Converting Units

Day 1

Starter

Which one doesn't belong?

Think about what the following are measured in…

the weight of a banana	a jug's capacity	a cucumber's weight	the mass of a pan

Starter – ANSWERS

A jug's capacity doesn't belong as it is measured using millilitres or litres. Whereas the other objects will be measured using grams or kilograms.

Date: Day 1

LO: To identify, read and write metric measurements for length, mass and capacity.

Key Vocabulary

Date: Day 1

LO: To identify, read and write metric measurements for length, mass and capacity.

Success Criteria

I can identify, read and write metric measurements for length, mass and capacity.

I can explain my reasoning.

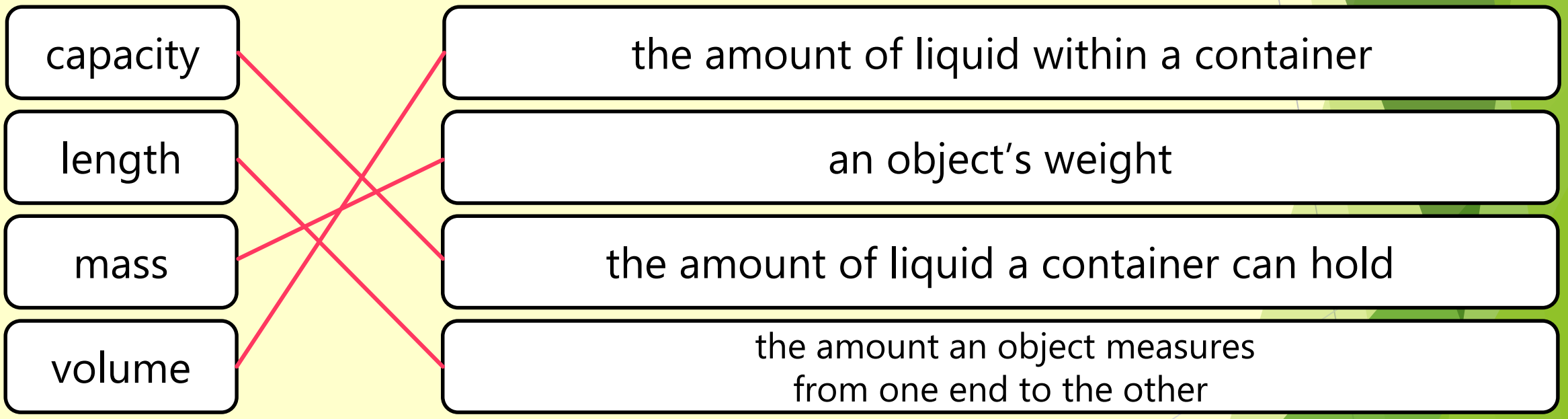
Descriptive Doing

Match each word to its definition.

capacity	the amount of liquid within a container
length	an object's weight
mass	the amount of liquid a container can hold
volume	the amount an object measures from one end to the other

Descriptive Doing - ANSWERS

Match each word to its definition.



Descriptive Doing

1. Which units of measurement would you use to measure length?
2. Which units of measurement would you use to measure mass or weight?
3. Which units of measurement would you use to measure capacity or volume?

Make a list in your book.

Descriptive Doing - ANSWERS

1. mm cm m km (inches, feet, yards, miles)

2. g / kg (maybe pounds or ounces too)

3. ml / l (maybe cups / fluid ounces too)

Descriptive Doing

Use the options: mm, cm, m, km, yards, miles, tonnes, g, kg, ml, l

Which unit of measurement would you use to measure the following?

a long road	a tiger's weight	a tank's mass	a soccer field
a sprint race	the length of a snake	the length of an eye lash	the capacity of a teacup

Descriptive Doing - ANSWERS

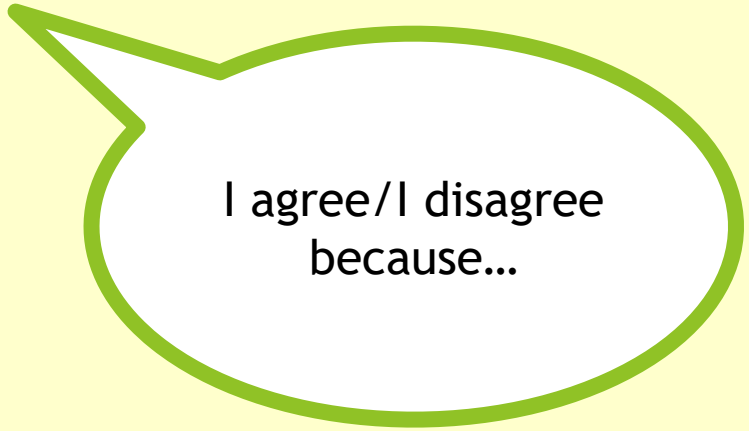
a long road km or miles	a tiger's weight kg	a tank's mass tonnes	a soccer field m or yards
a sprint race m	the length of a snake m or cm	the length of an eye lash mm	the capacity of a teacup ml

Reflective Doing

James says, “You can’t measure the width of the classroom using mm.”

Do you agree?

Explain your answer.



Reflective Doing - ANSWERS

No, I do not agree.

Although it is easier to measure the classroom using m or cm, it is still possible to measure the classroom in mm.

