, what would you need to do?



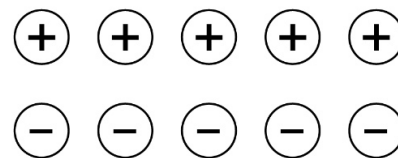
For example, if you start at 3, how can you get back to zero? You subtract 3, or you can think of it as adding a negative 3. These two operations are actually the same:

THESE
OPERATIONS
ARE THE SAME

$$3 - 3 = 0$$

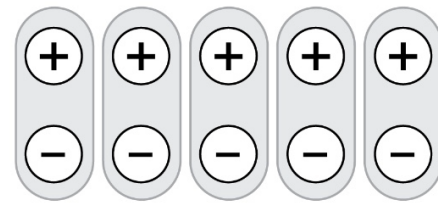
$$3 + (-3) = 0$$

In science, if an atom has a neutral charge, it means the number of protons (positive charges) equals the number of electrons (negative charges). For example, if an atom has 5 protons, how many electrons will it have?



A positive number and its negative counterpart make what we call a **zero pair**. In the atom example above, there are 5 zero pairs because each proton pairs with one electron to balance the charge.

Now, complete the activity pages titled, "Opposites Combine to Make Zero." On these pages, you will analyze situations, determine if opposites combine to make zero, identify the zero pairs, and decide what remains.



☐ Activity 2: Multiplying Positive and Negative Integers

Imagine you're on a number line, traveling to different points based on the rules of multiplication. Multiplication can seem like magic—it jumps you forward or backward depending on the signs of the numbers. But how does it really work? Let's uncover the "why" behind multiplying positive and negative numbers. Watch the following video to find out.



Multiplying Positive and Negative Integers

www.beyondthepage.com/link/12499/

Remember, these rules aren't just random—they're based on logical properties like the distributive property and the idea of reversing directions on a number line. Understanding the "why" makes it easier to remember:

1. Positive $\times$ Positive = Forward steps (easy addition). (a positive product)
2. Positive $\times$ Negative = Forward steps turned backward. (a negative product)
3. Negative $\times$ Positive = Backward steps. (a negative product)
4. Negative $\times$ Negative = Backward steps reversed, becoming forward. (a positive product)

Next, create a rules list for multiplying positive and negative integers by cutting out the terms and examples and pasting them next to the proper rule. Store this page in your Interactive Notebook.

Now that you've learned the rules for multiplying positive and negative numbers, it's time to put them into action. Use these rules to complete the practice problems on page 2 of the activity sheet, "Multiplying Positive and Negative Integers."

Remember to think about the signs of the numbers and apply the rules carefully. For an extra challenge, try explaining why your answer to the Challenge Problem makes sense using the distributive property or a number line.

Day 2

Activity 3: Multiplying Positive and Negative Fractions and Decimals

Jaden wakes up, and the temperature starts dropping by 2.5 degrees per hour. How much does the temperature decrease after 3.5 hours?

This situation involves multiplying fractions and decimals, just like other real-world scenarios. The good news is that the rules you learned yesterday for integers also apply here. Review the rules to the right:

Let's see how these rules work with fractions and decimals through real-world examples. Multiplying fractions and decimals might feel a bit different than multiplying whole numbers, but the same logic and rules apply. Whether you're calculating a discount at your favorite store, figuring out how far a diver descends under the ocean, or tracking temperature changes throughout the day, positive and negative fractions and decimals help us represent real-world scenarios with precision.

Let's look at a few relatable examples to see how the rules work in action.

Jaden wakes up, and the temperature starts dropping by 2.5 degrees per hour. How much does the temperature decrease after 3.5 hours?

Or, imagine Jolie went hiking and camped at the top of a mountain. As she made her way back down, she descended at a rate of 0.2 miles per hour. If she continued hiking downhill for 6.5 hours, how far did she descend in total?

To figure this out, multiply:

Multiplying Positive and Negative Decimals and Fractions

- 1 Positive × Positive = Positive
- 2 Positive × Negative = Negative
- 3 Negative × Positive = Negative
- 4 Negative × Negative = Positive

 STEP 1	Write the problem Since the temperature is dropping, we represent the rate as a negative number.	-2.5×3.5
 STEP 2	Multiply as usual Multiply as usual, ignoring the sign for now.	$2.5 \times 3.5 = 8.75$
 STEP 3	Apply the sign rule Since one number is negative (-2.5), the final answer is also negative.	$-2.5 \times 3.5 = -8.75$
 FINAL ANSWER	The temperature dropped by 8.75 degrees after 3.5 hours. 	



