

# YEAR 7 — APPLICATION OF NUMBER

## Fractions and percentages of amounts

@whisto\_maths

### 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

2 out of the 5 equal parts  
 $2 \times £41 = \underline{£82}$

$£205 \div 5 = £41$

Each part of the bar model represents £41

90

30 30 30

15 15 15

Use bar models for comparisons

$\frac{1}{3}$  of 90 = 30

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

$\therefore \frac{1}{3}$  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

$70 \div 2 = 35$

Each part of the bar model represents 35

35 35 35

$35 \times 3 = 105$

The whole number is 105

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

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

63

21 21 21 21

Find the whole

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

84

14 14 14 14 14 14

Use the whole to find a given part

= 14

### 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

Method 1  
 $65\% = 10\% \times 6 + 5\%$   
 $= (8 \times 6) + 4$   
 $= 52$

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

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

### 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

$0.65 \times 80 = 52$

Using the percent button

Find 65% of 80

Type 65

Press **SHIFT** **C** **(%)**

Press **×** 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