



Finding the Percentage of an Amount

No Calculator Allowed

Prior Knowledge:

- How to convert a decimal to a percentage.
- How to multiply and divide by 10 and 100.

It is useful to remember that **percent** comes from the words **per-** (meaning out of) and **-cent** (meaning 100). A percentage is measured out of 100.

You should know how to find the percentage of an amount, without using a calculator. You can calculate any percentage by finding either 10% or 1%.

To find:	
10% - Divide by 10 1% - Divide by 100	
Other useful percentages:	Alternative methods:
5% - Half of 10% (Divide by 10, then divide by 2).	50% - Divide by 2
2.5% - Half of 5% (Divide by 10 then divide by 4).	25% - Divide by 4
0.5% - Half of 1% (Divide by 100, then divide by 2).	75% - Divide by 4 then multiply by 3.

Example 1

Work out 10% of 128.

To find 10% of 128, simply divide 128 by 10.

$$10\%: 128 \div 10 = 12.8$$

$$10\% \text{ of } 128 = 12.8$$

Example 2

Work out 30% of 155.

If we know how to find 10% of a number, then we can easily find 30% of it too. First, find 10%:

$$10\%: 155 \div 10 = 15.5.$$

We can add three lots of 10% together to find 30%:

$$30\%: 15.5 + 15.5 + 15.5 = 46.5$$

Or, we could multiply the 10% by 3 to find 30%.

$$30\%: 15.5 \times 3 = 46.5$$

$$30\% \text{ of } 155 = 46.5$$

**Example 3**

Calculate 14% of 200.

Start by finding 10%:

$$10\%: 200 \div 10 = 20$$

Next find 1% of 20. To do this, simply divide 200 by 100:

$$1\%: 200 \div 100 = 2$$

To make 14%, we need 10% and 4%.

We have 10% already and if we know 1%, we can easily find 4%:

$$4\%: 2 + 2 + 2 + 2 = 8$$

$$\text{Or } 4\%: 2 \times 4 = 8$$

Finally, add 10% and 4% to find 14%:

$$14\%: 20 + 8 = 28$$

14% of 200 is 28.

Example 4

Calculate 7.5% of 50.

Start by finding 10%:

$$10\%: 50 \div 10 = 5$$

We can use this to find 5%. 5% is half of 10% so, to find 5%, we halve 5:

$$5\%: 5 \div 2 = 2.5$$

We could also find this value in one calculation:

$$5\%: 50 \div 10 \div 2 = 2.5$$

2.5% is half of 5% so that means we can also halve the 5% value.

$$2.5\%: 2.5 \div 2 = 1.25$$

We have a couple of choices how to make 7.5%. We could take 2.5% from 10%:

$$7.5\%: 5 - 1.25 = 3.75$$

Or add 5% to 2.5%:

$$7.5\%: 2.5 + 1.25 = 3.75$$

We could also have added together seven 1% and a 0.5%. There are lots of ways of making a percentage. If you do them correctly, they will all give the same answer.



Your Turn:

1. Calculate each of the following:

a. $120 \div 10$

b. $150 \div 10$

c. $15 + 7.5$

d. $160 \div 100$

e. $56 \div 2$

f. $25 + 25 + 12.5$

g. $65 \div 10$

h. $72 \div 10$

i. $35 + 35 + 35 + 8.75$

j. $98 \div 100$

k. $35 \div 2$

l. $23 \div 2$

m. $45.2 \div 10$

n. $16.8 \div 10$

o. $3.2 + 3.2 + 0.8$



2. Work out the following percentages:

a. 50% of 30

e. 1% of 900

i. 25% of 36

b. 50% of 400

f. 1% of 80

j. 25% of 78

c. 10% of 750

g. 5% of 60

d. 10% of 325

h. 5% of 12



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3. Work out the following percentages. Don't forget to include the units in your answer, where necessary.

a. 12% of £108

e. 63% of 90 miles

i. 88% of £12

b. 15% of 9400

f. 91% of 15mm

j. 17.5% of 5

c. 23% of 65cm

g. 72.5% of £8000

k. 0.5% of 150

d. 2% of 425g

h. 44% of 280cm

l. 10.5% of 10 000 euros



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4. Calculate the answer to each question, without using a calculator.

a. A cake has a mass of 750g. 35% of the cake is sugar. Work out how many grams of sugar are in the cake.

b. There are 300 students in year 7. 48% of these students catch the bus to school. How many students catch the bus to school?

c. There are 5600 people (made up of either home or away fans) at a football match. 92% of the people are home fans. Calculate the number of away fans at the football match.

d. Hayley gives 17.5% of her £80 to her sister. How much money does Hayley have left after giving the money to her sister?

e. Joel is paid £15 000 each year. He is given a pay rise of 3.5%. What is Joel's salary after the pay rise?



Challenge

Spencer and his family go for a meal while on holiday. They are told it is normal to tip 18%.

The meal costs \$135. Spencer tips \$21. Is this enough?

