Monday 1/6/2020 Year 5 Modelled Examples **Unit 16 Lesson 1**

I have skipped a few units as I'd prefer you to do these back at school. If the term goes on, we may have to tackle these at home but we'll see what happens. In the meantime, can you all make sure you have a protractor ready at home as you will need one for the skipped units. (Well done to everyone who kept the one I gave you for Christmas. Who knew back then, eh?)

Unit 16
Measure – converting units

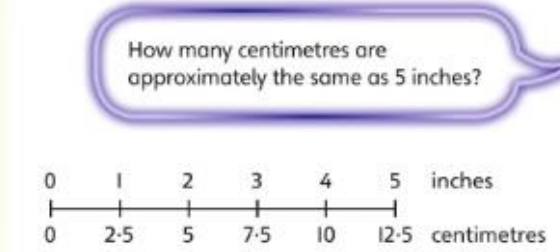
In this unit we will ...

- Convert between metric units of length, mass and capacity
- Recognise imperial units and understand how to convert them into metric units
- Convert between units of time
- Read timetables and understand the information they show
- Solve problems based on measures

Here are some maths words we will be using. Are any of these words new?

convert **metric units** **imperial units**
kilo **kilogram** **gram** **millimetre**
centimetre **metre** **kilometre**
litre **millilitre** **pound (lb)** **ounce (oz)**
inch (in) **foot (ft)** **yard (yd)**
pint **gallon** **stone (st)**
approximately **timetable**

How many centimetres are approximately the same as 5 inches?



How many millilitres of orange juice are in this jug?

Check out this clip from BBC Bitesize before you start
https://www.bbc.co.uk/bitesize/topics/z9sfr82/articles/zqf4cwx

Metric units 1

Discover

1 a) How many metres is it from London to Berlin?

b) Can Jen take her bag on to the plane?

Share

a) Kilometres (km) and kilograms (kg) both begin with 'kilo'.

1 km
1,000 m

The prefix 'kilo' comes from Greek. It means 'thousand'.

1 kilometre = 1,000 metres

930 km

1 km	1 km	1 km		1 km
1,000 m	1,000 m	1,000 m		1,000 m

930 × 1,000

HTh	TTh	Th	H	T	O	
			9	3	0	km
9	3	0	0	0	0	m

To convert between kilometres and metres, I need to multiply by 1,000. I know that I can do this by moving each digit three places to the left.

9 hundreds become 9 hundred thousands.

3 tens become 3 ten thousands.

930 × 1,000 = 930,000

It is 930,000 metres from London to Berlin.

Discuss with your carers then complete the activities in your maths book 5C p111

b) 1 kilogram = 1,000 grams

Th	H	T	O	•	Tth	Hth	
6	0	0	0	•			g
			6	•			kg

I am converting from a smaller unit (grams) into a larger unit (kilograms), so I am going to divide this time.

6,000 ÷ 1,000 = 6

6 kg < 7 kg, so Jen can take her bag onto the plane.

Think together

1 These scales measure mass in grams.

What will the scales show when the rucksack is placed on them?

1 kg = ☐ g

To convert kg to g, multiply by ☐.

When we multiply by 1,000, the digits shift to the left by ☐ places.

Th	H	T	O	•	Tth	
			5	•	9	kg
5				•		g

5·9 × ☐ = ☐

The scales will show ☐ g when the rucksack is placed on them.

2 How many kilometres does this plane travel?

City A — 260,500 m — City B

☐ m = 1 km

To convert m to km, ◯ by ☐.

The digits will shift to the _____ by ☐ places.

HTh	TTh	Th	H	T	O	•	Tth	Hth	Thth
2	6	0	5	0	0	•			

260,500 ◯ ☐ = ☐

The plane travels ☐ km.

3 Lee is working out how many grams are in 8·3 kilograms.

CHALLENGE

I know how to multiply by 1,000 quickly! I am going to write three zeros on the end.

Lee

It is not as easy as that! I think I need to shift the digits.

What mistake has Lee made?

How can you work out the correct answer?

Tuesday 2/6/2020 Year 5 Modelled Examples Unit 16 Lesson 2

Check out this clip from BBC Bitesize before you start

https://www.bbc.co.uk/bitesize/topics/z4nsgk7/articles/zqf4cwx

Metric units 2

Discover

1 a) Has Ebo got enough fencing to go across the flower bed?

b) How many litres of water has Alex put in the watering can?

Share

a) Millimetres and millilitres both begin with 'milli'.

1 m = 100 cm and 1 cm = 10 mm

100 × 10 = 1,000 so there are 1,000 millimetres in 1 metre.

1 mm = $\frac{1}{1,000}$ of a metre

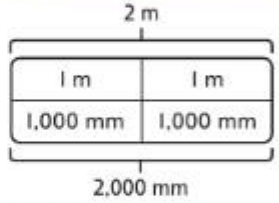
Ebo has 1,500 mm of fencing.
The flower bed is 2 m long.

