# Understanding Negative Numbers: A Comprehensive Guide for 14-Year-Olds

**Student Name:** _____

**Class:** _____

**Due Date:** _____

## Introduction to Negative Numbers

Negative numbers are numbers that are less than zero. They are used to represent debts, temperatures below zero, and other real-world quantities. Negative numbers can be represented on a number line, with the negative numbers to the left of zero and the positive numbers to the right.

### Activity 1: Number Line Exploration

Draw a number line and label the following numbers: -5, -2, 0, 2, 5. Identify the negative numbers and explain their relationship to the positive numbers.

## Properties of Negative Numbers

Negative numbers have several important properties, including the fact that they are less than zero, and that they can be added, subtracted, multiplied, and divided just like positive numbers. However, the rules for operating with negative numbers are different from those for positive numbers.

**Activity 2: Negative Number Sorting**

Sort the following numbers in order from least to greatest: -3, -1, -2, 0, 1, 2. Explain your reasoning and provide examples to support your answer.

## Comparing and Ordering Negative Numbers

When comparing negative numbers, the more negative a number is, the smaller it is. For example, -5 is less than -2. When ordering negative numbers, the numbers should be arranged in order from least to greatest.

**Activity 3: Comparing Negative Numbers**

Compare the following negative numbers: -4 and -2. Which number is greater? Explain your reasoning and provide examples to support your answer.

## Performing Operations with Negative Numbers

Negative numbers can be added, subtracted, multiplied, and divided just like positive numbers. However, the rules for operating with negative numbers are different from those for positive numbers.

**Activity 4: Performing Operations with Negative Numbers**

Perform the following operations:

- -2 + (-3) =
- -4 - (-2) =
- -1 x (-2) =
- -6 ÷ (-2) =

## Real-World Applications of Negative Numbers

Negative numbers have numerous real-world applications, including finance, science, and engineering. In finance, negative numbers are used to represent debts or losses. In science, negative numbers are used to represent temperatures below zero.

**Activity 5: Real-World Applications**

Provide examples of how negative numbers are used in real-world applications, such as finance or science. Explain how negative numbers are used to solve problems in these contexts.

## Practice Exercises

Complete the following exercises:

- -2 + (-1) =
- -5 - (-3) =
- -1 x (-4) =
- -8 ÷ (-2) =

## Word Problems

Solve the following word problems:

- A bank account has a balance of -$50. If $20 is deposited into the account, what is the new balance?
- A temperature graph shows a temperature of -5°C at 6 am and -2°C at 12 pm. What is the change in temperature?

## Review and Assessment

Review the key concepts and skills learned in this worksheet. Complete the following assessment:

- Define negative numbers and explain their relationship to positive numbers.
- Compare and order the following negative numbers: -3, -1, -2.
- Perform the following operation: -2 + (-3).

## Conclusion

In conclusion, negative numbers are an important concept in mathematics, with numerous real-world applications. By understanding negative numbers, students can develop a deeper understanding of mathematical concepts and apply them to solve problems in a range of contexts.

## Additional Resources

For additional practice and review, visit the following websites:

- Khan Academy: Negative Numbers
- Mathway: Negative Numbers
- GeoGebra: Negative Numbers