Let's follow the steps

-0.2×6.5

STEP 1 	Multiply as usual Multiply as usual, ignoring the sign for now.	$0.2 \times 6.5 = 1.3$
STEP 2 	Apply the sign rule Since one number is negative (-0.2), the final answer is also negative.	$-0.2 \times 6.5 = -1.3$

So, Jolie descended 1.3 miles after hiking downhill for 6.5 hours.

You might be asking: Why does this work? The negative number represents a decrease in elevation, and when we multiply a negative by a positive, we get a negative result—just like when the temperature drops or an object moves downward.

Special Note: Why Debt is Written as a Negative Number

In everyday life, we say "You owe \$12," which sounds positive. But in math, owing money means your balance is below zero, so we represent it with a negative number.

If the total debt is $-\$60$ and 5 friends share it evenly: $-60 \div 5 = -12$

Each person's balance changes by -12 , meaning each person is *down* \$12. We can still say "each person owes \$12," but mathematically we show it as: -12 (a negative balance).

Now it's your turn. Use what you've learned to solve the following problems on the activity sheet titled "Multiplying Positive and Negative Fractions and Decimals."

☐ Activity 4: Rational Number Relay

Have you ever wondered how math connects to the real world? Imagine you're tracking a temperature drop, calculating your total debt, or figuring out how far a submarine dives. All of these situations involve multiplying positive and negative rational numbers. Today, you will review how to solve these problems, and then you'll put your skills to the test in a fun game called the Rational Number Relay.

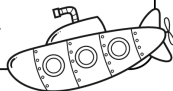
Let's quickly review what you know about multiplying positive and negative numbers:

1	Positive $\times$ Positive = Positive
Example: $2 \times 3 = 6$ <i>(Adding two groups of 3 steps forward lands you at 6.)</i>	
2	Positive $\times$ Negative = Negative
Example: $2 \times (-3) = -6$ <i>(Adding two groups of 3 steps backward lands you at -6.)</i>	
3	Negative $\times$ Positive = Negative
Example: $(-2) \times 3 = -6$ <i>(Reversing two groups of 3 forward steps sends you to -6.)</i>	
4	Negative $\times$ Negative = Positive
Example: $(-2) \times (-3) = 6$ <i>(Reversing two backward steps flips the direction, landing you at 6.)</i>	



Remember, these same rules apply to fractions and decimals. Let's practice applying them to some real-world scenarios.

Temperature Change The temperature drops by 3.5°F every hour for 4 hours. To find the total change, you multiply: $-3.5 \times 4 = -14$ This means the temperature has dropped a total of 14°F .	Submarine Depth A submarine dives $\frac{4}{5}$ of a mile every hour for 3 hours. To find the total distance, multiply: $-\frac{4}{5} \times 3 = -\frac{12}{5} = -2\frac{2}{5}$ The submarine has descended $2\frac{2}{5}$ miles.
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Now that you've reviewed, choose an option below to practice.

Option 1: Complete the activity page titled "Real World Contexts."

Option 2: It's time for a game! The Rational Number Relay will take you through stations with real-world scenarios. Solve each problem correctly to unlock the next station and earn points along the way. Here's how to play:

1. **Create Stations:** Cut out problem cards on the activity page titled "Real-World Contexts" and place them at different "stations" (these can be labeled areas on a table or in the room).
2. **Start at Station 1:** Read the first problem (e.g., temperature scenario). Solve the problem, write the answer, and explain it briefly on the scorecard.
3. **Have a Parent or Sibling Check the Answer:** If correct, you "unlock" the next station and move on. If incorrect, you may get a hint and try again.
4. **Move Through the Stations until You Reach the Final Challenge Station:** Create your own real-world problem using multiplication of rational numbers. Solve it and explain the result.
5. **Tally the Points:** Add up points for correct answers and thoughtful explanations. Scoring System: Correct answer: +10 points Partial explanation: +5 points Fully incorrect: 0 points (but allow retries!)
6. **Optional: Race Against Time:** Set a timer to solve each station problem quickly for bonus points.

Day 3

☐ **Activity 5: Dividing Positive and Negative Integers**

Have you ever wondered how division works with positive and negative numbers? Whether you're splitting up a debt among friends or figuring out the change in temperature over time, understanding how division works with signs is an important skill. Today, you are going to uncover the rules for dividing positive and negative numbers—and, spoiler alert, they're closely related to the multiplication rules you already know.