Reflective Doing

Jamal says, “I wonder how heavy the local supermarket building is…”

Create a strategy to get a reasonable estimate for James.

Reflective Doing - ANSWERS

A sensible strategy must be selected.

E.g. Estimating how much a brick weighs, how many bricks there are per wall…

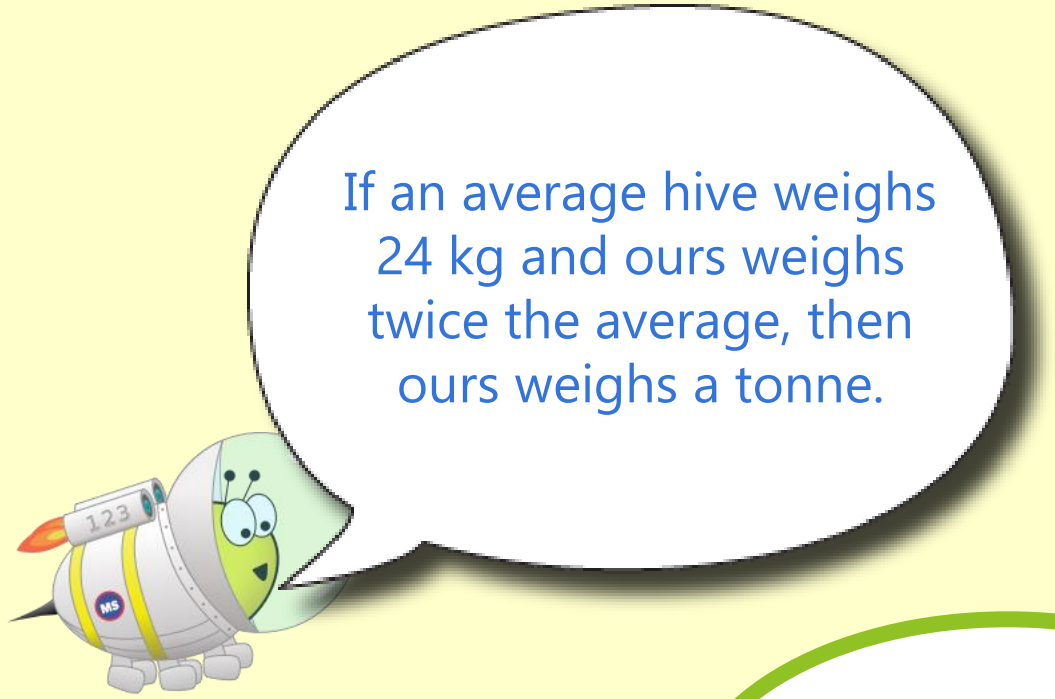
Choose your challenge

Challenges can be found on the document named ‘Maths Challenges Day 1’.

Choose an appropriate challenge OR work through green, orange and red.

Answers can be found at the bottom of the document.

Reflection Time



Do you agree?

Explain your answer.

I agree/I disagree because...

Reflection Time - ANSWERS

No, I do not agree.

There are 1,000 kg in a tonne.

If their hive is double 24 kg, the it is 48 kg.
This is much less than a tonne!

Converting Units

Day 2

Starter

Which one doesn't belong?

1 kg = _____ g	_____ mm = 1 m	_____ kg = 1 t	1 m = ___ cm

Explain your answer.

Starter - ANSWERS

1 kg = 1,000 g	1,000 mm = 1 m	1,000 kg = 1 t	1 m = 100 cm

The final statement doesn't belong as 1m is equal to 100cm. Whereas, the other statements all show units of measurement being equal to 1,000 of a smaller unit.

Date: Day 2

LO: To convert metric units of measurement.

Key Vocabulary

Date: Day 2

LO: To convert metric units of measurement.

