



Year 7 Summer 1 Unit 3 Percentages



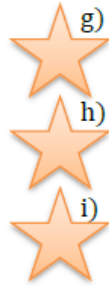
What you will learn

- Percentages represent a part out of 100.
- Percentage and decimal / fraction equivalents
- Find the whole given a percentage
- Express one number as a percentage of another
- Increase or decrease a quantity by a percentage.

Task One

Fill in the gaps in the percentage and decimal equivalences below:

- | | |
|------------------|--------------------|
| a) 50% = _____ | f) 12.5% = _____ |
| b) _____% = 0.25 | g) _____% = 0.0023 |
| c) 36% = _____ | h) 320% = _____ |
| d) _____% = 0.08 | i) _____% = 14.1 |
| e) 2% = _____ | |



Concept Corner

denominator	decimals	simplified
fraction	100	

Fill in the spaces below:

A percentage can also be represented as a _____ out of _____.

Percentages can be converted into fractions. Sometimes these can be _____:

$$36\% = \frac{36}{100} = \frac{9}{25}$$

$$75\% = \frac{\quad}{100} = \frac{\quad}{\quad}$$

Percentages can also be converted into _____:

$$17\% = \frac{17}{100} = 0.17$$

$$0.05 = \frac{\quad}{100} = \quad\%$$

Concept Corner

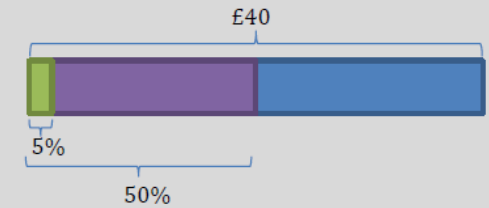
Percentages of quantities can be calculated in many different ways. Complete the gaps in these methods to find **45% of £40**:

Example 1: 45% = 50% - 5%

Find 50% of £40: $\underline{\pounds 40} \div \underline{\quad} = \underline{\pounds 20}$

Then find 5%: $\underline{50\%} \div \underline{\quad} = \underline{\pounds 20} \div \underline{\quad} = \underline{\pounds 2}$

Then find the difference between the values: _____

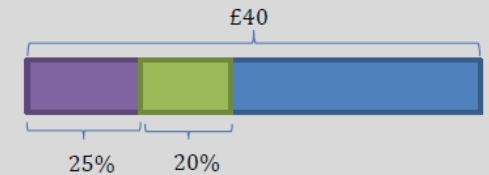


Example 2: 45% = 25% + 20%

Find 25% of 40: $\underline{\pounds 40} \div \underline{\quad} = \underline{\pounds 10}$

Find 20% of 40: $\underline{\pounds 40} \div \underline{\quad} = \underline{\pounds 8}$

Then add the two values: _____



Example 3: 45% = 45 x 1%

Find 1% of 40: $\underline{\pounds 40} \div \underline{\quad} = \underline{\pounds 0.40}$

Find 45% of 40: $\underline{45} \times \underline{0.40} = \underline{\quad}$

Describe how you might find 7.5% of £80:

1. Calculate the following percentages of amounts:

- | | |
|------------------|---------------------|
| a) 50% of £80 | e) 50% of 17 tonnes |
| b) 10% of 250 m | f) 10% of £36 |
| c) 25% of 800 g | g) 25% of 7 litres |
| d) 1% of 1200 ml | h) 1% of £45.60 |



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Concept Corner

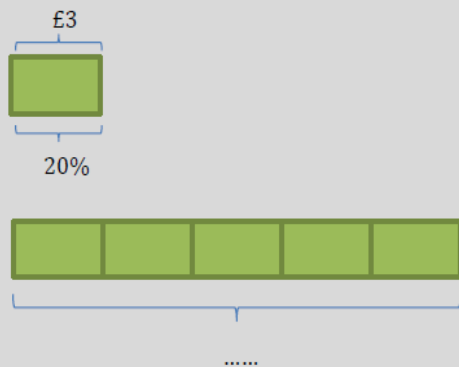
We can use bar models to help us find the whole given a percentage.

Alexi spends 20% of his pocket money on a magazine.

The magazine costs £3. How much does Alexi get as pocket money?

$20\% = \text{£}3$

$100\% = \dots\dots$



Find the value of:

- a) The number when 40% of the number is 10
- b) The number when 75% of the number is 12
- c) Half of the number when 60% of the number is 18
- d) Half of the number when 8% of the number is 12
- e) $\frac{2}{5}$ of the number when 80% is 1.8

Concept Corner

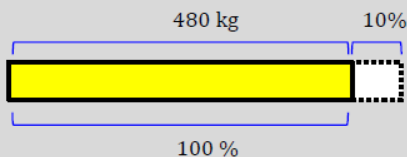
To increase 480 kg by 10%:

i) Find 10% of 480:

$10\% = 480 \div 10 = 48$

ii) Add this to the original amount:

$480 + 48 = \text{£} \dots\dots$



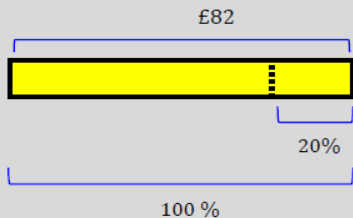
To decrease £82 by 20%:

i) Find 20% of £82:

$20\% = \dots\dots\dots$

ii) Subtract this from the original amount:

$\dots\dots\dots$



A bag of sweets normally contains 250 grams of sweets. A limited-edition bag contains 20% more. What mass of sweets does the limited-edition bag contain?

Rachel buys a mobile phone for £150. After a year she sells it for 40% less than she paid. How much does she sell the phone for?

Answers to questions—see Mr CJ or your teacher for solutions