Watch the following video.



Dividing Positive and Negative Integers

www.beyondthepage.com/link/12500/

Remember, these rules for division aren't random—they're based on logical properties, such as the connection between division and multiplication and the idea

of balancing or reversing directions on a number line. Understanding the "why" behind these rules makes them much easier to remember:

1. Positive $\div$ Positive = Positive

Dividing a positive by a positive is straightforward—just like splitting something evenly among groups.

2. Positive $\div$ Negative = Negative

Dividing a positive by a negative reverses the direction, resulting in a negative outcome.

3. Negative $\div$ Positive = Negative

Dividing a negative by a positive keeps the direction negative, as you are splitting a negative amount into positive groups.

4. Negative $\div$ Negative = Positive

Dividing a negative by a negative cancels out the negatives, reversing the direction and resulting in a positive outcome.

Next, create a rules list for multiplying positive and negative integers by cutting out the terms and examples and pasting them next to the proper rule. Store this page in your Interactive Notebook for future reference.

Now that you've learned the rules for dividing positive and negative numbers, it's time to put them into action. Use these rules to complete the practice problems on page 2 of the activity sheet, "Dividing Positive and Negative Integers." Remember to think about the signs of the numbers and apply the rules carefully.

☐ Activity 6: Integer Division Mystery Puzzle

Have you ever thought about how division shows up in your everyday life? From splitting a pizza with friends to calculating how much time it takes to complete a task, division is everywhere. But when we start working with positive and negative numbers, the story gets even more interesting.

Today, you'll solve real-world problems where division with integers helps explain what's happening. Whether it's figuring out an average temperature change, sharing debt, or calculating points lost in a game, each problem tells a story. And here's the fun part—your answers will unlock clues to complete a mystery puzzle at the end of the activity.

As you work through these problems, think about what the quotients mean in real life. Are they positive or negative? What do they tell us about the situation?

On the activity page titled "Integer Division Mystery Puzzle," you will solve integer division problems. Each solution corresponds to a letter in the table on page 2, which

will help you decode a final secret word. Be sure to pay close attention to the signs and context of each problem. Once you have all the letters, unscramble them to solve the puzzle.

Wrapping Up

In this lesson, you've learned how to work with positive and negative rational numbers, and you've seen how they apply to real-world situations like sharing debt, tracking temperature changes, and calculating ascent rates. Understanding these concepts helps you make sense of everyday math, from finances to science.

Next up, you are diving into the exciting world of fractions and decimals. You'll learn how to change fractions into decimals and vice versa. This will open up even more ways to use math in practical scenarios. Get ready to expand your math toolkit with these new skills!

☐ Life Application: Financial Soccer Game (Optional)



Financial Soccer

www.beyondthepage.com/link/12504/

This site offers a game related to financial literacy. It explains concepts like debt (negative balances) and savings (positive balances) in practical terms. It connects directly to real-world examples of working with negative and positive numbers in money-related situations.

Learning Gates

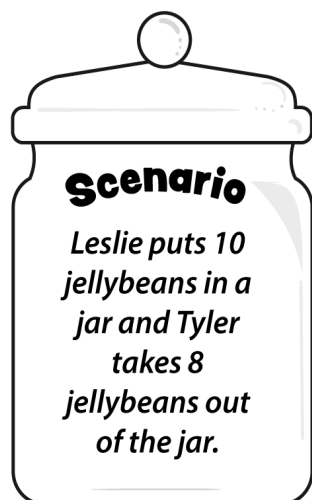
Take the [Learning Gates quiz](#) for this lesson.

Opposites Combine to Make Zero

Directions: Read each scenario carefully and answer the questions that follow. Use what you've learned about positive and negative numbers to:

1. Determine if opposites combine to make zero.
2. Write an equation using one positive number and one negative number to represent the situation.
3. Draw a visual representation, such as symbols or a number line, and circle any zero pairs.
4. Solve to find the final result.