2 × 1,000 = 2,000

2 ones are now worth 2 thousands.

1,500 < 2,000, so Ebo does not have enough fencing to go across the flower bed.

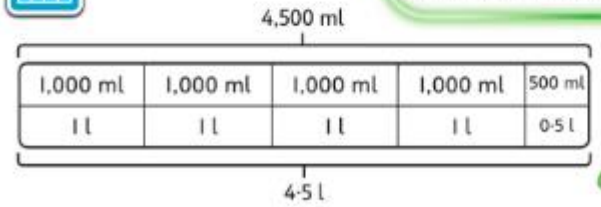
Th	H	T	O	•	
			2	•	m
2	0	0	0	•	mm



The prefix 'milli' comes from Latin. We use it to mean 'one thousandth' of something.

b) Alex has 4,500 ml of water.

1,000 millilitres = 1 litre, so I am going to divide by 1,000 to convert from millilitres to litres.



4,500 ÷ 1,000 = 4·5

Alex has put 4·5 litres of water in the watering can.

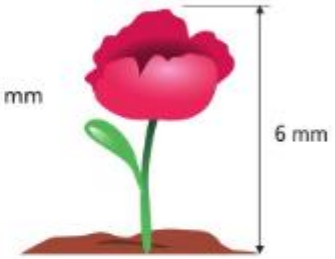
Discuss with your carers then complete the activities in your maths book 5C p114

Think together

1 **a)** This flower is just starting to grow.

How tall is it in centimetres?

There are ☐ mm in 1 cm, so to convert mm into cm, divide by ☐.



O	•	Tth
6	•	
0	•	6

mm
cm

6 mm

1 mm	1 mm	1 mm	1 mm	1 mm	1 mm
0·1 cm	0·1 cm	0·1 cm	0·1 cm	0·1 cm	0·1 cm

☐

6 ÷ ☐ = ☐

The flower is ☐ cm tall.

b) How many millilitres of plant food are in the bottle?

There are ☐ ml in 1 l.

H	T	O	•	Tth
		0	•	7
			•	

l
ml

0·7 ○ ☐ = ☐

The bottle contains ☐ ml.

2 Choose which operation goes into each sentence.

× ÷

To convert from a larger to a smaller unit (for example, from litres to ml), _____ .

To convert from a smaller to a larger unit (for example, from mm to cm), _____ .

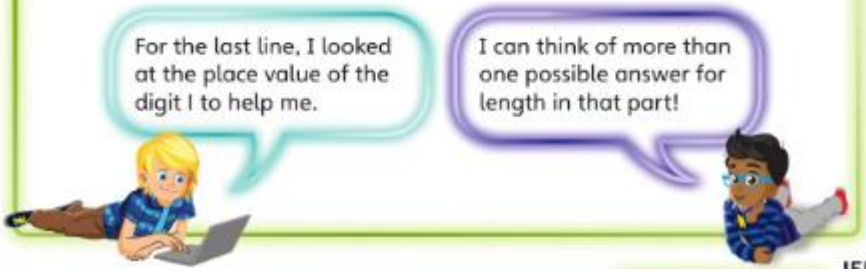
CHALLENGE

3 **a)** Complete the table.

Length	Capacity
1 mm = 1/☐ of a metre	1 ml = 1/☐ of a litre
1 cm = 1/☐ of a metre	
1 m = 1,000 _____	1 l = 1,000 _____
1 m = 100 _____	
1 _____ is 0·001 _____	1 _____ is 0·001 _____

Explain your answers.

b) What is the same about the two columns? What is different?



Wednesday 3/6/2020 Year 5 Modelled Examples Unit 13 Lesson 3

Warm up – Go to Education City and check out *Massive Measure* in MyCity Y5 Maths

Metric units 3

Discover

1 a) Is Isla tall enough to go on the roller coaster?

b) How many millilitres of fizzy pop is Aki buying altogether?

Share

a) Isla needs to convert 140 cm into metres.

140 cm ⟵ ? m

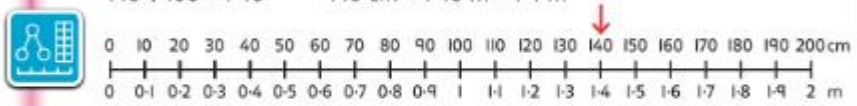
Smaller unit ⟵ larger unit, so we need to divide.

Divide by 100 as there are 100 cm in 1 m.

H	T	O	•	Tth	Hth
1	4	0	•		
		1	•	4	0

The number line helps you convert between cm (along the top) and m (along the bottom).

140 ÷ 100 = 1·40 140 cm = 1·40 m = 1·4 m



1·40 m < 1·45 m so Isla is not tall enough to go on the roller coaster.

b) Aki buys one 0·25 l bottle and one 500 ml bottle.