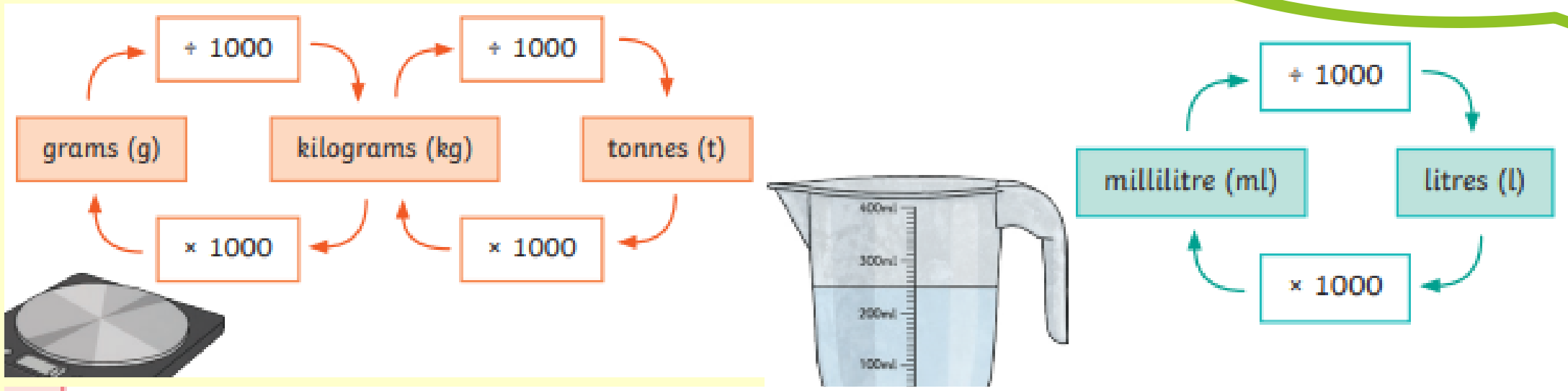
Success Criteria

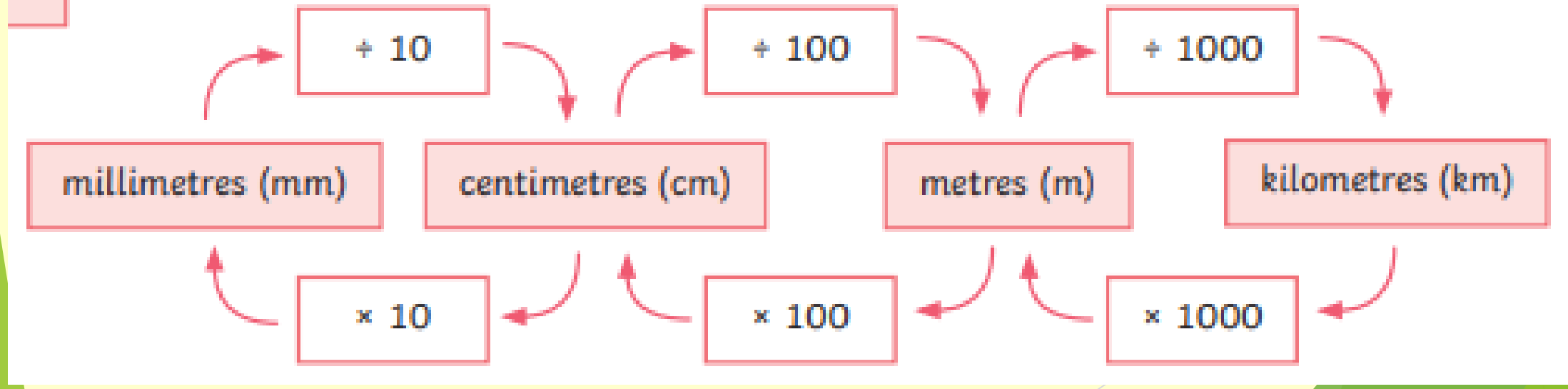
I can use my knowledge of multiplying and dividing by 10, 100 and 1,000 to convert between metric units of measurement for capacity, length and mass.

I can explain my reasoning.

Descriptive Teaching

You may like to create a poster to remember these conversions!





Descriptive Doing

Copy the tables into your book.

Use your knowledge of converting units and the slide before to complete the tables.

kg	g
4	
	2,500
	2,040
2.504	
2.005	
	245

kg	t
	3
	3.5
3,405	
3,040	
	3.004
354	

Descriptive Doing - ANSWERS

kg	g
4	4,000
2.5	2,500
2.04	2,040
2.504	2,504
2.005	2,005
0.245	245

kg	t
3,000	3
3,500	3.5
3,405	3.405
3,040	3.04
3,004	3.004
354	0.354

Descriptive Doing

Use your knowledge of converting units and the slide before to complete the tables.

_____ ml = 4.2 l
0.42 l = _____ ml
_____ ml = 0.042 l
0.004 l = _____ ml

Descriptive Doing - ANSWERS

Use your knowledge of converting units and the slide before to complete the tables.

4,200 ml = 4.2 l
0.42 l = 420 ml
42 ml = 0.042 l
0.004 l = 4 ml

Descriptive Doing

Copy the table into your book.

Use your knowledge of converting units and the slide before to complete the tables.

mm	cm	m	km
			0.022
		48.6	
	1,660		
1,250,000			

Descriptive Doing - ANSWERS

Use your knowledge of converting units and the slide before to complete the tables.

mm	cm	m	km
22,000	2,200	22	0.022
48,600	4,860	48.6	0.0486
16,600	1,660	16.6	0.0166
1,250,000	125,000	1,250	1.25

Reflective Doing

A hectoliter is 100 times greater than 1l.

1) How many ml are there in a hectolitre?
2) If there are 2.4 hectolitres of water in a pond, what is the measurement in ml?

Explain your answers.

Reflective Doing - ANSWERS

1) There are 100,000 ml in a hectolitre.
2) There are 240,000 ml in a pond, as each hectolitre is worth 100,000, so, 2 hectolitres are 200,000ml and 0.4 hectolitres are 40,000ml.

Reflective Doing

A megalitre is 1,000 times greater than 1l.

1) How many ml are there in a megalitre?
2) If there are 3.6 megalitres of water in a lake, what is the measurement in ml?

Explain your answer.

Reflective Doing - ANSWERS

1) There are 1,000,000ml in a megalitre.
2) There are 3,600,000ml in the lake, as each megalitre is worth 1,000,000, so, 3 megalitres are 3,000,000ml and 0.6 megalitres are 600,000ml.