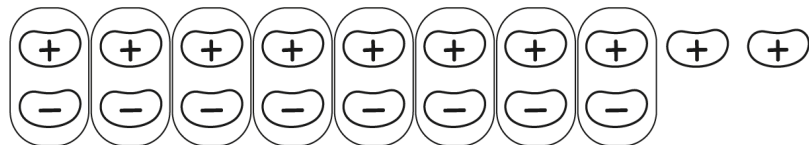
Example:



a) Do opposites combine to make zero? No, because 10 jellybeans were put in, and 8 were taken out.

b) Write the equation: $10 + (-8)$

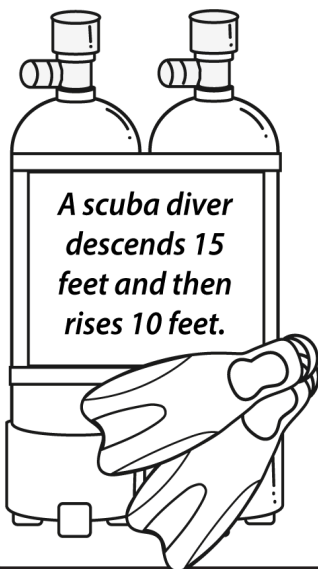
c) Draw the jellybeans with positive and negative signs. Circle any zero pairs:



d) What is the amount left? 2 positive jellybeans are left.

1

scenario



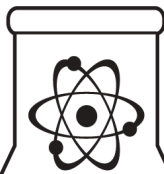
a) Do opposites combine to make zero? _____

b) Write the equation: _____

c) Draw the movements on a number line or as symbols. Circle any zero pairs.

d) What is the depth now? _____

2

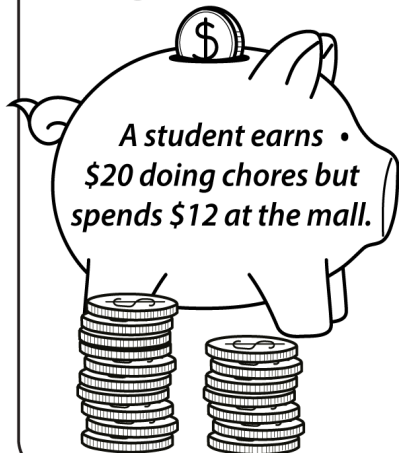
scenario

An atom
has 7 protons
(positive charges)
and 7 electrons
(negative charges).

- a) Do opposites combine to make zero? _____

- b) Write the equation: _____
- c) Draw the movements on a number line or as symbols. Circle any zero pairs.
- d) What is the total charge? _____

3

scenario

A student earns
\$20 doing chores but
spends \$12 at the mall.

- a) Do opposites combine to make zero? _____

- b) Write the equation: _____
- c) Draw the movements on a number line or as symbols. Circle any zero pairs.
- d) What is the amount left? _____

4

Create your own scenario where opposites combine to make zero. Write your equation, draw your illustration, circle any zero pairs, and explain your result.

scenario

- a) Do opposites combine to make zero? _____

- b) Write the equation: _____
- c) Draw the movements on a number line or as symbols. Circle any zero pairs.
- d) What is the amount left? _____

Multiplying Positive and Negative Integers

Answer:

Example:

Positive x Positive =

Positive x Negative =

Negative x Positive =

Negative x Negative =

Positive

Positive

$$2 \times (-3) = -6$$

$$(-3) \times 2 = -6$$

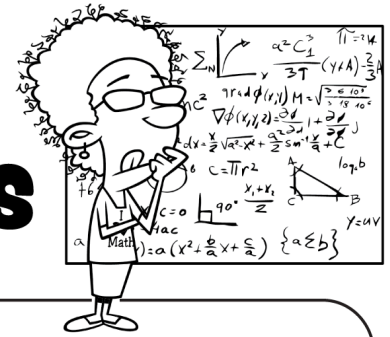
Negative

Negative

$$2 \times 3 = 6$$

$$(-2) \times (-3) = 6$$

Multiplying Positive and Negative Integers



1. $5 \times (-4) =$

6. $10 \times 4 =$

2. $-6 \times 3 =$

7. $-3 \times -7 =$

3. $(-8) \times (-2) =$

8. $2 \times -6 =$

4. $7 \times (-1) =$

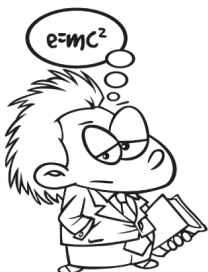
9. $(-5) \times 0 =$

5. $(-9) \times (-5) =$

10. $-12 \times 2 =$

CHALLENGE PROBLEM:

Solve and explain $(-3) \times (-4)$ using the distributive property or a number line. Include diagrams or detailed steps to support your reasoning.



