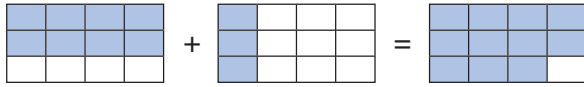


As outcomes, Year 8 pupils should, for example:

Add and subtract fractions.

Use diagrams to illustrate adding and subtracting fractions, showing equivalence.



Know that fractions can only be added and subtracted if they have the same denominator. Use, for example, a single bar to avoid the problem of adding denominators:

$$\frac{3}{5} + \frac{5}{10} = \frac{6+5}{10} = \frac{11}{10} = 1\frac{1}{10}$$

Answer questions such as:

- Add/subtract these fractions:
 $\frac{1}{4} + \frac{5}{12}$ $\frac{3}{5} + \frac{3}{4}$ $\frac{5}{6} - \frac{3}{4}$
- Ancient Egyptian fractions were written with 1 as the numerator (unit fractions). Express these fractions as sums of unit fractions:
 $\frac{5}{8}$, $\frac{11}{12}$, $\frac{7}{10}$, $\frac{7}{12}$, $\frac{9}{20}$
- This fraction sum is made from four different digits, 1, 2, 4 and 8. The fraction sum is 1.

$$\frac{1}{2} + \frac{4}{8}$$

Find other fraction sums made from four different digits and with a fraction sum of 1.

Calculate fractions of numbers, quantities or measurements.

Develop written methods to answer short questions with fraction answers, such as:

- Find: three fifths of 17;
 two thirds of 140 g;
 $\frac{9}{25}$ of 34.

Link to multiplying and dividing fractions (pages 68–9).

As outcomes, Year 9 pupils should, for example:

Add and subtract fractions.

Add and subtract more complex fractions. For example:

$$\frac{11}{18} + \frac{7}{24} = \frac{44+21}{72} = \frac{65}{72}$$

- A photograph is $6\frac{1}{4}$ inches tall and $8\frac{5}{8}$ inches wide. Calculate its perimeter.
- Investigate $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$ and similar series.
- Begin to add and subtract algebraic fractions (pages 118–19), linking to number examples.

Link to finding lowest common multiples (pages 54–5).

Calculate fractions of numbers, quantities or measurements.

Understand the multiplicative nature of fractions as operators. For example:

- Which is the greater: $\frac{3}{4}$ of 24 or $\frac{2}{3}$ of 21?
 34% of 75 or $\frac{5}{7}$ of 85?
 5 out of 16 or 8 out of 25?
- In a survey of 24 pupils, $\frac{1}{3}$ liked football best, $\frac{1}{4}$ liked basketball, $\frac{3}{8}$ liked athletics. The rest liked swimming. How many liked swimming?
- Brian used $\frac{1}{3}$ of a 750 g bag of flour to make scones. Claire used $\frac{2}{5}$ of the flour that remained to make a cake. How many grams of flour were left in the bag?
- In a bag of 20 coloured beads, $\frac{2}{5}$ are red, $\frac{1}{4}$ are blue, $\frac{1}{10}$ are yellow and 3 are green. The rest are black. What fraction are black?

Link to mutually exclusive events in probability (pages 278–81).