

## Percentage of an amount – multi-step

### Notes and guidance

In this small step, children build on the learning of the previous step by finding percentages of amounts that require more than one step.

Using knowledge of how to find 1%, 10%, 20%, 25%, 50%, children find multiples of these amounts. For example, to find 75% they can find 25% and multiply it by 3; to find 60% they can find 10% and multiply it by 6. They then move on to more complex percentages.

Allow children time to explore different ways of making percentages without actually calculating the percentages of amounts, for example 45% can be made from  $25\% + 10\% + 10\%$ ,  $5\% \times 9$ ,  $1\% \times 45$ ,  $50\% - 5\%$ . Once children recognise that percentages can be made in a range of ways, they apply this to finding a percentage of an amount using the most efficient method.

### Things to look out for

- Children often do not explore subtraction as an efficient strategy, particularly subtracting from the whole, for example  $95\% = 100\% - 5\%$ .
- Children may rely on finding 1% and then multiplying it, rather than considering more efficient methods.

### Key questions

- How can you find 1%/10%/20%/25%/50% of a number?
- How can you use 10% to find 30%?
- How can the percentage 36% be made using 1%, 5%, 10%, 20%, 25%, 50% and 100%?
- If you know 1% of an amount, how can you work out 37% of that amount?
- If you know 1% of an amount, how can you work out 99% of that amount?

### Possible sentence stems

- \_\_\_\_\_% is made up of \_\_\_\_\_%, \_\_\_\_\_ and \_\_\_\_\_%.
- \_\_\_\_\_% of \_\_\_\_\_ is equal to \_\_\_\_\_
- If 100% is equal to \_\_\_\_\_, then \_\_\_\_\_% is equal to \_\_\_\_\_
- \_\_\_\_\_% is equal to \_\_\_\_\_ lots of \_\_\_\_\_%.

### National Curriculum links

- Solve problems involving the calculation of percentages and the use of percentages for comparison

# Percentage of an amount – multi-step

## Key learning

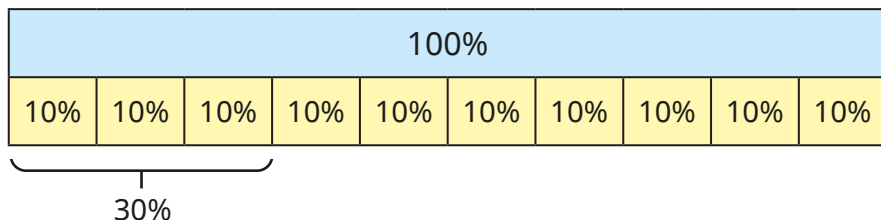
- Work out 1% of each number.

500	180	2,000	15
-----	-----	-------	----

Use your answers to work out the percentages of amounts.

3% of 500	2% of 180	7% of 2,000	5% of 15
-----------	-----------	-------------	----------

- The bar model shows that 30% is made up of three lots of 10%.



Use the bar model to help you work out the percentages.

30% of 500	70% of 5,000	90% of 25
------------	--------------	-----------

- Calculate the percentages.

75% of 500	40% of 500	80% of 500
------------	------------	------------

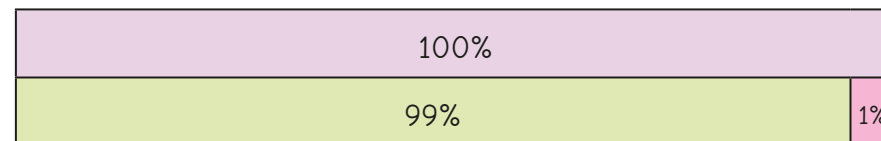
- Here is a method for finding 11% of 250

$$\begin{aligned} 10\% \text{ of } 250 &= 25 \\ 1\% \text{ of } 250 &= 2.5 \\ 11\% \text{ of } 250 &= 25 + 2.5 = 27.5 \end{aligned}$$

Use this method to work out the percentages.

11% of 400	51% of 400	21% of 400	26% of 400
36% of 6,400	41% of 900	66% of 80	87% of 2,000

- Rosie knows that 99% of an amount is 1% less than the full amount, so she finds 1% and takes that away from the total.



Use this to work out the percentages.

99% of 8,000	99% of 4.5	98% of 450	49% of 60
--------------	------------	------------	-----------

# Percentage of an amount – multi-step

## Reasoning and problem solving

Dora, Jack, Mo and Rosie were asked to find 90% of a number.



I found 10% and multiplied it by 9

Dora



I found 1% by dividing by 100, then I multiplied my answer by 90

Jack



I worked out  $50\% + 10\% + 10\% + 10\% + 10\%$ .

Mo



I found 10% and subtracted it from 100%

Rosie

Whose method is correct?

Explain your answer.

All the methods are acceptable ways of finding 90%.

Work out 24% of 3.5 metres.

Give your answer in centimetres and in metres.

Compare methods with a partner.



84 cm, 0.84 m

Work out the percentages of amounts.

45% of 60

60% of 45



27

27

What do you notice?

Does this always happen?