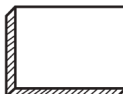
Multiplying Positive and Negative Fractions and Decimals

Directions: Solve the following problems. Pay particular attention to the sign for your answer. Simplify fractions, if necessary.

1. $5.5 \times 6.7 =$ 

5. $\frac{1}{5} \times \frac{3}{8} =$ 

2. $-1.2 \times 4.3 =$ 

6. $-\frac{1}{2} \times \frac{2}{5} =$ 

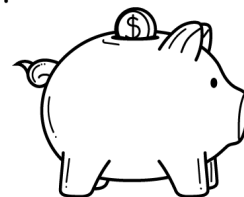
3. $2.3 \times (-0.6) =$ 

7. $\frac{2}{3} \times \left(-\frac{3}{4}\right) =$ 

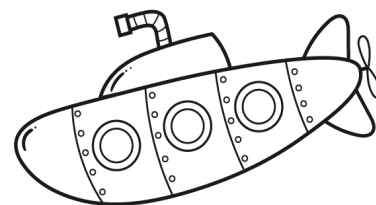
4. $-4 \times -0.25 =$ 

8. $-\frac{2}{5} \times -\frac{1}{2} =$ 

9. Jamie borrowed money from her brother to pay for a school project. She owes her brother \$1.25 for every day she doesn't repay the loan. After 8 days, how much debt has Jamie accumulated?



10. A submarine descends $\frac{3}{8}$ of a mile per hour for $1\frac{1}{2}$ hours. How far has the submarine descended?

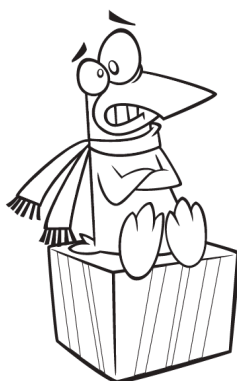


REAL-WORLD CONTEXTS



TEMPERATURE

The temperature drops 2.5°F per hour for 5 hours. What is the total change?



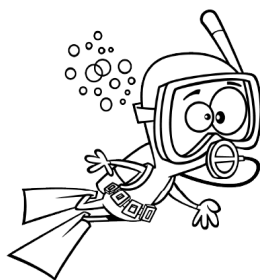
MONEY/DEBT

You lose $\$4.25$ per week for 3 weeks. What is your total loss?



DISTANCE

A diver descends $\frac{2}{3}$ of a mile per hour for 2 hours. What is the change in elevation?



CHALLENGE

Create your own real-world multiplication problem using positive and negative rational numbers. Write the equation, solve it, and explain the meaning of the result.

Dividing Positive and Negative Integers

Answer:

Example:

Positive ÷ Positive =

Positive ÷ Negative =

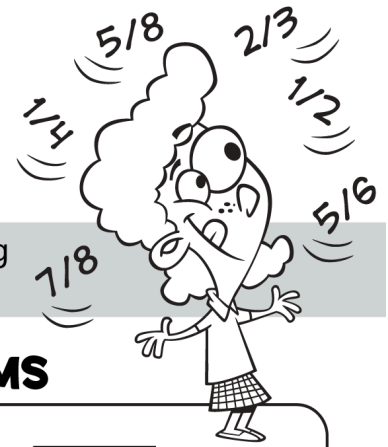
Negative ÷ Positive =

Negative ÷ Negative =

Positive	Positive	$(-6) \div 3 = -2$	$6 \div 3 = 2$
Negative	Negative	$(-6) \div (-3) = 2$	$6 \div (-3) = -2$

Dividing Positive & Negative Integers

Directions: Solve each problem below by applying the rules for dividing positive and negative numbers.



PART 1: BASIC DIVISION PROBLEMS

1. $36 \div 6 =$

2. $-48 \div 8 =$

3. $25 \div -5 =$

4. $-30 \div -6 =$

5. $-72 \div 9 =$

6. $-15 \div 3 =$

7. $-64 \div -8 =$

8. $18 \div -3 =$

PART 2: INTERPRET REAL-WORLD QUOTIENTS

9. A company loses \$60 over 5 days. What is the average daily loss?

10. A worker has a debt of \$84. He plans to make 7 equal payments to repay the debt. What is the value of each payment?

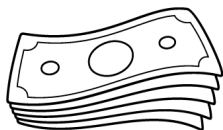
Integer Division Mystery Puzzle

Directions: Solve the integer division problems. Each answer will match a letter in the table on the bottom of page 2, helping you uncover a secret word. Pay close attention to the signs (positive or negative) and the context of each problem. Once you've solved all the problems and collected the letters, unscramble them to reveal the final puzzle word!