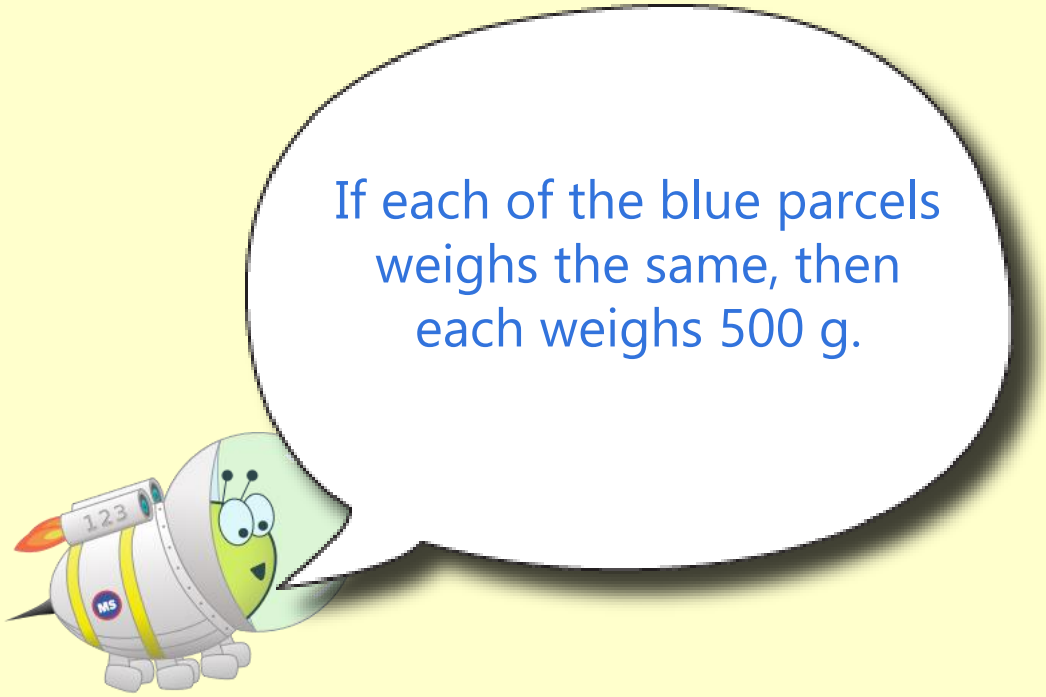
Choose your challenge

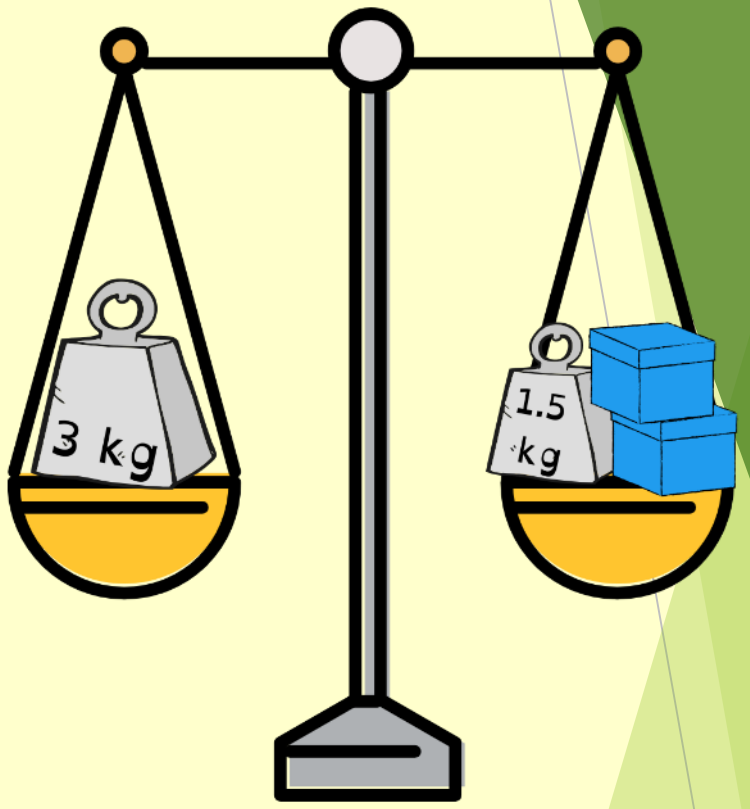
Challenges can be found on the document named ‘Maths Challenges Day 2’.

Choose an appropriate challenge OR work through green, orange and red.

Answers can be found at the bottom of the document.

Reflection Time





Do you agree?

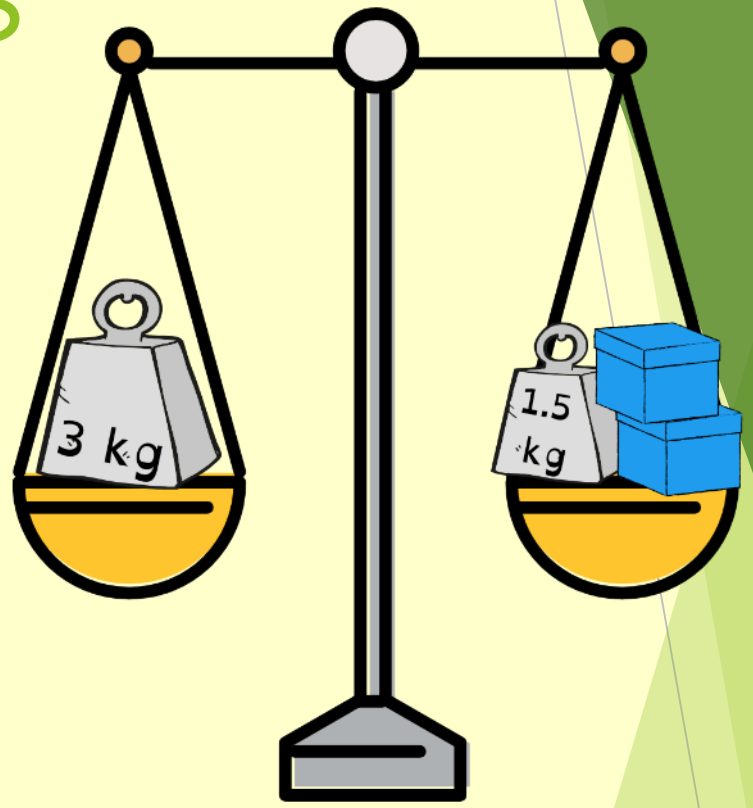
Explain your answer.

