



Student Name: _____

Class: _____

Due Date: _____

Introduction to Integers

What are Integers?

Integers are whole numbers, either positive, negative, or zero, without a fractional part. They are used to represent a wide range of real-world quantities, such as temperatures, distances, and populations.

Exercise 1: Integer Basics

1. Define what an integer is.
2. Provide examples of positive, negative, and zero integers.
3. Explain the difference between a whole number and an integer.

Properties of Integers

- Commutativity: The order of the numbers does not change the result.
- Associativity: The order in which we perform operations does not change the result.
- Distributivity: We can distribute one operation over another.

Exercise 2: Integer Properties

1. Provide examples of commutativity, associativity, and distributivity using integers.
2. Explain how these properties are useful in real-world applications.

Integer Operations

Integers can be added, subtracted, multiplied, and divided. These operations follow specific rules and properties.

Exercise 3: Integer Operations

1. Perform the following operations:

- $2 + 3 = ?$
- $5 - 2 = ?$
- $4 \times 6 = ?$
- $12 \div 3 = ?$

2. Explain the rules for each operation.

Real-World Applications of Integers

Integers are used in a wide range of real-world applications, such as finance, science, and engineering.

Case Study 1: Temperature

A city's temperature is -5°C in the morning and rises to 10°C in the afternoon. What is the change in temperature?

Practice Exercises

1. A book costs \$15. If a 10% discount is applied, how much will you pay?
2. A car travels 250 miles in 5 hours. What is its average speed?
3. A company has a profit of \$1000. If it has a loss of \$500, what is its new profit?

Choose one of the following projects:

1. Create a budget for a school event using integers.
2. Design a mathematical model to predict population growth using integers.
3. Develop a game or simulation that involves integers.

Assessment

1. What is the definition of an integer?
2. What are the properties of integers?
3. How are integers used in real-world applications?

Conclusion

In conclusion, integers are whole numbers that are used to represent a wide range of real-world quantities. They have several properties that make them useful in mathematics, and they are used in a wide range of real-world applications.

References

References

List the sources used in this worksheet.

Answers

Answers

1. Exercise 1: Integer Basics

- Integer: A whole number, either positive, negative, or zero, without a fractional part.
- Examples: -3, 0, 5
- Difference: A whole number is a positive integer, while an integer can be positive, negative, or zero.

2. Exercise 2: Integer Properties

- Commutativity: $2 + 3 = 3 + 2 = 5$
- Associativity: $(2 + 3) + 4 = 2 + (3 + 4) = 9$
- Distributivity: $2(3 + 4) = 2*3 + 2*4 = 14$

3. Exercise 3: Integer Operations

- $2 + 3 = 5$
- $5 - 2 = 3$
- $4 \times 6 = 24$
- $12 \div 3 = 4$