



Fractions, Decimals, and Percentages

7

Free and always will be!

Focus: A set of questions and solutions for Year 7 students focused on the topic of Fractions, Decimals and Percentages, tailored to the Australian Curriculum:

1. Converting Between Fractions, Decimals, and Percentages:

a) Convert 0.75 to a fraction and a percentage, then draw a number line between zero and one, and show the location of 0.75 with a small circle or cross.

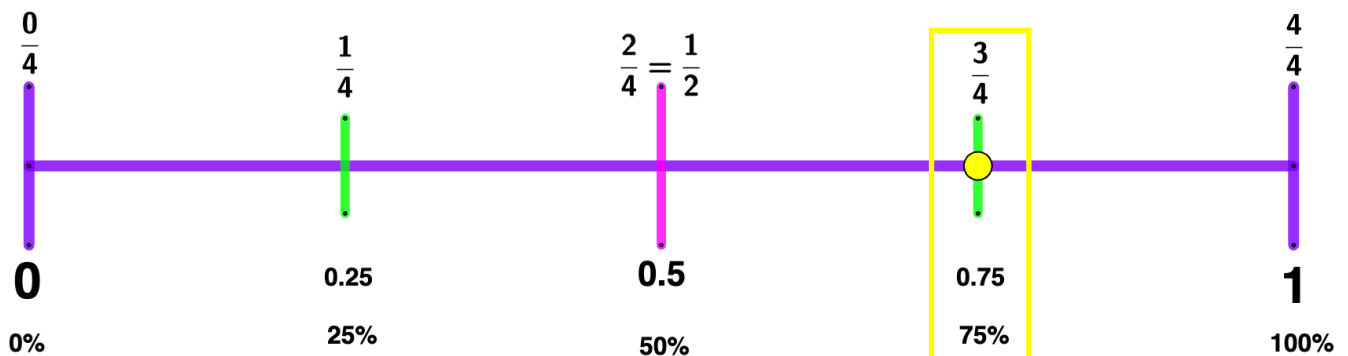
Solution:

Fraction:

$$\begin{aligned} &0.75 \\ &= \frac{75}{100} \\ &= \frac{75 \div 25}{100 \div 25} \\ &= \frac{3}{4} \end{aligned}$$

Percentage:

$$\begin{aligned} &0.75 \times 100 \\ &= 75\% \end{aligned}$$





b) Convert $\frac{2}{5}$ to a decimal and a percentage.

Solution:

Decimal:

$$\begin{aligned} & 2 \div 5 \\ &= \frac{2 \times 2}{5 \times 2} \\ &= \frac{4}{10} \\ &= 0.4. \end{aligned}$$

Percentage:

$$\begin{aligned} & \frac{2}{5} \times 100 \\ &= \frac{2 \times 100}{5} \\ &= \frac{200}{5} \\ &= 40\%. \end{aligned}$$

Remember,

$$0.1 = \frac{1}{10}$$

$$0.01 = \frac{1}{100}$$

$$0.001 = \frac{1}{1,000}$$

$$0.0001 = \frac{1}{10,000}$$

Conversley :

$$\frac{1}{10} = 0.1$$

$$\frac{1}{100} = 0.01$$

$$\frac{1}{1,000} = 0.001$$

$$\frac{1}{10,000} = 0.0001$$

2. Comparing and Ordering:

Arrange in ascending order: 0.8 , $\frac{3}{4}$, 75% , 0.78 .

Solution:

First convert all to decimals:

$$0.8, \frac{3}{4} = (0.75), 75\% = (0.75), 0.78.$$

Ascending order:

$$\frac{3}{4} \text{ or } 75\%, 0.78, 0.8.$$



3. Operations with Fractions:

a) Add: $\frac{1}{4} + \frac{1}{2}$.

Solution:

Find a common denominator (4):

$$\begin{aligned} & \frac{1}{4} + \frac{1 \times 2}{2 \times 2} \\ &= \frac{1}{4} + \frac{2}{4} \\ &= \frac{1+2}{4} \\ &= \frac{3}{4}. \end{aligned}$$

b) Subtract: $\frac{5}{6} - \frac{1}{3}$.

Solution:

Find a common denominator (6):

$$\begin{aligned} &= \frac{5}{6} - \frac{1 \times 2}{3 \times 2} \\ &= \frac{5}{6} - \frac{2}{6} \\ &= \frac{5-2}{6} \\ &= \frac{3 \div 3}{6 \div 3} \\ &= \frac{1}{2}. \end{aligned}$$

4. Operations with Decimals:

a) Multiply: 0.3×0.2 .

Solution:

$$\begin{aligned} & 0.3 \times 0.2 \\ &= 0.06. \end{aligned}$$

OR

$$\begin{aligned} & 0.2 \times 0.3 \\ &= \frac{2}{10} \times \frac{3}{10} \\ &= \frac{2 \times 3}{10 \times 10} \\ &= \frac{6}{100} \\ &= 0.06 \end{aligned}$$

Remember,

$$0.1 = \frac{1}{10}$$

$$0.01 = \frac{1}{100}$$

$$0.001 = \frac{1}{1,000}$$

$$0.0001 = \frac{1}{10,000}$$

Conversley :

$$\frac{1}{10} = 0.1$$

$$\frac{1}{100} = 0.01$$

$$\frac{1}{1,000} = 0.001$$

$$\frac{1}{10,000} = 0.0001$$



b) Divide: $0.8 \div 0.4$.