I agree/I disagree because…

Reflection Time - ANSWERS

No, I do not agree.

One side of the scale has 3kg or 3,000g. We know there is a 1.5kg or 1,500g weight on the other side, so each of the parcels weighs 750g.



Converting Units

Day 3

Starter

An Olympic swimming pool is 50m in length.

- Jamal swims four lengths.
- Ruth swims six lengths.
- Ahmed swims five lengths.
- Chen swims two lengths.

Which one doesn't belong?
Explain your answer.

Work out how many metres they all swim individually.

Starter - ANSWERS

Ahmed's answer doesn't belong as the length as the length of his total swim is not a multiple of 100. Ahmed swims 250m, whereas Jamal, Ruth and Chen swim 200m, 300m and 100m respectively.

Date: Day 3

LO: To calculate using metric units of measurement.

Key Vocabulary

Date: Day 3

LO: To calculate using metric units of measurement.

Success Criteria

I can use my knowledge of metric units of measurement and converting between them to complete calculations in context.

I can explain my reasoning.

Descriptive Teaching

Jamal is running a 2km race. He has planned to run the race in sprints.

He has run 800m already. He wants to run the rest of the race in four equal sprints.

How long will each of the four remaining sprints be?

Convert the measurements into the same unit e.g. 2km = 2,000m.

2,000m – 800m = 1,200m.

1,200m ÷ 4 = 300m.

Descriptive Doing

Ahmed has 3kg of flour. He uses 600g. He then splits the remaining flour equally into eight bowls for other recipes.

How much flour is in each of Ahmed's bowls?

Explain your answer.

Use the method shown on the slide before.

Descriptive Doing - ANSWERS

Ahmed divides 2,400g between the eight bowls as 3,000 – 600 = 2,400g.

So, each bowl will hold 300g of flour as 2,400 ÷ 8 = 300g.

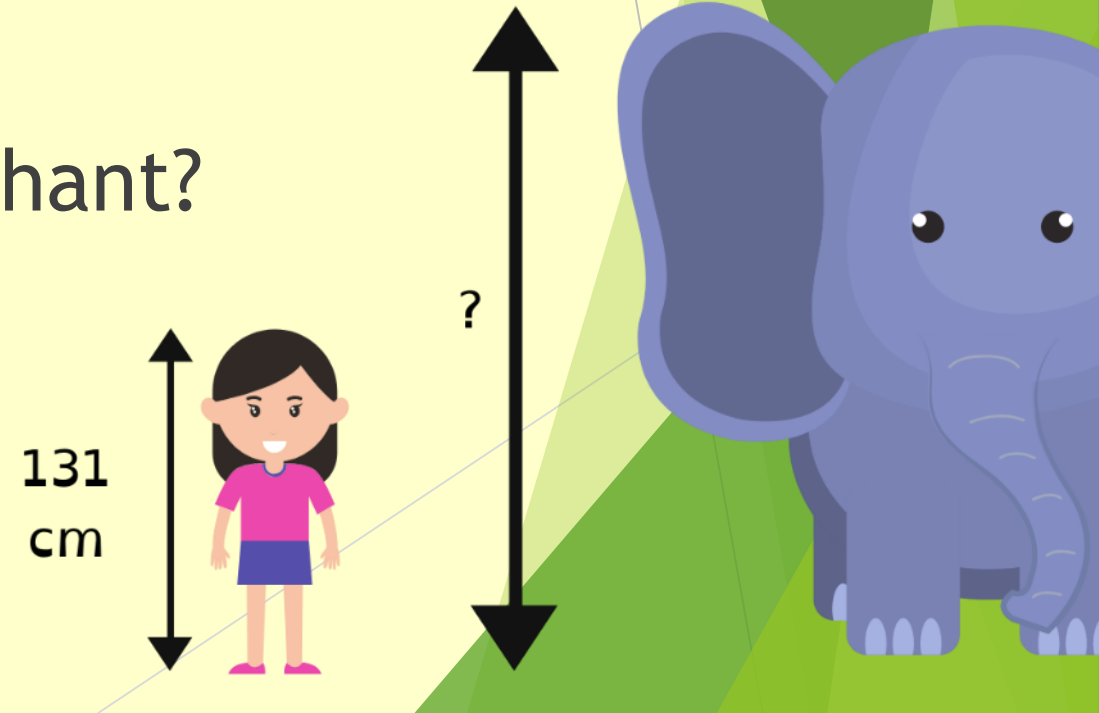
Descriptive Doing

The average ten-year-old is 131cm tall.