The question asks for the answer to be given in millilitres. One of the amounts is in litres, so I am going to convert it first.

Larger unit ⟵ smaller unit, so we need to multiply.

Multiply by 1,000 as there are 1,000 ml in 1 l.

0·25 × 1,000 = 250, so 0·25 l = 250 ml

250 ml + 500 ml = 750 ml

Aki is buying 750 ml of fizzy pop altogether.

Discuss with your carers then complete the activities in your maths book 5C p117

Think together

1 What should Ambika's total guess be?

The larger cake looks like it might weigh about 0·9 kg.

The smaller cake looks like it might weigh about 0·3 kg.

Ambika

0·9 × 1,000 = ☐

0·3 × 1,000 = ☐

H	T	O	•	Tth
		0	•	9
			•	

H	T	O	•	Tth
		0	•	3
			•	

0·9 kg = ☐ g 0·3 kg = ☐ g

0·9 kg + 0·3 kg = ☐ g + ☐ g = ☐ g

Ambika should guess a total of ☐ g.

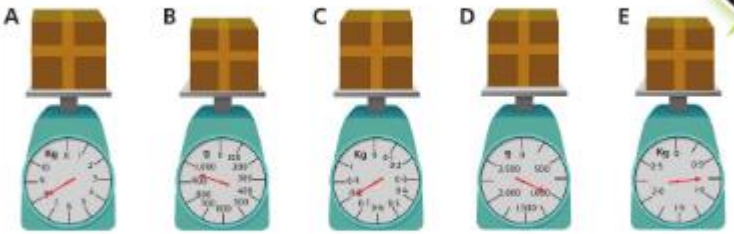
2 How long is the roller coaster now?

Give your answer in metres.

The roller coaster is now ☐ metres long.

3 Here are the masses of five parcels.

CHALLENGE



a) Put the masses in order from heaviest to lightest.

I think you can just look at the position of the dial. The further around it is, the heavier it will be.

I am going to convert the masses of the parcels into the same unit.

b) If you converted the masses to a different unit, would you get the same order?

Explain your answer.

Thursday 4/6/2020 Year 5 Modelled Examples Unit 16 Lesson 4

Warm up – Go to Education City and check out *Measure Island* in MyCity Y5 Maths

Metric units 4

Discover

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 m
100 cm
1,000 mm

1 **milli**metre = $\frac{1}{1,000}$ m 1 **centi**metre = $\frac{1}{100}$ m

1 **kilo**metre = 1,000 m

1 1p coin is 1 cm long.

100 1p coins will be 1 metre long.

There are 1,000 m in 1 km.

100 × 1,000 = 100,000

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

We know that 100p = £1.

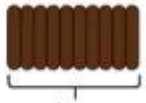
100,000 ÷ 100 = 1,000

They will have raised £1,000 for charity.

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.

b) 1 cm = 10 mm

So there are 10 coins for every 1 cm.



1 m = 100 cm

So in 1 m there are 10 × 100 = 1,000 coins.

1,000p = £10 1 km = 1,000 m

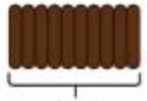
So, 1 km must be £10 × 1,000 = £10,000

£10,000 – £1,000 = £9,000

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

1 m
100 cm

100 ×



= 1,000p = £10

Discuss with your carers then complete the activities in your maths book 5C p120

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

To convert cm ⟵ m, ÷ 100

☐ ÷ ☐ = ☐

☐ cm = ☐ m

H	T	O	
6	0	0	mm
			cm

T	O	•	Tth	Hth	
		•			cm
		•			m

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	•				mm
			•				m

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 metres by multiplying by 1,000.

b) Now work out the answer.

3

CHALLENGE

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.

Reena

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.

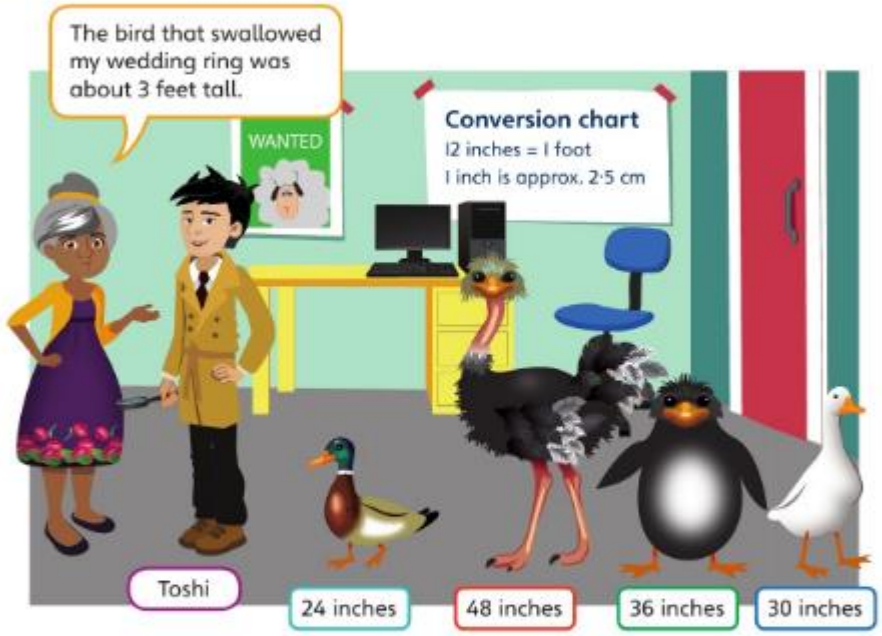
Friday 5/6/2020 Year 5 Modelled Examples Unit 16 Lesson 5

