

Grade 5 Math Book

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Introduction

Welcome to your Grade 4 Science Book on Mathematics! This book is designed to help you understand essential math concepts such as multiplication, division, fractions, and budgeting. Each chapter contains explanations, examples, and practice problems that will make learning fun and engaging. Let's dive in!

Chapter 1: Multiplying and Dividing Numbers Up to Four Digits

1.1 Understanding Place Value

Before we start multiplying and dividing larger numbers, it's important to understand place value. Each digit in a number has a value depending on its position.

- **Thousands:** 4,000
- **Hundreds:** 400
- **Tens:** 40
- **Units:** 4

For example, in the number 4,567:

- 4 is in the thousands place
- 5 is in the hundreds place
- 6 is in the tens place
- 7 is in the units place

1.2 Long Multiplication Method

Long multiplication is a method used to multiply larger numbers. Here's how to do it step-by-step.

Example: Multiply 234 by 12.

1. Write the numbers vertically, aligning them by the right.

$$\begin{array}{r} 234 \\ \times 12 \\ \hline \end{array}$$

2. Multiply the bottom number (2) by each digit of the top number:

$$\begin{array}{r} 234 \\ \times 12 \\ \hline 468 \quad (234 \times 2) \end{array}$$

3. Now, multiply the bottom number (1) by each digit of the top number, shifting one position to the left:

$$\begin{array}{r} 234 \\ \times 12 \\ \hline 468 \\ +2340 \quad (234 \times 1, \text{ shifted left}) \\ \hline 2808 \end{array}$$

So, 234 multiplied by 12 equals 2808.

1.3 Long Division Method

Long division is a method to divide larger numbers. Here's a step-by-step guide.

Example: Divide 1,256 by 4.

1. Write the numbers in long division format:

$$4 \overline{) 1256}$$

2. See how many times 4 fits into the first digit (1). It doesn't, so look at the first two digits (12). 4 fits into 12 three times ($3 \times 4 = 12$).

$$\begin{array}{r} 4 \overline{) 1256} \\ \underline{-12} \\ 0 \end{array}$$

31

314

So, 1,256 divided by 4 equals 314.

1.4 Practice Problems

1. Multiply 345 by 23.
2. Divide 2,048 by 8.

Chapter 2: Solving Word Problems Involving Multiplication and Division

2.1 Identifying Key Information

When solving word problems, the first step is to identify the important information. Look for keywords that indicate whether to multiply or divide.

- **Multiplication keywords:** total, each, per, times.
- **Division keywords:** each, share, distribute, per.

2.2 Setting Up the Problem

Once you identify the keywords, set up the equation based on the information given.

Example: If a box holds 24 apples and you have 5 boxes, how many apples do you have in total?

- **Equation:** $24 \text{ apples/box} \times 5 \text{ boxes} = \text{total apples}.$

2.3 Practice Word Problems

1. A farmer has 120 eggs and packs them in cartons of 12. How many cartons does he have?
2. Sarah has 45 candies. She wants to share them equally among 9 friends. How many candies will each friend get?

Chapter 3: Simplifying and Comparing Fractions

3.1 What are Fractions?

Fractions represent a part of a whole. The top number is called the numerator, and the bottom number is the denominator.

Example: In the fraction $\frac{3}{4}$, 3 is the numerator, and 4 is the denominator.

3.2 Simplifying Fractions

To simplify a fraction, divide both the numerator and the denominator by their greatest common factor (GCF).

Example: Simplify $\frac{8}{12}$.

1. Find the GCF of 8 and 12, which is 4.
2. Divide both by 4:
 - a. $8 \div 4 = 2$
 - b. $12 \div 4 = 3$
3. The simplified fraction is $\frac{2}{3}$.

3.3 Comparing Fractions

To compare fractions, you can find a common denominator or convert them to decimals.

Example: Compare $\frac{1}{2}$ and $\frac{3}{4}$.

1. The common denominator for 2 and 4 is 4.
2. Convert $\frac{1}{2}$ to $\frac{2}{4}$.
3. Now compare: $\frac{2}{4} < \frac{3}{4}$.

3.4 Practice Problems

1. Simplify $\frac{15}{20}$.
2. Which is greater: $\frac{2}{5}$ or $\frac{3}{8}$?

Chapter 4: Adding and Subtracting Fractions

4.1 Adding Fractions with the Same Denominator

When adding fractions with the same denominator, simply add the numerators.

Example: $\frac{1}{4} + \frac{2}{4} = \frac{(1+2)}{4} = \frac{3}{4}$.

4.2 Adding Fractions with Different Denominators

To add fractions with different denominators, find a common denominator.

Example: Add $\frac{1}{3}$ and $\frac{1}{6}$.

1. The common denominator is 6.
2. Convert $\frac{1}{3}$ to $\frac{2}{6}$.
3. Now add: $\frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$.

4.3 Subtracting Fractions

The process is similar to addition. For the same denominator, subtract the numerators.

Example: $\frac{3}{4} - \frac{1}{4} = \frac{(3-1)}{4} = \frac{2}{4} = \frac{1}{2}$.

4.4 Practice Problems

1. Add $\frac{2}{5}$ and $\frac{1}{5}$.
2. Subtract $\frac{3}{8}$ from $\frac{5}{8}$.

Chapter 5: Budgeting and Understanding Financial Literacy Basics

5.1 What is Budgeting?

Budgeting is planning how to spend your money wisely. It helps you track your income and expenses.

5.2 Creating a Simple Budget

1. **Income:** List all sources of money (allowance, gifts).
2. **Expenses:** List things you spend money on (toys, snacks).
3. **Saving:** Decide how much you want to save.

Example:

- Income: \$10
- Expenses: \$6 (snacks: \$3, toys: \$3)
- Saving: \$4

5.3 Understanding Needs vs. Wants

- **Needs:** Things you must have (food, clothing).
- **Wants:** Things you would like to have (toys, games).

5.4 Practice Budgeting Scenarios

1. If you receive \$20 for your birthday, how would you budget it if you want to buy a toy for \$15 and save the rest?
2. If your weekly allowance is \$5, how can you save for a \$50 game?

Conclusion

Congratulations on completing the Grade 4 Science Book on Mathematics! You have learned about multiplication, division, fractions, and budgeting. Remember, practice is key to mastering these concepts. Keep practicing, and you will become a math whiz in no time!

Glossary

- **Fraction:** A part of a whole.
- **Numerator:** The top number in a fraction.
- **Denominator:** The bottom number in a fraction.
- **Budget:** A plan for managing money.

This ebook serves as a comprehensive guide for Grade 5 students to understand and apply mathematical concepts effectively. Happy learning!