Solution:

$$0.8 \div 0.4 = 2.$$

OR

$$\begin{aligned} 0.8 \div 0.4 &= \frac{8}{10} \div \frac{4}{10} \\ &= \frac{8}{10} \times \frac{10}{4} \\ &= \frac{8 \times \cancel{10}}{\cancel{10} \times 4} \\ &= \frac{8}{4} \\ &= 2. \end{aligned}$$

When dividing by a fraction, change the divide to times, and flip the fraction on the right (the one being divided by).

$$\begin{aligned} \frac{a}{b} \div \frac{c}{d} \\ = \frac{a}{b} \times \frac{d}{c} \end{aligned}$$

5. Percentage of a Number:

a) What is 20 % of 60 ?

Solution:

$$\begin{aligned} 20 \% \text{ of } 60 &= 20\% \times 60 \\ = 0.2 \times 60 &\text{ OR } = \frac{20}{100} \times 60 \\ = 12. &= 0.2 \times 60 \\ &= 12. \end{aligned}$$

$$\begin{aligned} 20 \% \text{ of } 60 &= 20\% \times 60 \\ &= \frac{20}{100} \times 60 \\ \text{OR} &= \frac{20 \times 60}{100} \\ &= 2 \times 6 \\ &= 12. \end{aligned}$$

$$\begin{aligned} 20 \% \text{ of } 60 &= 20\% \times 60 \\ &= \frac{20}{100} \times 60 \\ \text{OR} &= \frac{20 \times 60}{100} \\ &= \frac{1200}{100} \\ &= 12. \end{aligned}$$

$$\begin{aligned} 20 \% \text{ of } 60 &= 20\% \times 60 \\ &= \frac{20}{100} \times 60 \\ \text{OR} &= \frac{20 \div 20}{100 \div 20} \times 60 \\ &= \frac{1}{5} \times 60 \\ &= \frac{60}{5} \\ &= 12. \end{aligned}$$

b) Increase 80 by 15 % .

Solution:

$$\begin{aligned} &= \text{Original Price} + \text{Markup} \\ &= 80 + (15 \% \text{ of } 80) \\ &= 80 + \left(\frac{15}{100} \times 80 \right) \\ &= 80 + (0.15 \times 80) \\ &= 80 + 12 \\ &= 92. \end{aligned}$$



6. Word Problems:

a) A cake recipe requires $\frac{3}{4}$ of a cup of sugar. If you want to make half the recipe, how much sugar do you need?

Solution:

$$\begin{aligned}\text{Half of } \frac{3}{4} &= \frac{1}{2} \times \frac{3}{4} \\ &= \frac{3 \times 1}{4 \times 2} \\ &= \frac{3}{8} \text{ of a cup of sugar.}\end{aligned}$$

b) In a sale, all items are discounted by 25 % . If a shirt originally costs \$40, how much will it cost after the discount?

Solution:

Discount amount:

$$= 25 \% \text{ of } 40$$

$$= \frac{25}{100} \times 40$$

$$= 0.25 \times 40$$

$$= 10.$$

New price:

$$= \text{Original Price} - \text{Discount Amount}$$

$$= 40 - 10$$

$$= \$30.$$

7. Decimal to Fraction Conversion:

Convert 0.625 to a fraction.

Solution:

$$0.625 = \frac{625}{1000},$$

Simplify by dividing top and bottom by 125 :

$$= \frac{625 \div 125}{1000 \div 125}$$

$$= \frac{5}{8}.$$



Additional Notes for Teachers:

Learning Outcomes: Students should be adept at converting between fractions, decimals, and percentages, performing operations on these numbers, and solving real-life problems using these concepts.

Teaching Strategies: Use visual aids like fraction bars, hundred grids, or number lines to illustrate concepts. Engage students with practical applications, like shopping discounts, recipe scaling, or sports statistics. Encourage the use of estimation to check the reasonableness of answers.

Assessment: Monitor students' ability to convert, compare, and operate with fractions, decimals, and percentages in various contexts.

Resources: Use manipulatives for fractions, digital tools for quick conversion practise, or real-life contexts like budgeting games to apply percentage concepts.

This question set aligns with the Australian Curriculum for Year 7, focusing on the key proficiencies of understanding, fluency, problem-solving, and reasoning in the context of fractions, decimals, and percentages.

IMPORTANT: At Acacia Tutoring we believe all educational resources should be free, as education, is a fundamental human right and a cornerstone of an equitable society. By removing financial barriers, we ensure that all students, regardless of their socioeconomic background, have equal access to high-quality learning materials. This inclusivity promotes fairness, helps bridge achievement gaps, and fosters a society where every individual can reach their full potential.

Furthermore, free resources empower teachers and parents, providing them with tools to support diverse learners and improve outcomes across communities. Education benefits everyone, and making resources universally accessible ensures we build a more informed, skilled, and prosperous future for all.

All documents are formatted as a **.pdf** file, and are completely **FREE** to use, print and distribute - as long as they are not sold or reproduced to make a profit.

N.B. Although we try our best to produce high-quality, accurate and precise materials, we at Acacia Tutoring are still human, these documents may contain errors or omissions, if you find any and wish to help, please contact Jason at info@acaciatutoring.com.au.

