

Metric units 4

Discover

I know that each 1p coin is about 1 cm long.

Charity chain of coins
Let's raise 1 km of 1p coins for charity!

I wonder how much money we will raise.

I think we would raise more money if we placed them on their sides. Each coin is about 1 mm thick.



Jamilla

Olivia

Zac

- 1 a) How many 1p coins do the children need to lay flat to make a line 1 km long?

How much money will they have raised for charity?

- b) How much more money would the children raise if they use Zac's idea and placed the coins on their sides?

Share

- a) The base metric unit of length is the metre.

$$1 \text{ millimetre} = \frac{1}{1,000} \text{ m} \quad 1 \text{ centimetre} = \frac{1}{100} \text{ m}$$

$$1 \text{ kilometre} = 1,000 \text{ m}$$

1 m
100 cm
1,000 mm

1 1p coin is 1 cm long.

100 1p coins will be 1 metre long.

There are 1,000 m in 1 km.

$$100 \times 1,000 = 100,000$$

The children will need 100,000 1p coins to make a line 1 km long.

$$\text{We know that } 100\text{p} = \text{£}1.$$

$$100,000 \div 100 = 1,000$$

They will have raised £1,000 for charity.

- b) 1 cm = 10 mm

So there are 10 coins for every 1 cm.

$$1 \text{ m} = 100 \text{ cm}$$

So in 1 m there are $10 \times 100 = 1,000$ coins.

$$1,000\text{p} = \text{£}10$$

$$1 \text{ km} = 1,000 \text{ m}$$

So, 1 km must be $\text{£}10 \times 1,000 = \text{£}10,000$

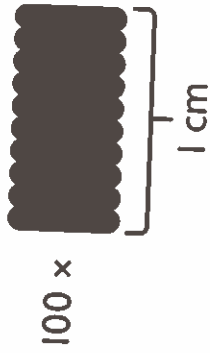
$$\text{£}10,000 - \text{£}1,000 = \text{£}9,000$$

The children would raise £9,000 more if they placed the coins on their sides.

I did it a different way. I know there is 100p in £1 and that 100p is the same as 100 cm which is 1 m. So I multiplied £1 by 1,000 m to get £1,000.



1 m
100 cm



$$= 1,000\text{p} = \text{£}10$$

Think together

- 1 Olivia makes a chain of coins 600 mm long. Each coin is 1 cm wide.
Use both methods to work out how many metres her chain of coins is.

Method 1

1 cm = 10 mm

To convert mm → cm, ÷ 10

÷ =

600 mm = cm

H	T	O	
6	0	0	mm
			cm

Olivia's chain of coins is m long.

Method 2

1 m = 1,000 mm

To convert mm → m, ÷ 1,000

÷ =

600 mm = m

H	T	O	•	Tth	Hth	THth
6	0	0	•			
			•			

Olivia's chain of coins is m long.

- 2 a) Max walks $\frac{1}{2}$ km to Bella's house.

Put these steps in the correct order to show how to work out how far he walks in centimetres.

A Change m into cm by multiplying by 100.

B Convert $\frac{1}{2}$ to a decimal.

C Change km into m by multiplying by 1,000.

b) Now work out the answer.

3



Reena

When we convert between millilitres and litres or between grams and kilograms I only need to know how to multiply and divide by 1,000.

But when we convert between metric units of length, there seems to be more to remember.

Luis

mm cm m km

Although there are more conversions, the numbers involved are very similar.

Explain what you need to do to convert between each pair of units and why.



CHALLENGE