Introduction

Adding fractions is a fundamental concept in mathematics. A fraction represents a part of a whole, with the numerator (top number) indicating the number of equal parts and the denominator (bottom number) indicating the total number of parts.

What is a Fraction?

A fraction consists of two parts: the numerator and the denominator. For example, in the fraction 2/8, the numerator is 2 and the denominator is 8.

Maths - Fractions and Decimals: Adding Fractions

Objective

The objective of this lesson is to learn how to add fractions with the same denominator and different denominators.

Adding Fractions with the Same Denominator

To add fractions with the same denominator, simply add the numerators and keep the denominator the same.

- **Foundation**: 1/4 + 1/4 = 2/4
- **Core**: 2/8 + 1/8 = 3/8
- **Extension**: 3/12 + 2/12 = 5/12

Adding Fractions with Different Denominators

To add fractions with different denominators, find the least common multiple (LCM) of the denominators and convert each fraction to have the LCM as the denominator.

- **Foundation**: 1/4 + 1/6 = ?
  - Find the LCM of 4 and 6, which is 12.
  - Convert both fractions: 1/4 = 3/12 and 1/6 = 2/12.
  - Add the numerators: 3 + 2 = 5. The answer is 5/12.
- **Core**: 2/3 + 1/4 = ?
  - Find the LCM of 3 and 4, which is 12.
  - Convert both fractions: 2/3 = 8/12 and 1/4 = 3/12.
  - Add the numerators: 8 + 3 = 11. The answer is 11/12.
- **Extension**: 1/4 + 1/6 + 1/8 = ?
  - Find the LCM of 4, 6, and 8, which is 24.
  - Convert all fractions: 1/4 = 6/24, 1/6 = 4/24, and 1/8 = 3/24.
  - Add the numerators: 6 + 4 + 3 = 13. The answer is 13/24.

Activities

Practice adding fractions with the same and different denominators:

- **Foundation**: Add simple fractions with the same denominator, such as 1/4 + 1/4 or 2/8 + 1/8.
- **Core**: Add fractions with different denominators, such as 1/4 + 1/6 or 2/3 + 1/4.
- **Extension**: Add three or more fractions with different denominators, such as 1/4 + 1/6 + 1/8 or 2/3 + 1/4 + 1/5.

Assessment

Complete the following exercises to assess your understanding:

- **Foundation**: Add the following fractions: 1/4 + 1/4, 2/8 + 1/8, 3/12 + 2/12.
- **Core**: Add the following fractions: 1/4 + 1/6, 2/3 + 1/4, 3/8 + 2/8.
- **Extension**: Add the following fractions: 1/4 + 1/6 + 1/8, 2/3 + 1/4 + 1/5, 3/8 + 2/8 + 1/12.

Conclusion

In this lesson, we learned how to add fractions with the same denominator and different denominators. Remember to always check if the denominators are the same and to simplify your answer if possible.

References

- National Curriculum in England: mathematics programmes of study, www.gov.uk
- BBC Bitesize: Fractions, www.bbc.co.uk