YEAR 7 — APPLICATION OF NUMBER
Fractions and percentages of amounts

What do I need to be able to do?

By the end of this unit you should be able to:
- Find a fraction of a given amount
- Use a given fraction to find the whole or other fractions
- Find the percentage of an amount using mental methods
- Find the percentage of a given amount using a calculator

Keywords

Fraction: how many parts of a whole we have
Equivalent: of equal value
Whole: a number with no fractional or decimal part.
Percentage: parts per 100 (uses the ∕ symbol)
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right
Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle.

Fraction of a given amount

Find $\frac{2}{5}$ of £205

The bar represents the whole amount

£205

| £41 | £41 | £41 | £41 | £41 |

2 out of the 5 equal parts

2 x £41 = **£82**

£205 ÷ 5 = £41

Each part of the bar model represents £41

90

| 30 | 30 | 30 |
| 15 | 15 | 15 |

45

Use bar models for comparisons
$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 45 = 30

∴ $\frac{1}{3}$ of 90 = $\frac{2}{3}$ of 45

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?

70

| 35 | 35 | 35 |

70 ÷ 2 = 35
Each part of the bar model represents 35.

35 x 3 = 105
The whole number is 105

The wording of the question is important to setting up the bar model

63

| 21 | 21 | 21 | 21 |

$\frac{3}{4}$ of a number is 63

Find the whole

What is $\frac{1}{6}$ of the number?

= 14

84

| 14 | 14 | 14 | 14 | 14 | 14 |

Use the whole to find a given part

Find the percentage of an amount (Mental methods)

The **whole** represents 100%

10% = $\frac{1}{10}$ of the whole

0% 20% 40% 60% 80% 100%

10% = $\frac{1}{10}$ of the whole   50% = $\frac{5}{10}$ = $\frac{1}{2}$ of the whole

20% = $\frac{2}{10}$ = $\frac{1}{5}$ of the whole   5% = $\frac{1}{20}$ of the whole

Find 65% of 80

80

| 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |

For bigger percentages it is sometimes easier to take away from 100%

Method 1:
65% = 10% x 6 + 5%
= (8 x 6) + 4
= 52

Method 2:
65% = 50% + 10% + 5%
= 40 + 8 + 4
= 52

Find the percentage of an amount (Calculator methods)

Using a multiplier
Find 65% of 80

Fraction, decimal, percentage conversion
65% = $\frac{65}{100}$ = 0.65 ← The multiplier

0.65 x 80 = **52**

Using the percent button
Find 65% of 80

Type 65

Press [SHIFT] [( ] (%)

Press [X] 80 and then press =

This brings up the ∕ button on screen
You will see 65%

You can also use the calculator to support non calculator methods and find 1% or 10% then add percentages together

"of" can represent 'x' in calculator methods