Can I calculate a fraction of a number or quantity?
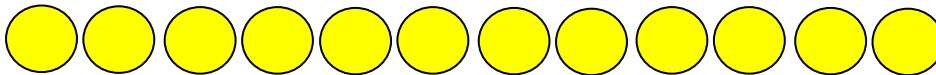
Teaching guidance

Key vocabulary

fraction, equal parts, numerator, denominator, divide, division, multiply, multiplication

Models and images

Use models and images alongside oral work. For example, display 12 small objects such as counters.

Ask questions such as:

'What is one third of these 12 counters?'

'What is two thirds of 12 counters?'

'What is three thirds of 12?'

Arrange the counters in ways that help children to see the process and gradually reduce the reference to the counters as the children become more confident. Record the steps with the children and encourage them to recognise the underlying counting in 4s.

$\frac{1}{3}$ of 12 is 4

$\frac{2}{3}$ of 12 is 8
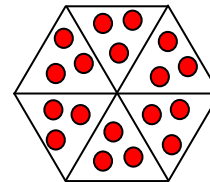
$\frac{3}{3}$ of 12 is 12
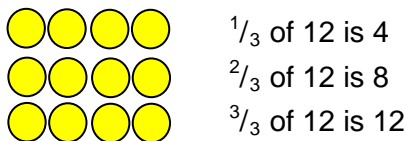
Link finding fractions of amounts to fractions of shapes, for example:
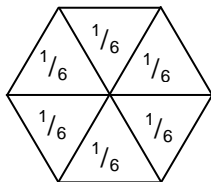
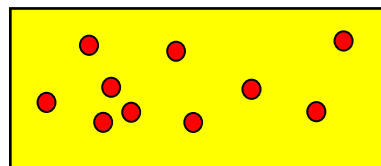Find $\frac{5}{6}$ of 18.

What is $\frac{1}{6}$ of 18?
If one-sixth is 3, what is five-sixths?

Ensure children have experience of finding fractions of a range of wholes.

Give children 'bags of images to represent the whole', of which they can then find fractions, such as $\frac{5}{6}$. This could include shapes, numbers, an amount of money, a length of string, a set of counters and so on.

240

£1.80

Teaching tips

- Children need to be able to relate fractions to division, for example, to understand that finding one tenth is equivalent to dividing by 10.

- Help children to understand that they are finding a fraction of a whole amount by using practical equipment to explore a variety of different wholes (see image box above).

- Use different models and images to help children understand that a fraction such as $\frac{4}{5}$ is $\frac{1}{5} \times 4$, and finding $\frac{1}{5}$ is the first step to finding $\frac{4}{5}$.
  This will help them begin to associate finding $\frac{4}{5}$ with 'divide the whole into five equal parts and then group together four of these equal parts'.

- Introduce a number line, scale or measured length to support the process, for example, a length representing 30 cm. Use this to ask questions such as: 'What is one-sixth of 30 cm? What is two-sixths of 30 cm? What is three-sixths of 30 cm?'
  Identify the steps of 5 cm and the counting process to establish that $\frac{1}{6}$ of 30 is 5; $\frac{2}{6}$ of 30 is 10; $\frac{3}{6}$ of 30 is 15; $\frac{4}{6}$ of 30 is 20; $\frac{5}{6}$ of 30 is 25; $\frac{6}{6}$ of 30 is 30. It is important to establish that $\frac{6}{6}$ represents the whole. When they are confident they can extend the idea beyond the whole to $\frac{7}{6}$ and so on.

- When finding a fraction of a quantity, children may also need to consider whether a unit of measurement is required in the answer. Ensure that they know the relationships between familiar units of measure.

- Children will need to be taught how to use a calculator to find fractions of a quantity. They should also be taught regularly to consider when it is appropriate to do so and when a mental method might be better, for example, when finding $\frac{1}{10}$ of 500.