

Year 7 - Unit 9: Fractions

Learning Journey:

Prior Learning

- Recognise simple fractions and understand fractions as equal parts of a whole.
- Recall multiplication facts and find common multiples and common factors.

Next Steps

- Multiply and divide fractions and apply fraction skills to ratio, algebra and probability.
- Solve multi-step GCSE problems involving fractions in a range of mathematical contexts.



By the end of this unit, you should be able to:

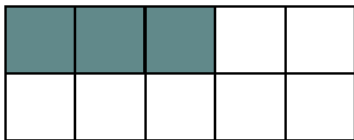
- Simplify, compare and convert between equivalent, mixed and improper fractions.
- Add and subtract fractions, including mixed numbers and fractions with different denominators.

Keywords:

- Fraction** – A number representing part of a whole.
- Equivalent fractions** – Fractions that have the same value.
- Improper fraction** – A fraction with a numerator greater than or equal to the denominator.
- Mixed number** – A whole number and a fraction written together.
- Common denominator** – A shared denominator used to compare or calculate fractions.
- Simplify** – Write a fraction in its lowest terms.

Finding fractions of shapes

how many pieces have I got?



$$\frac{3}{10}$$

how many pieces altogether?

Ordering Fractions

In order to put fractions in ascending order:

- 1 Write all the fractions so that they have a common denominator
- 2 Find the smallest fraction by comparing the numerators and order the fractions
- 3 Rewrite the numbers as they appear in the question in size order

Write the following fractions in order of size:

Here are the fractions with their common denominator of 12

$$\frac{3}{4} \quad \frac{1}{2} \quad \frac{5}{6} \quad \frac{7}{12} \quad \frac{9}{12} \quad \frac{6}{12} \quad \frac{10}{12} \quad \frac{7}{12} \quad \frac{6}{12} \quad \frac{7}{12} \quad \frac{9}{12} \quad \frac{10}{12} \quad \frac{1}{2} \quad \frac{7}{12} \quad \frac{3}{4} \quad \frac{5}{6}$$

Simplifying fractions

To simplify fractions:

1. Look at the numerator and the denominator and find the HCF
2. Divide both the numerator and the denominator by the HCF.
3. Write the fraction in its simplest terms.

$$\frac{24}{30} = \frac{4 \times 6}{5 \times 6}$$

The HCF of 6 will cancel.

$$\frac{24}{30} = \frac{4}{5}$$

Improper fractions & Mixed Numbers

Changing Mixed Numbers to Improper Fractions

- Step 1:** Multiply the denominator (2) by the whole number (4) $2 \times 4 = 8$
- Step 2:** Take your new multiplied number (8) and add it to the numerator (1) $8 + 1 = 9$
- Step 3:** The answer you got (9) becomes the new numerator and you keep the original denominator (2)

$$4\frac{1}{2}$$

Changing Improper Fractions to Mixed Numbers

$$\frac{9}{2} = 4\frac{1}{2}$$

9 becomes the new whole number

2 stays the denominator

1 becomes the new numerator

Adding & Subtracting Fractions

Example #1

$$\frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$$

Example #2

$$\frac{3}{7} - \frac{2}{9} = \frac{27}{63} - \frac{14}{63} = \frac{13}{63}$$

Example #3

$$\frac{7}{8} - \frac{4}{24} = \frac{168}{192} - \frac{32}{192} = \frac{136}{192} = \frac{17}{24}$$

Work out:

$$1\frac{5}{6} + 1\frac{1}{3}$$

Convert to improper fractions

$$\frac{11}{6} + \frac{4}{3} = \frac{11}{6} + \frac{8}{6} = \frac{19}{6} = 3\frac{1}{6}$$

Numerator & Denominator Left the same

Numerator & Denominator $\times 2$