

Lesson 3

Using fractions

Objectives

Order fractions ... and position them on a number line (Y6)

Vocabulary

gauge, litre
numerator, denominator
order

Resources

OHT 3.1
individual whiteboards
(optional)

Objectives

Calculate simple fractions of quantities and measurements (Y7)

Order fractions (Y6)

Use names and abbreviations of units of measurement (Y7)

Vocabulary

kilogram kg, gram g
kilometre km
hour h, minute min
order

Resources

OHT 3.2
Springboard 7 Unit 13
OHT 3.3 (Plenary)

By the end of the lesson

pupils should be able to:

- order simple fractions;
- work out fractions of quantities and measurements.

Framework supplement of examples pages 66–69

Level 4

Oral and mental starter

15 minutes

Show **OHT 3.1**. Ask pupils to read the question.

Wait a few minutes then take responses.

Q How did you work out the answer?

Some pupils may consider the gauge to be a 0 to 60 'number line' and work out 45. Others may say that the tank is three-quarters full, and then calculate $\frac{3}{4}$ of 60.

Repeat for tanks of different sizes.

Clarify the meaning of *a fraction as a number*, with a position on a number line, and *a fraction as an operator* – a fraction of a quantity.

On the board draw a 0 to 1 number line and ask a pupil to estimate where $\frac{1}{8}$ lies on it. Repeat for other unitary fractions (numerator = 1) and then fractions such as $\frac{5}{8}$, $\frac{7}{10}$. You may prefer pupils to do this individually, displaying their answers on whiteboards.

Using a 0 to 10 number line, repeat the process with examples of fractions greater than 1 (e.g. $2\frac{1}{4}$, $3\frac{2}{5}$).

Main teaching

35 minutes

Begin by chanting fractions:

$$\frac{1}{3} \text{ of } 1 = \frac{1}{3}$$

$$\frac{1}{3} \text{ of } 2 = \frac{2}{3}$$

$$\frac{1}{3} \text{ of } 3 = 1$$

$$\frac{1}{3} \text{ of } 4 = 1\frac{1}{3}$$

$$\frac{1}{3} \text{ of } 5 = 1\frac{2}{3}$$

$$\frac{1}{3} \text{ of } 6 = 2$$

$$\frac{1}{3} \text{ of } 7 = 2\frac{1}{3}$$

$$\frac{1}{3} \text{ of } 8 = 2\frac{2}{3}$$

$$\frac{1}{3} \text{ of } 9 = 3$$

$$\frac{1}{3} \text{ of } 10 = 3\frac{1}{3}$$

$$\frac{1}{3} \text{ of } 11 = 3\frac{2}{3}$$

$$\frac{1}{3} \text{ of } 12 = 4$$

Explain how to find a fraction of a quantity.

Q Find $\frac{4}{5}$ of 20 litres.

Q Find $\frac{7}{10}$ of 200 metres.

Take pupils' suggestions. Check that they have a reliable method for calculation, for example find $\frac{1}{5}$ of 20, then multiply by 4; to find $\frac{7}{10}$ of 200, find $\frac{1}{10}$ of 200, then multiply by 7, or find $\frac{7}{10}$ of 100, then multiply by 2.

Emphasise that the answer should be expressed in the correct units.

OHT 3.2 contains a set of similar questions.

Emphasise the need to calculate the numerical answer and state the appropriate units.

Discuss which are mental calculations and which require some written working.

Explain the difference between the question types: *find [fraction] of ...* and *what fraction of ... is ...?*

Springboard 7 Unit 13 pages 425–426 provide further examples involving money, time and measures.

Plenary

10 minutes

Use the test question on **OHT 3.3**.

Ask pupils to order the fractions, starting with the smallest.

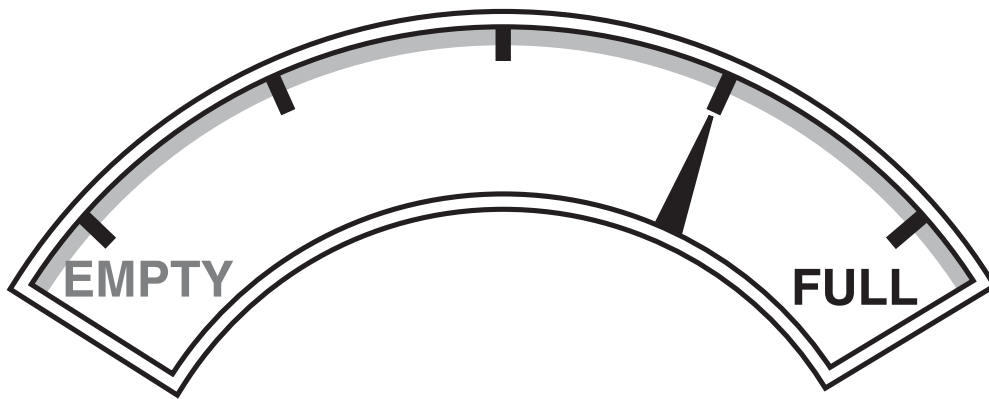
Rectify any errors, distinguishing between careless errors and misconceptions.

A common misconception is for pupils to order the denominators ignoring the numerators. Use a list of fractions with the same denominator but different numerators to check pupils' understanding.

Ask pupils to draw a picture to explain that $\frac{1}{2}$ of $\frac{1}{4}$ is $\frac{1}{8}$. Share their explanations.

Fractions

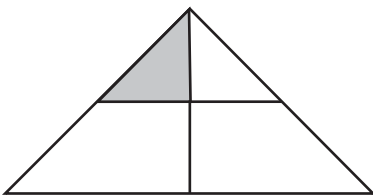
A car's petrol tank holds 60 litres when it is full.



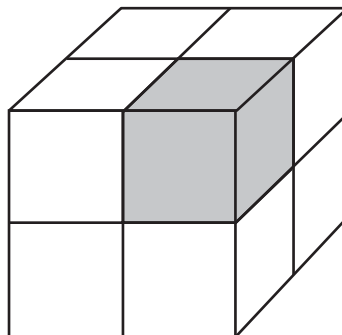
How much petrol is in the tank now?

More fractions

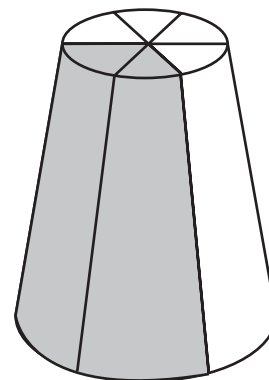
- 1 What is $\frac{3}{10}$ of 600 m?
- 2 What is $\frac{3}{10}$ of 5 m? Give your answer in centimetres.
- 3 What fraction of a leap year is 1 week?
- 4 What is $\frac{4}{5}$ of 6 litres?
- 5 What is $\frac{3}{4}$ of 12 m?
- 6 What fraction of 1 kilogram is 400 grams?
- 7 What is $\frac{3}{8}$ of £8.80?
- 8 Find $\frac{7}{9}$ of 90.
- 9 $\frac{2}{3} \times 24$
- 10 What fractions of these shapes are shaded?



a



b



c

Ordering fractions

Put these fractions in order.

Explain your reasoning.

$$\frac{5}{8}$$

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

$$\frac{3}{8}$$

$$\frac{5}{16}$$

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