Check out this clip from BBC Bitesize before you start today

https://www.bbc.co.uk/bitesize/topics/z4nsgk7/articles/zwbndxs

Imperial units of length

Discover



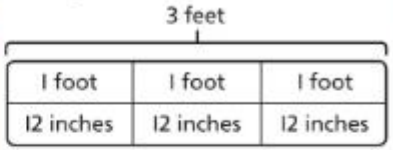
1 a) Which bird swallowed the ring?

b) How tall is the ostrich in metric units?

Share

a) Inches and feet are imperial units of length. 12 inches (in) = 1 foot (ft)

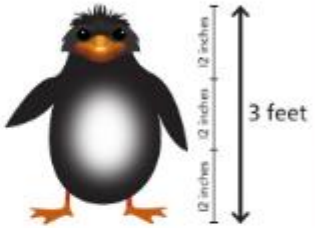
Imperial units were used in the UK until the metric system was introduced in 1965. The metric system made things easier as it deals with 10s, 100s and 1,000s. Imperial units are still sometimes used.



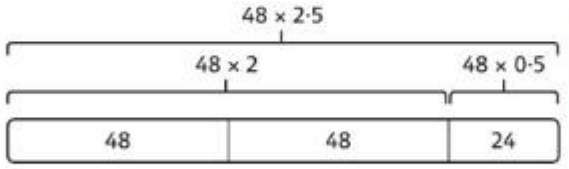
12 × 3 = 36

3 feet = 36 inches

The penguin swallowed the ring.



b) 1 inch is approximately 2·5 cm. The ostrich is 48 inches tall.



I know that 48 × 0·5 means 48 lots of $\frac{1}{2}$. This is the same as finding half of 48!

48 × 2 = 96

48 × 0·5 = 24

96 + 24 = 120 cm

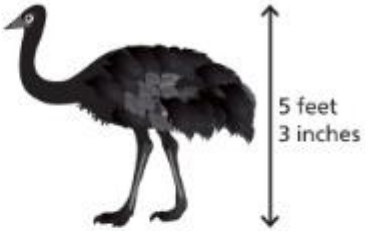
120 ÷ 100 = 1·2 m

The ostrich is 120 cm tall, which is the same as 1·2 m.

Discuss with your carers then complete the activities in your maths book 5C p123

Think together

1 This emu is 5 feet and 3 inches tall.
How tall is it in inches?



1 foot (ft) = 12 inches (in)

5 feet 3 inches					
1 foot	1 foot	1 foot	1 foot	1 foot	3 in
12 inches	12 inches	12 inches	12 inches	12 inches	3 in

5 × 12 | 3

5 × 12 = ☐ ☐ + 3 = ☐

So, 5 feet 3 inches = ☐ inches. The emu is ☐ inches tall.

2 The duck's pond is 15 yards wide.
How wide is it in inches?

1 yard (yd) = 3 feet (ft)

15 × ☐ = ☐

So, 15 yards = ☐ feet

☐ × ☐ = ☐

So, 15 yards = ☐ inches

The pond is ☐ inches wide.

15 yards

1 yd	1 yd		
3 ft	3 ft		
12 in 12 in 12 in	12 in 12 in 12 in		

I am going to multiply twice to find the answer: once to convert into feet and once to convert into inches.

3 Convert each of these imperial units into metric units.

CHALLENGE

Choose a range of metric units to convert to. For example, you could convert 1 inch into millimetres, 1 foot into centimetres and 1 yard into metres.

1 inch	1 foot	1 yard

Explain how you can work out the answer.

Use these conversion facts to help.

1 inch is about the same as 2·5 cm.	10 mm = 1 cm
12 inches = 1 foot	100 cm = 1 m
3 feet = 1 yard	1,000 m = 1 km

I wonder if I will need to convert all the measurements into inches first.

I am going to use the fact that 1 inch is about the same as $2\frac{1}{2}$ cm to help me.