

Percentage Problems

Finding Percentages of Amounts

Finding a percentage of an amount isn't too bad.
That's because...



$10\% = \frac{10}{100} = \frac{1}{10}$...and to find a tenth of something, you just divide by 10.
So to find 10% of something, just divide it by 10.

EXAMPLE: What is 10% of 350 kg?

ANSWER: 10% of 350 = $350 \div 10 = 35$ kg

If you can find 10%, it's easy to find 20% or 30%.
(Just find 10% then multiply it by 2 or 3...)

Finding 50% is easy too.
50% is just a half.
For example, 50% of £80
is $80 \div 2 = £40$.

You can also use 10% to find 5% or 15%.

EXAMPLE: Rose buys 700 g of cheese. She uses 5% of the cheese in her lunch. How many grams of cheese does she use?

Find 10% of 700 g. Use that to find 5% of 700 g.



$$10\% \text{ of } 700 \text{ g} = 700 \text{ g} \div 10 = 70 \text{ g}$$

5% is just
half of 10%

$$5\% \text{ of } 700 \text{ g} = 70 \text{ g} \div 2 = 35 \text{ g}$$

So Rose uses 35 g of cheese in her lunch.

Writing a Number as a Percentage of Another

To write one number as a percentage of another number, write it as a fraction and then convert to a percentage.

EXAMPLE: There are 12 girls and 8 boys in a choir. What percentage of the choir are girls?

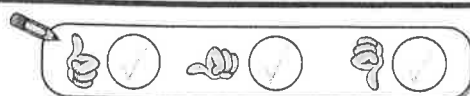
First write the total number of people in the choir as the denominator of the fraction. $12 + 8 = 20 \rightarrow 20$

Then write the number of girls as the numerator.
Convert the fraction into a percentage (see page 46).

$$\frac{12}{20} \xrightarrow{\times 5} \frac{60}{100} = 60\%$$



"I can find a percentage of an amount."



Worked Examples

- 1 Victoria eats 40% of a 150 g chocolate bar.
How many grams of chocolate has she eaten?

- 1) Divide by 10 to find 10% of 150 g.
- 2) Multiply this by 4 to find 40%.

$$150 \text{ g} \div 10 = 15 \text{ g}$$

$$15 \text{ g} \times 4 = 60 \text{ g}$$

Victoria has eaten
60 g of chocolate.

- 2 Solomon has £300. He spends 15% of his money on a new jacket.
What was the price of the jacket?

$$£300 \div 10 = £30$$

$$£30 \div 2 = £15$$

$$£30 + £15 = £45$$

The price of the jacket was £45.

- 1) Divide by 10 to find 10% of £300.

- 2) Divide this by 2 to find 5%.

- 3) Add together the amounts to find 15%.

- 3 A car garage has 50 cars. 15 of the cars are broken.
What percentage of the cars aren't broken?

- 1) Subtract 15 from 50 to find the number of cars that aren't broken.
- 2) Write the number of cars that aren't broken as the numerator and the total number of cars as the denominator.
- 3) Make an equivalent fraction with 100 as the denominator.
- 4) The numerator is the percentage of cars that aren't broken.

$$50 \text{ cars} - 15 \text{ cars} = 35 \text{ cars}$$

$$\frac{35}{50} \xrightarrow{\times 2} \frac{70}{100}$$

70%

I bet you enjoy 100% of maths...

To convert a fraction to a percentage, you need to make the bottom 100 by multiplying or dividing. Then do the same to the top, and that's the percentage.

Percentage Problems

- 1 Work out these percentages.

10% of 160 =

20% of 2300 =

30% of 450 =

☐ 2 marks

- 2 Calculate:

5% of £360

£

☐ 1 mark

15% of 8200 km

km

☐ 1 mark

- 3 There are 240 pupils in a school.
65% of the pupils have a dog.

How many pupils have a dog?

☐ 1 mark

- 4 Sanjay has 180 staples. He uses 45%
of the staples to make a wall display.

How many staples does he have left?

☐ 1 mark

Percentage Problems

- 5 Calculate:

6 as a percentage of 10

%

☐ 1 mark

9 as a percentage of 20

%

☐ 1 mark

- 6 In a group of 200 children, 162 of them play football.
What percentage of the group **don't** play football?

%

☐ 1 mark

- 7 23 cats and 27 dogs were entered into a cat and dog show.
What percentage of the entries were dogs?

%

☐ 1 mark

- 8 In a library one afternoon 10 people are aged under 18, 3 people
are aged between 18 and 60 and 12 people are aged over 60.
What percentage of the people in the library are aged over 60?

%

☐ 1 mark

"I can find a percentage of an amount."