1. Salary Deductions

A company deducts \$72 evenly across 6 months. What is the monthly deduction?

Equation: _____ Answer: _____



Letter

2. Mountain Hike

The hiker climbs 600 feet in 4 hours. What is the average ascent rate per hour?

Equation: _____ Answer: _____

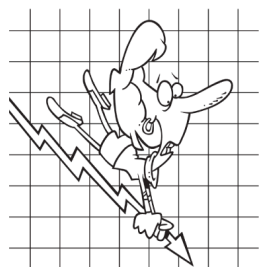


Letter

3. Stock Market Drops

A stock's value dropped \$60 over 5 days. What was the average daily change in value?

Equation: _____ Answer: _____



Letter

4. Game Loss

A gamer loses 120 points over 6 rounds. What is the average point change per round?

Equation: _____ Answer: _____



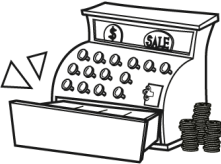
Letter

5.

Debt Per Person

A group of 5 friends splits a debt of \$60. How much does each person owe?

Equation: _____ Answer: _____



Letter

6.

Temperature Change

A city's temperature dropped 48° over 6 hours. What was the average temperature change per hour?

Equation: _____ Answer: _____



Letter

7.

Debt Splitting

A family owes \$112 and splits the debt equally among 8 family members. How much debt does each family member take on?

Equation: _____ Answer: _____



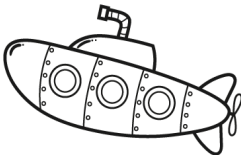
Letter

8.

Submarine Descent

A submarine descends 150 meters over 5 minutes. What is the average descent rate per minute?

Equation: _____ Answer: _____



Letter

A	B	C	D	E	F	G	H	I	J	K	L	M
5	-4	12	-8	20	-6	8	-150	-12	30	6	-10	10
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
-14	150	60	25	7	-20	32	-100	-30	9	21	14	-52

Write the letters you found as clues on the lines below

Unscramble to reveal the secret puzzle word

Lesson 1: Positive and Negative Rational Numbers (3 Days)

Getting Started

✿ Ideas to Think About

- How can understanding positive and negative numbers help make sense of real-world situations?
- Why do positive and negative numbers cancel each other out when added?

📖 Things to Know

- When you combine an equal but opposite quantity to a given quantity, you make zero. A positive number and its negative counterpart make what we call a **zero pair**.
- When you multiply or divide two positive numbers, the answer is a positive number.
- When you multiply or divide a positive and negative number, the answer is negative.
- When you multiply or divide two negative numbers, the answer is positive.

🕒 Skills

- Describe situations in which opposite quantities combine to make 0.
- Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
- Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.

Introducing the Lesson

In today's lesson, your child will explore the concept of positive and negative rational numbers and how they describe real-world situations like temperature changes, money owed or saved, and direction on a number line. She will learn the rules for working with these numbers when multiplying or dividing, and practice applying these rules in real-world contexts. This foundational understanding will help her build problem-solving skills and see how math connects to everyday life.

Activities

Activity 1: Combining to Make Zero

In this activity, your child works with positive and negative numbers to understand how opposites combine to create zero. She explores real-world scenarios, such as changes in depth, balancing charges in atoms, and earning versus spending money. Each problem requires her to write an equation, draw visual representations (like zero pairs or a number line), and solve for the remaining amount or result. Through this process, she practices critical math skills, including identifying relationships between positive and negative values and applying these concepts to everyday situations. This activity also encourages creative thinking as she designs her own scenario to demonstrate how opposites can combine to make zero.