An Asian elephant is – on average – twice as tall as a ten-year-old.

How tall is the average Asian elephant?

Express your answer in metres.

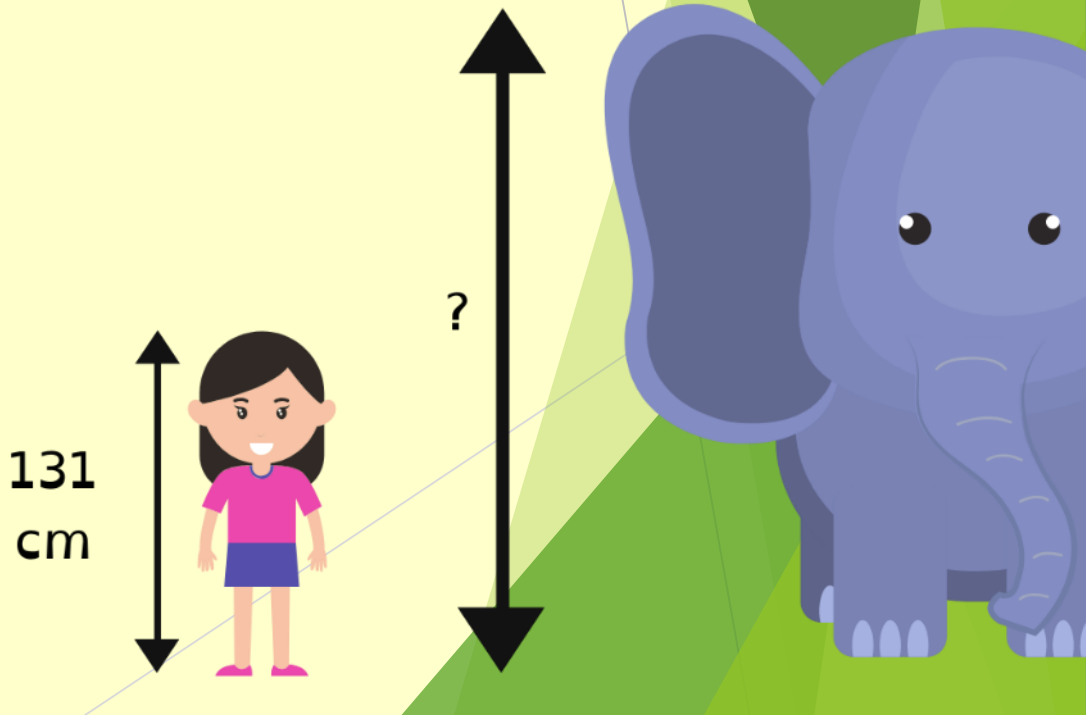


Descriptive Doing - ANSWERS

The average Asian elephant is 2.62m tall.

