



Mastering Fractions: Understanding the Properties of Adding and Subtracting Fractions

Student Name: _____

Class: _____

Due Date: _____

Introduction to Fractions

Welcome to the world of fractions! In this worksheet, we will explore the properties of adding and subtracting fractions. You will learn how to add and subtract fractions with like and unlike denominators, and how to apply these skills to real-world problems.

A fraction is a way of expressing a part of a whole as a ratio of two numbers. The top number is called the numerator, and the bottom number is called the denominator.

Exercise 1: Identifying Fractions

1. Identify the numerator and denominator in each of the following fractions:

- $\frac{1}{2}$
- $\frac{3}{4}$
- $\frac{2}{5}$

Adding Fractions with Like Denominators

When adding fractions with like denominators, we simply add the numerators and keep the denominator the same.

Exercise 2: Adding Fractions with Like Denominators

1. Add the following fractions:

- $\frac{1}{4} + \frac{1}{4} =$
- $\frac{2}{6} + \frac{1}{6} =$
- $\frac{3}{8} + \frac{2}{8} =$

Adding Fractions with Unlike Denominators

When adding fractions with unlike denominators, we need to find the least common denominator (LCD) first.

Exercise 3: Adding Fractions with Unlike Denominators

1. Add the following fractions:

- $\frac{1}{4} + \frac{1}{6} =$
- $\frac{2}{3} + \frac{1}{4} =$
- $\frac{3}{5} + \frac{2}{7} =$

Subtracting Fractions with Like Denominators

When subtracting fractions with like denominators, we simply subtract the numerators and keep the denominator the same.

Exercise 4: Subtracting Fractions with Like Denominators

1. Subtract the following fractions:

◦ $\frac{2}{4} - \frac{1}{4} =$

◦ $\frac{3}{6} - \frac{2}{6} =$

◦ $\frac{4}{8} - \frac{2}{8} =$

Subtracting Fractions with Unlike Denominators

When subtracting fractions with unlike denominators, we need to find the least common denominator (LCD) first.

Exercise 5: Subtracting Fractions with Unlike Denominators

1. Subtract the following fractions:

- $\frac{2}{3} - \frac{1}{4} =$
- $\frac{3}{5} - \frac{2}{7} =$
- $\frac{1}{2} - \frac{1}{6} =$

Fractions are used in many real-world applications, such as cooking, measurement, and finance.

Exercise 6: Real-World Applications

1. A recipe calls for $\frac{1}{4}$ cup of sugar. If you want to make half the recipe, how much sugar will you need?
2. A bookshelf has 5 shelves, and each shelf can hold $\frac{3}{4}$ of a meter of books. If the bookshelf is currently empty, how many meters of books can be placed on it in total?
3. A person has $\frac{3}{4}$ of a liter of juice and wants to put it into bottles that hold $\frac{1}{6}$ liter each. How many bottles can be filled?

Word problems involving fractions can be challenging, but with practice, you can become proficient.

Exercise 7: Word Problems

1. Tom has $\frac{1}{2}$ of a bag of potatoes and gives $\frac{1}{4}$ of the bag to his friend. What fraction of the bag does Tom have left?
2. A bakery sells $\frac{2}{3}$ of a cake to a customer. If the customer wants to buy $\frac{1}{4}$ of the remaining cake, how much of the original cake will the customer have bought in total?
3. A group of friends want to share some candy equally. If they have $\frac{3}{4}$ of a bag of candy and there are 4 friends, how much candy will each friend get?

Mixed Numbers and Improper Fractions

Mixed numbers and improper fractions are used to represent fractions in different ways.

Exercise 8: Mixed Numbers and Improper Fractions

1. Convert the mixed number $2 \frac{1}{2}$ to an improper fraction.
2. Convert the improper fraction $\frac{5}{4}$ to a mixed number.
3. Simplify the fraction $\frac{6}{8}$.

Review

Review the concepts learned in this worksheet.

Exercise 9: Review

1. Add the fractions $\frac{1}{4} + \frac{1}{6}$.
2. Subtract the fractions $\frac{2}{3} - \frac{1}{4}$.
3. Simplify the fraction $\frac{8}{12}$.

Challenge

Challenge yourself with more complex problems.

Exercise 10: Challenge

1. A person has $\frac{2}{3}$ of a liter of juice and wants to put it into bottles that hold $\frac{1}{8}$ liter each. How many bottles can be filled?
2. A recipe calls for $\frac{3}{4}$ cup of sugar. If you want to make half the recipe, how much sugar will you need?
3. A bookshelf has 5 shelves, and each shelf can hold $\frac{3}{4}$ of a meter of books. If the bookshelf is currently empty, how many meters of books can be placed on it in total?