Answer Key:

1. Scenario: A scuba diver descends 15 feet and then rises 10 feet.
 - a. Do opposites combine to make zero? No, because the diver descended more than they rose.
 - b. Write the equation: $-15+10$
 - c. Draw the movements on a number line or as symbols: Illustrate -15 and $+10$ with arrows or symbols. Circle any zero pairs.
 - d. What is the depth now? -5 feet below sea level.
2. Scenario: An atom has 7 protons (positive charges) and 7 electrons (negative charges).
 - a. Do opposites combine to make zero? Yes, because the protons and electrons are equal in number.
 - b. Write the equation: $7 + (-7)$
 - c. Draw the movements on a number line or as symbols. Circle any zero pairs. Illustrate 7 positive charges and 7 negative charges. Circle the 7 zero pairs.
 - d. What is the total charge? 0
3. Scenario: A student earns \$20 doing chores but spends \$12 at the mall.
 - a. Do opposites combine to make zero? No, because the student spent less than they earned.
 - b. Write the equation: $20 + (-12)$
 - c. Draw the movements on a number line or as symbols. Circle any zero pairs. Illustrate 20 positive dollars and 12 negative dollars. Circle the 12 zero pairs.
 - d. What is the amount left? \$8 left
4. Student Challenge: Answers will vary.

Activity 2: Multiplying Positive and Negative Integers

In this activity, your child watches a video that explores the rules for multiplying positive and negative numbers and gains an understanding of why these rules work. She learns that multiplication with opposite signs (positive $\times$ negative or negative $\times$ positive) results in a negative product, while multiplying two numbers with the same sign (positive $\times$ positive or negative $\times$ negative) results in a positive product. Using tools like the distributive property and number lines, she also develops reasoning skills to explain these concepts, reinforcing her understanding of how multiplication connects to real-world situations and mathematical logic.

Answer Key:

- | | |
|---|--|
| 1. Positive $\times$ Positive = Positive $2 \times 3 = 6$ | 4. Negative $\times$ Negative = Positive |
| 2. Positive $\times$ Negative = Negative $2 \times (-3) = 6$ | $(-2) \times (-3) = 6$ |
| 3. Negative $\times$ Positive = Negative $(-3) \times 2 = -6$ | |

Answer Key:

1. -20
2. -18
3. 16
4. -7
5. 45
6. 40
7. 21
8. -12
9. 0
10. -24

11. Challenge Problem: Using the distributive property: $(-3) \times (-4) = (-3) \times (-4) = -3 \times (-2 + -2)$. Break it into two terms $(-3) \times (-2) + (-3) \times (-2)$. Each term equals 6, so: $6 + 6 = 12$. Using a number line: 1. Start at 0. 2. Normally, multiplying by -3 means moving backward, but multiplying by another negative reverses the direction. 3. Moving forward 4 groups of 3 results in $+12$.

Day 2

Activity 3: Multiplying Positive and Negative Fractions and Decimals

In this activity, your child learns how to multiply positive and negative fractions and decimals by applying the same rules she previously masters with integers. She explores real-world examples to understand how signs influence the outcome of multiplication. Through this activity, your child discovers that multiplying two negatives results in a positive outcome, while multiplying numbers with different signs produces a negative result. These examples emphasize the practical application of fractions and decimals in everyday scenarios, helping her connect abstract math concepts to real life.

Answer Key:

- | | |
|-----------------------|---|
| 1. 36.85 | 8. $2/10 = 1/5$ |
| 2. -5.16 | 9. $-\$10.00$ |
| 3. -1.38 | $-\$1.25 \times 8 = -\$10.00$ |
| 4. 1 | 10. The submarine descends $9/16$ miles into the ocean. |
| 5. $3/40$ | $(3/8) \times 3/2 = 9/16$ |
| 6. $(-2/10) = (-1/5)$ | |
| 7. $(-6/12) = (-1/2)$ | |

Activity 4: Rational Number Relay

In this activity, your child has the option to complete the activity page or play a "game," applying the rules for multiplying positive and negative rational numbers in real-world contexts, such as calculating temperature changes, debt, and distance. She works through problems that involve both fractions and decimals, reinforcing her understanding of how the signs of numbers affect the result. This activity emphasizes critical thinking by encouraging your child to interpret the mathematical results in terms of real-life scenarios. By solving these problems, she gains a deeper appreciation for how math connects to everyday situations.

Answer Key:

- | | |
|--|--|
| 1. $-2.5 \times 5 = -12.5^\circ \text{ F}$ | 3. $-2/3 \times 2 = -4/3 = -1 \frac{1}{3}$ |
| 2. $-4.25 \times 3 = -12.75$ | 4. Answers will vary |

Achievement	Point Range	Description
Math Mastery	36 – 40	Excellent work! The student provided correct answers and clear, thoughtful explanations for nearly all problems.
Strong Understanding	28 – 35	Great job! The student demonstrates a solid understanding with mostly correct answers and explanations.
Developing Skills	16 – 27	Good effort! The student shows some understanding but has errors in calculations or incomplete explanations.
Needs Improvement	Below 16	The student is struggling with the concepts and needs additional practice and support to grasp the material.