131cm x 2 = 262cm

262cm ÷ 100 = 2.62m



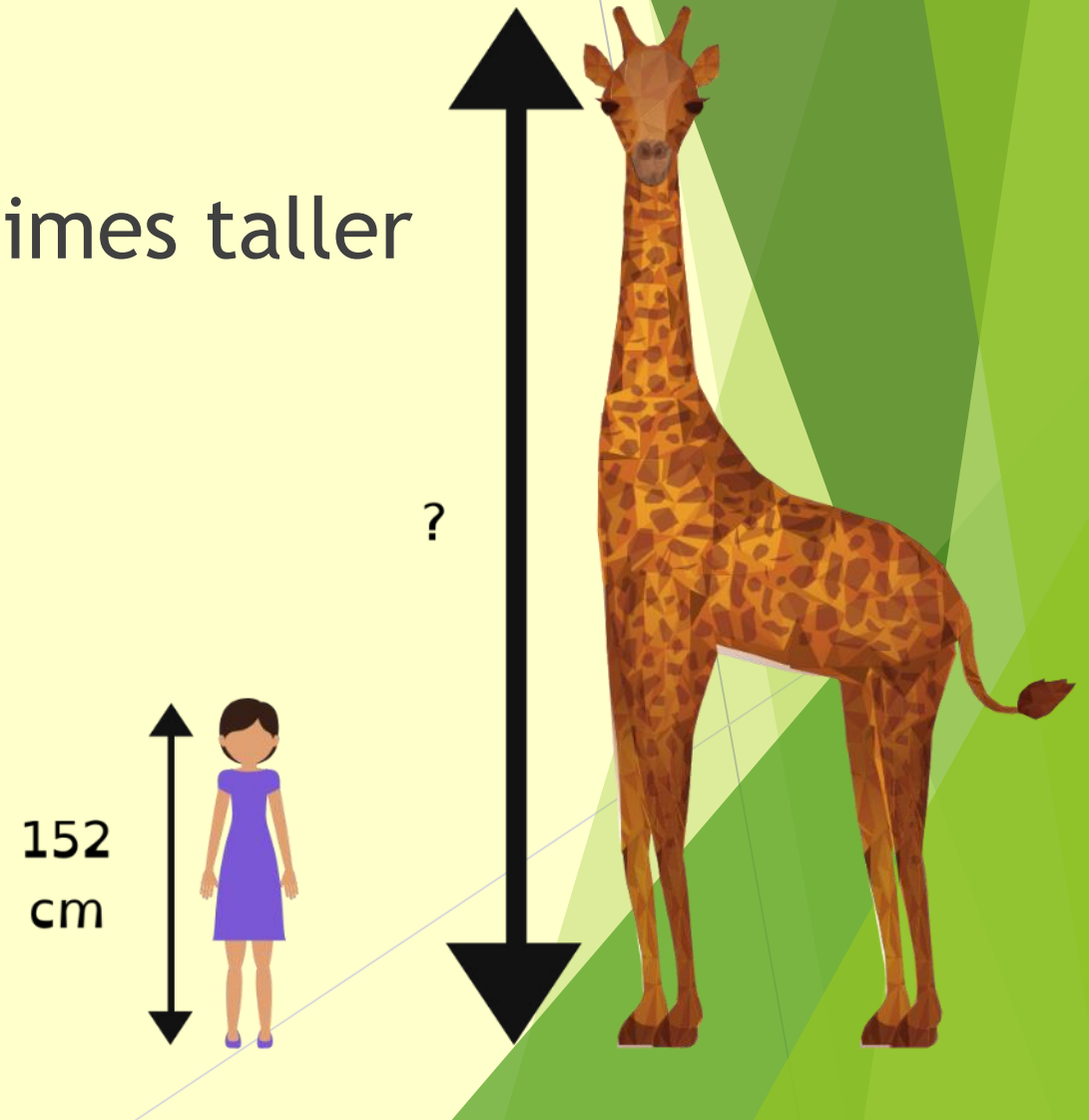
Descriptive Doing

The average adult is 152cm tall.

A giraffe is – on average – three times taller than an adult person.

How tall is the average giraffe?

Express your answer in metres.

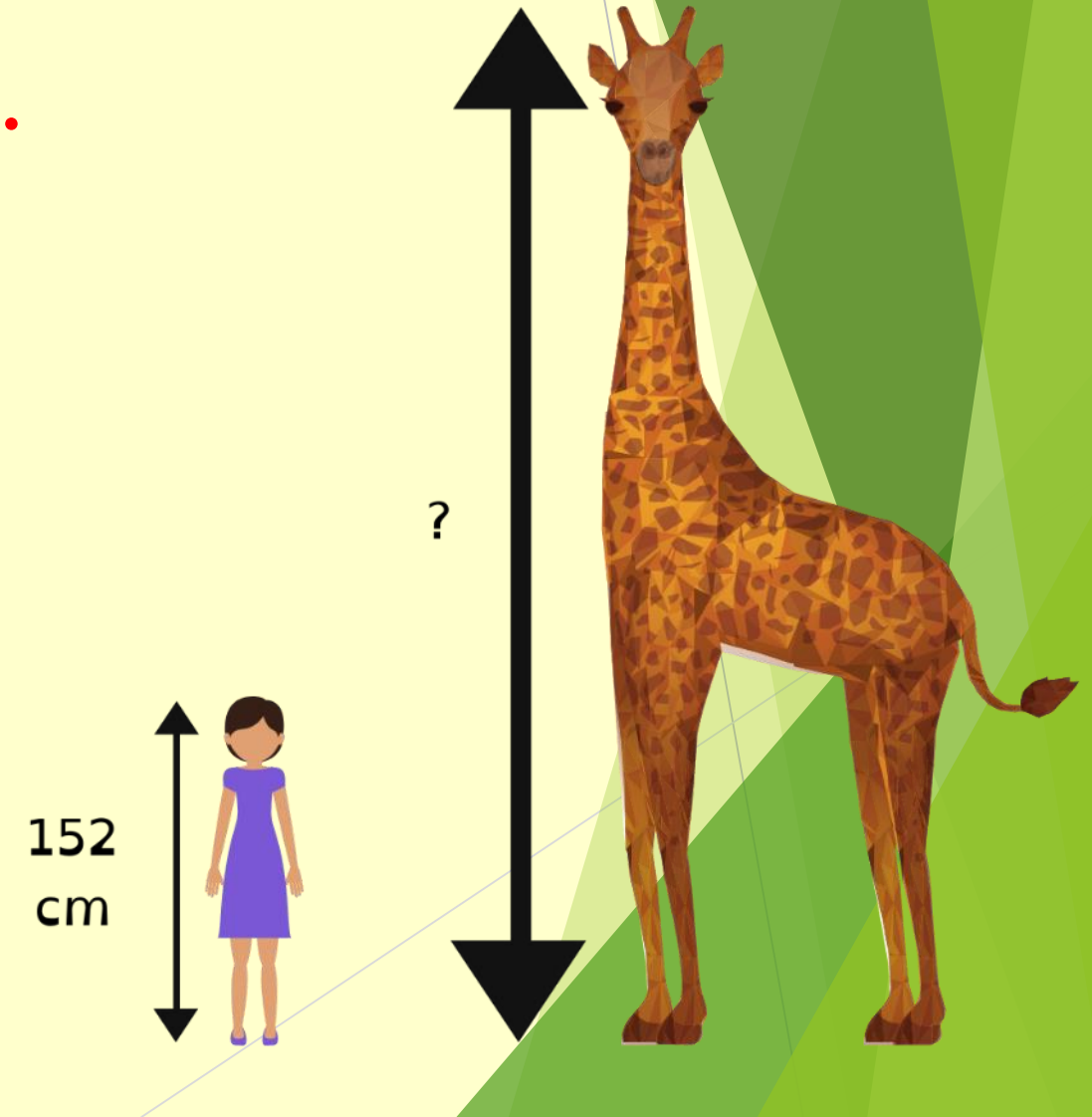


Descriptive Doing

The average giraffe is 4.56m tall.

