

Introduction

Welcome to the Introduction to Fractions and Decimals Basics worksheet! This worksheet is designed for students aged 11-14, following the UK Primary School Curriculum.

The purpose of this worksheet is to provide a comprehensive introduction to fractions and decimals, including their definitions, notation, and basic operations.

What are Fractions?

A fraction is a way of showing part of a whole. It consists of a numerator (the number of equal parts) and a denominator (the total number of parts).

For example, $\frac{1}{2}$ is a fraction, where 1 is the numerator and 2 is the denominator.

Foundation:

Identify and write simple fractions, such as $\frac{1}{2}$ or $\frac{3}{4}$.

Core:

Simplify fractions and understand equivalent ratios.

Extension:

Explore more complex fractions, including mixed numbers and improper fractions.



What are Decimals?

A decimal is a way of showing part of a whole using a point to separate the whole number part from the fractional part.

For example, 0.5 is a decimal, which is equivalent to the fraction $\frac{1}{2}$.

Foundation:

Convert simple fractions to decimals, such as $\frac{1}{2}$ to 0.5.

Core:

Convert more complex fractions to decimals, such as $\frac{3}{4}$ to 0.75.

Extension:

Explore the relationship between fractions, decimals, and percentages.

Converting Fractions to Decimals

To convert a fraction to a decimal, divide the numerator by the denominator.

For example, to convert $\frac{1}{2}$ to a decimal, divide 1 by 2, which equals 0.5.

Converting Decimals to Fractions

To convert a decimal to a fraction, write the decimal as a fraction with the decimal part as the numerator and the place value as the denominator.

For example, 0.5 can be written as $\frac{5}{10}$, which simplifies to $\frac{1}{2}$.

Adding and Subtracting Fractions

To add or subtract fractions, find a common denominator and add or subtract the numerators.

For example, to add $\frac{1}{2}$ and $\frac{1}{4}$, find a common denominator of 4 and add the numerators: $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$.

Foundation:

Add and subtract simple fractions with like denominators.

Core:

Add and subtract fractions with unlike denominators.

Extension:

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Apply addition and subtraction skills to solve problems involving mixed numbers and improper fractions.



Multiplying and Dividing Fractions

To multiply fractions, multiply the numerators and denominators.

For example, to multiply $\frac{1}{2}$ and $\frac{3}{4}$, multiply the numerators and denominators: $(1 \times 3) / (2 \times 4) = \frac{3}{8}$.

Foundation:

Multiply simple fractions.

Core:

Multiply more complex fractions.

Extension:

Apply multiplication skills to solve problems involving mixed numbers and improper fractions.

Real-World Applications

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

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For example, a recipe may call for $\frac{3}{4}$ cup of sugar, or a water tank may hold $3\frac{1}{2}$ liters of water.

Activities and Questions

Complete the following activities and questions to practice your understanding of fractions and decimals.

1. Convert the following fractions to decimals:

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

2. Convert the following decimals to fractions:

- 0.5
- 0.75
- 0.25

3. Add and subtract the following fractions:

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

4. Multiply and divide the following fractions:

- $\frac{1}{2} \times \frac{3}{4}$
- $\frac{2}{3} \div \frac{3}{4}$

5. Solve the following real-world problems:

- A recipe calls for $\frac{3}{4}$ cup of sugar. If you want to make half the recipe, how much sugar do you need?
- A water tank can hold $3\frac{1}{2}$ liters of water. If $2\frac{3}{4}$ liters of water are already in the tank, what fraction of the tank is filled?

Conclusion

Congratulations on completing the Introduction to Fractions and Decimals Basics worksheet!

You have learned the definitions, notation, and basic operations of fractions and decimals, as well as their real-world applications.

Individual Reflection:

1. What was the most challenging part of this worksheet for you?

2. What did you learn about fractions and decimals that you did not know before?

3. How will you apply your knowledge of fractions and decimals in real-world situations?

