

# YEAR 8 — 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

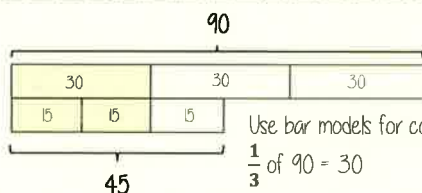


2 out of the 5 equal parts

$$2 \times £41 = \underline{£82}$$

$$£205 \div 5 = £41$$

Each part of the bar model represents £41



Use bar models for comparisons

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

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

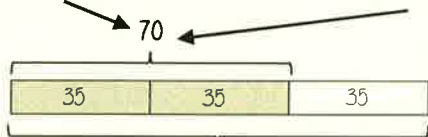
$$\therefore \frac{1}{3} \text{ of } 90 = \frac{2}{3} \text{ of } 45$$

### Use a fraction of amount

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

$$70 \div 2 = 35$$

Each part of the bar model represents 35

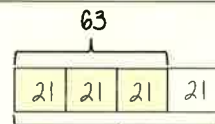


$$35 \times 3 = 105$$

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



Find the whole

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

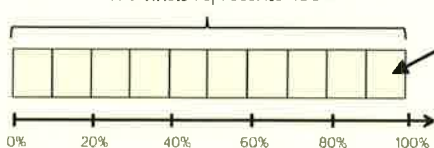


Use the whole to find a given part

$$\underline{-14}$$

### Find the percentage of an amount (Mental methods)

The whole represents 100%



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

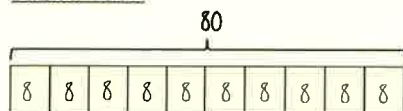
$$10\% = \frac{1}{10} \text{ of the whole}$$

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

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

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

Find 65% of 80



Method 1

$$\begin{aligned} 65\% &= 10\% \times 6 + 5\% \\ &= (8 \times 6) + 4 \\ &= 52 \end{aligned}$$

Method 2

$$\begin{aligned} 65\% &= 50\% + 10\% + 5\% \\ &= 40 + 8 + 4 \\ &= 52 \end{aligned}$$

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

$$0.65 \times 80 = \underline{52}$$

Using the percent button

Find 65% of 80

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

Type 65

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

Press **×** 80 and then press =

You can also use the calculator to support non-calculator methods and find  $\frac{1}{10}$  or  $\frac{10}{100}$  then add percentages together

"of" can represent 'x' in calculator methods