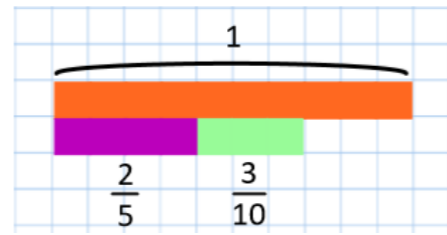


Year 5 Unit 8: Fractions, decimals and percentage (3 weeks)

Before you start...

- Are pupils confident adding and subtracting fractions with the same denominator?
- Can pupils identify, name and write equivalent fractions?
- Are pupils familiar with using Cuisenaire rods to represent fraction relationships?
- Can pupils find fractions of amounts?

Video: Importance of a common denominator



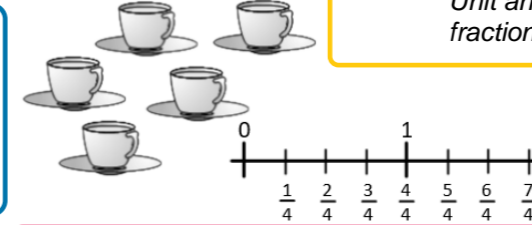
$$\frac{2}{5} + \frac{3}{10} = \frac{5}{10}$$

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A consolidation lesson could be used here to enhance confidence with addition and subtraction. Extend experiences by including a mixture of decimal fractions.

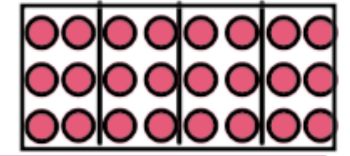
One cup hold $\frac{1}{4}$ litre



Video: Multiplying fractions: Unit and non-unit fractions

Video: Multiplying fractions: Improper fractions and mixed numbers

$$\frac{3}{4} \times 24 = 18$$



Adding and subtracting fractions

- L1 Add and subtract fractions with the same denominator
- L2 Add and subtract fractions with denominators that are multiples of the same number
- L3 Add and subtract fractions, including improper fractions

Pupils review content from Y3 and 4 and extend to working with fractions that do not have a common denominator. This is an opportunity to apply and deepen understanding of equivalent fractions. Cuisenaire rods are used to represent and make sense of the abstract calculations. Existing understanding of the relationship between addition and subtraction should be used to explore related facts.

- ? How will you use the deliberate errors shown above to challenge understanding?
- ? What do expect pupils to say, do and write to explain each error?

Multiplying fractions

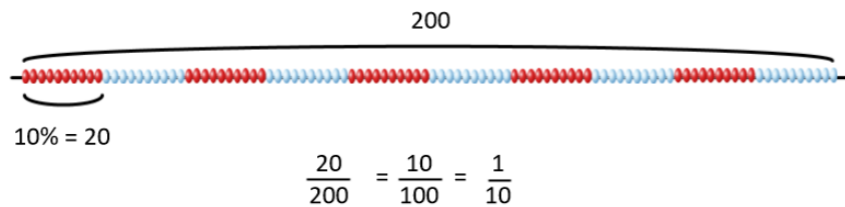
- L4 Multiply a fraction by a whole number
- L5 Multiply a mixed number by a whole number
- L6 Fractions of quantities
- L7 Solving problems involving fractions of a quantity

Multiplication of fractions is introduced with the context of repeated addition with the representation of skip counting along a number line. This mirrors pupils' early experiences when connecting repeated addition and the multiplication symbol. Finding fractions of a quantity can be interpreted as multiplication and pupils are supported in seeing that, for example, $\frac{3}{4} \times 24$ is the same as finding $\frac{3}{4}$ of 24.

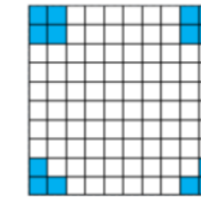
- ? Which models of multiplication are your pupils familiar with that can be useful for fractional values?
- ? How will you prepare to confidently model and explain different interpretations of fraction multiplication for example $\frac{3}{4}$ of 24 or $\frac{3}{4}$, 24 times?

There are three consolidation lessons that can be used strategically throughout the unit to consolidate key ideas.

What is 10% of 200?



14% of the grid is shaded



$$14\% = \frac{14}{100} = 0.14$$

Video: Introduction to percentage

14% of the bead string



Solving problems involving percentage and fractions

- L10 Use percentage to describe proportions of a set of any size
- L11 Identify percentage of amounts
- L12 Use percentage to compare

So far, percentage has been used to describe part of a set of 100 items and this is built upon to use percentage to describe part of a set of any size and develop understanding that per cent relates to 'number of parts per hundred'. The final lesson of the unit provides opportunities for application of knowledge and understanding of fractions, decimals and percentage to solve problems and make comparisons using proportional reasoning.

- ? There are lots of opportunities to apply understanding of fractions, decimals and percentages. How will you draw attention to the connected aspects?

Introducing percentage

- L8 Relate percentage to 'number of parts per hundred'
- L9 Relate percentages, decimals and fractions

It is important that understanding of percentage is grounded in connections to 100 parts. Initial experiences involve working with 100 items/objects and using percentage to describe and compare parts of these sets. Clear connections are made with fractions and decimals, using familiar representations to support this.

- ? What connections between the word 'cent' and 100 do you think your pupils are familiar with?
- ? How will you make use of pupils' existing understanding of fractions and decimals when working with percentages?

If the world were a village

'If the world were a village' by David J. Smith is a book that presents the whole world as a village of 100 people. This inspired lesson 10 and could easily become a longer, cross-curricular project. Further ideas from [Nrich](#).

Reasoning Support

The NCETM has [reasoning documents](#) that include further questions and problems related to fractions, decimals and percentages.