

Subtract lengths

Notes and guidance

In this small step, children begin by subtracting lengths that are measured in the same unit of measurement. They then look at subtracting millimetres from a whole number of centimetres as well as centimetres from a whole number of metres using simple conversions, for example $1\text{ m} - 35\text{ cm}$ and $4\text{ cm} - 3\text{ mm}$. They then explore more complex examples where the lengths have different units of measurement and therefore equivalent lengths need to be found, for example $4\text{ m } 36\text{ cm} - 112\text{ cm}$. This can be a useful opportunity to also revisit subtraction where there is a need for exchange, for example $2\text{ m } 43\text{ cm} - 118\text{ cm}$.

Children should be exposed to the different structures of subtraction through word problems: partitioning, reduction and difference. Bar models can be a useful pictorial representation to highlight these different structures.

Things to look out for

- If children are not secure with converting between units of measurement, they may make errors when subtracting lengths.
- Children may subtract lengths without converting the units of measurement, for example $71\text{ cm} - 5\text{ mm} = 66\text{ cm}$.

Key questions

- How many centimetres are there in _____ m and _____ cm?
- Why is it important that the lengths have the same unit of measurement before you subtract them?
- Which unit of measurement will you use to find equivalent lengths before you subtract them? Why?
- What is the difference in length between the two objects?
- How can you check that you have the correct answer?

Possible sentence stems

- _____ mm/cm = 1 cm/1 m
- _____ cm – _____ mm = _____ mm – _____ mm = _____ mm
- _____ m – _____ cm = _____ cm – _____ cm = _____ cm
- I am going to convert all of the units of measurement to _____ because ...

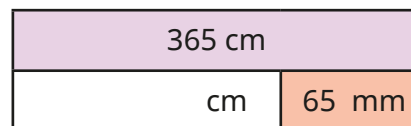
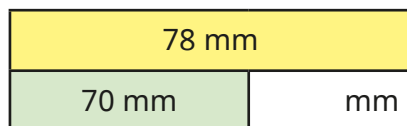
National Curriculum links

- Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Subtract lengths

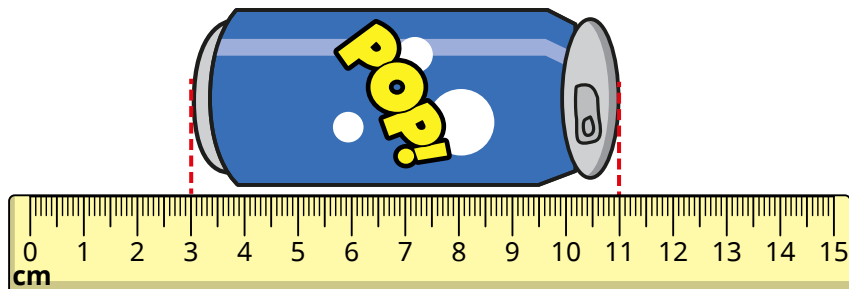
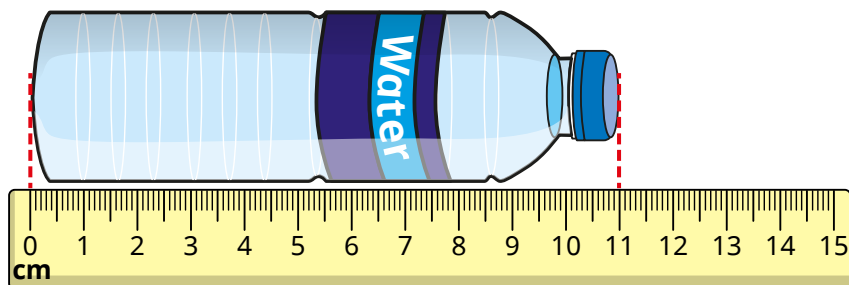
Key learning

- Complete the bar models.



- What is the difference in length between the bottle of water and the can of fizzy drink?

Write your answer in centimetres.



- Complete the subtractions.

▶ 1 m – 42 cm = _____ cm

▶ 5 cm – 3 mm = _____ mm

▶ 3 m – 42 cm = _____ m _____ cm

▶ 88 mm = 10 cm – _____ mm

- Tommy and Eva are working out 3 m 85 cm – 120 cm.

Here are their workings.

Tommy's method

$$\begin{aligned} 3 \text{ m } 85 \text{ cm} - 120 \text{ cm} \\ 120 \text{ cm} &= 1 \text{ m } 20 \text{ cm} \\ 3 \text{ m} - 1 \text{ m} &= 2 \text{ m} \\ 85 \text{ cm} - 20 \text{ cm} &= 65 \text{ cm} \\ 3 \text{ m } 85 \text{ cm} - 120 \text{ cm} &= 2 \text{ m } 65 \text{ cm} \end{aligned}$$

Eva's method

$$\begin{aligned} 3 \text{ m } 85 \text{ cm} - 120 \text{ cm} \\ 3 \text{ m} &= 300 \text{ cm} \\ 3 \text{ m } 85 \text{ cm} &= 385 \text{ cm} \\ 385 \text{ cm} - 120 \text{ cm} &= 265 \text{ cm} \\ 3 \text{ m } 85 \text{ cm} - 120 \text{ cm} &= 265 \text{ cm} \end{aligned}$$

Whose method do you prefer?

- Kim has 5 m of rope.

She uses 1 m and 54 cm to make a skipping rope.

How much rope does she have left?

Subtract lengths

Reasoning and problem solving

A bike race is 950 m long.

Dora cycles 243 m and stops for a break.

She cycles another 459 m and stops for another break.

How much further does she need to cycle to complete the race?



248 m

A train engine is 20 metres long.

A car is $15\frac{1}{2}$ m shorter than the train.

A bike is 250 cm shorter than the car.

Work out the length of the car.

Work out the length of the bike.

How much longer is the train than the bike?



$4\frac{1}{2}$ m

200 cm or 2 m

18 m

Tom has a 3 m roll of ribbon.

He is cutting it up into 10 cm lengths.

How many lengths can he cut?



Tom gives 240 cm of his ribbon to Nijah.

How much ribbon does he have left?

How many 10 cm lengths does Tom have left?

30

60 cm, 6 lengths



Tiny has worked out
 $3\text{ m } 20\text{ cm} - 2\text{ m } 56\text{ cm}$.

$$3\text{ m } 20\text{ cm} - 2\text{ m } 56\text{ cm} \\ = 1\text{ m } 36\text{ cm}$$

What mistake has Tiny made?

What is the correct answer?



64 cm