Day 3

Activity 5: Dividing Positive and Negative Integers

In this activity, your child watches a video and completes activity sheets on dividing positive and negative integers. She practices applying the rules: dividing two positives or two negatives results in a positive quotient, while dividing integers with opposite signs results in a negative quotient. This activity helps reinforce her understanding of integer operations and builds confidence in solving division problems with signed numbers.

Answer Key:

1. Positive $\div$ Positive = Positive Example: $6 \div 3 = 2$
2. Positive $\div$ Negative = Negative Example: $6 \div (-3) = -2$
3. Negative $\div$ Positive = Negative Example: $-6 \div 3 = -2$
4. Negative $\div$ Negative = Positive Example: $-6 \div (-3) = 2$

Answer Key:

1. 6
2. -6
3. -5
4. 5
5. -8
6. -5
7. 8
8. -6
9. The average daily loss is -12. Explanation: Dividing a negative loss by a positive number gives a negative result, representing a loss of \$12 per day.
10. Each payment is -12. Explanation: Dividing a positive total by a negative number results in a negative amount, representing the cost of each payment.

Activity 6: Integer Division Mystery Puzzle

In this activity, your child practices solving integer division problems using real-world contexts, such as calculating salary deductions, average ascent rates, and temperature changes. Each problem reinforces the rules of dividing positive and negative integers, helping your child understand how to interpret quotients in practical scenarios. By solving these problems, your child uncovers clues to decode a secret word,

adding a fun and engaging element to the lesson. This activity builds problem-solving skills, logical reasoning, and a deeper connection between math and everyday situations.

Answer Key:

1. Equation: $-72 \div 6 = -12$; Answer: $-\$12$ per month; Clue: Letter "I"
2. Equation: $600 \div 4 = 150$; Answer: The hiker ascends 150 feet per hour; Clue: Letter "O"
3. Equation: $60 \div -5 = -12$; Answer: The stock lost \$12 per day (-12).; Clue: Letter "I"
4. Equation: $-120 \div 6 = -20$; Answer: The gamer lost -20 points per round; Clue: Letter "S"
5. Equation: $-60 \div 5 = -12$; Answer: Each person owes $-\$12$; Clue: Letter "I"
6. Equation: $-48 \div 6 = -8$; Answer: The temperature dropped -8°F per hour; Clue: Letter "D"
7. Equation: $-112 \div 8 = -14$; Answer: Each family member takes on $-\$14$ of the debt; Clue: Letter "N"
8. Equation: $-150 \div 5 = -30$; Answer: The submarine descends -30 meters per minute; Clue: Letter "V"
9. Secret Word: Division

Wrapping Up

In this lesson, your child explored how positive and negative rational numbers help us describe and solve real-world situations, from managing money and tracking temperature changes to calculating ascent and descent rates. She practiced adding, subtracting, multiplying, and dividing signed numbers, both whole numbers and fractions/decimals, and applied these skills through engaging activities and word problems. By building a strong understanding of how these numbers interact, she is developing flexible problem-solving strategies that will serve her well in both math and everyday life.

Life Application: Financial Soccer Game (Optional)

As an option, if your child is intrigued by financial literacy, she may play a game at the provided link, which explains concepts like debt (negative balances) and savings (positive balances) in practical terms. It connects directly to real-world examples of working with negative and positive numbers in money-related contexts.

Questions to Discuss

- Can you explain how dividing two negative numbers results in a positive quotient? (*Dividing two negative numbers cancels out the negatives, leaving a positive result. For example, $-12 \div -3 = 4$ because the negatives "reverse" each other.*)
- How can you use division to figure out an average temperature change over time? (*Divide the total temperature change by the number of hours. For example, if the temperature dropped -48°F over 6 hours, dividing $-48 \div 6 = -8$ gives the average change of -8°F per hour.*)
- What does a negative quotient mean in real-life scenarios? (*A negative quotient indicates a decrease or loss in context. For example, if a gamer loses -120 points over 6 rounds, dividing $-120 \div 6 = -20$ means they lost 20 points per round.*)

Things to Review

- Review the rules for multiplying positive and negative integers, decimals, and fractions
- Review the rules for dividing positive and negative integers