152cm x 3 = 456cm

456 ÷ 100 = 4.56m



Reflective Teaching

The weight of an industrial-sized bag of sugar is 10kg. Ruth offloads 600kg of sugar from a delivery vehicle. Jamal offloads 450kg of sugar from a delivery vehicle.

How many more bags does Ruth carry from the vehicle to the bakery?

Ruth offloads 60 bags, as 600kg ÷ 10kg = 60 bags.

Jamal offloads 45 bags, as 450kg ÷ 10kg = 45 bags.

So, Ruth carries 15 more bags from the vehicle to the bakery as 60 - 45 = 15 bags.

Reflective Doing

The weight of an industrial-sized bag of sand is 25kg. Ahmed offloads 800kg of sand from a delivery vehicle. Yasmin offloads 1 tonne of sand from a delivery vehicle.

How many more bags does Yasmin carry from the vehicle to the building site?

Explain your answer.

Use the method shown on the slide before.

Reflective Doing - ANSWERS

Ahmed offloads 32 bags of sand, as there are four bags in 100kg, and he offloads 800kg (8 x 4 = 32 bags).

Yasmin offloads 40 bags, as 1,000kg ÷ 25 = 40 bags.

So, Yasmin has delivered 8 more bags, as 40 – 32 = 8 bags.

Reflective Doing

Use the method shown before.

A sack contains 400 coffee beans. Each coffee bean weighs 1.5g. The sack weighs 112g.

Chen has some sacks of coffee beans. In total, his sacks of coffee beans weigh 2.848kg.

How many sacks of coffee beans does Chen have?

Explain your answer.

Reflective Doing - ANSWERS

Each sack weighs 712g because
(400 x 1.5g) + 112g = 600g + 112g = 712g.

So, he has four sacks because
712g x 4 = 2,848 g or 2.848kg.

Reflective Doing

Copy the table into your book.

The table below shows a recipe for 6 brownies. Complete the right-hand table to complete a recipe for making 36 brownies.

ingredient	amount
butter	225 g
sugar	400 g
cocoa powder	60 g
vanilla extract	1 tsp
eggs	4 eggs
flour	240 g
baking powder	0.5 tsp
salt	½ tsp

ingredient	amount
butter	
sugar	
cocoa powder	
vanilla extract	
eggs	
flour	
baking powder	
salt	

Reflective Doing - ANSWERS

ingredient	amount
butter	1,350 g
sugar	2,400 g
cocoa powder	360 g
vanilla extract	6 tsp
eggs	24 eggs
flour	1,440 g
baking powder	3 tsp
salt	3 tsp

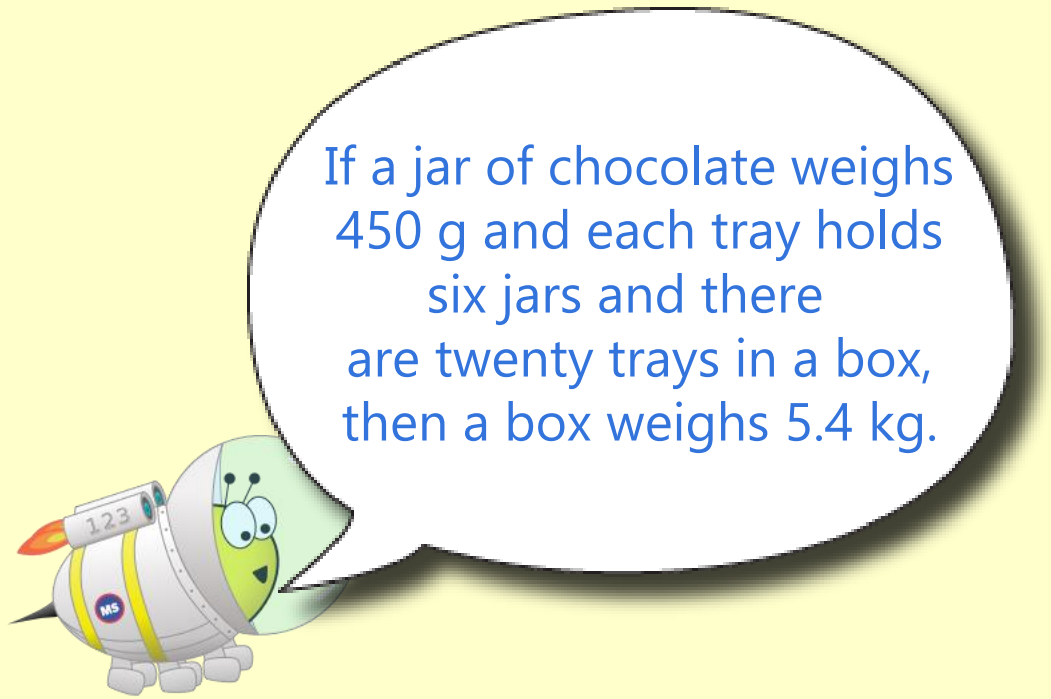
Choose your challenge

Challenges can be found on the document named ‘Maths Challenges Day 3’.

Choose an appropriate challenge OR work through green, orange and red.

Answers can be found at the bottom of the document.

Reflection Time



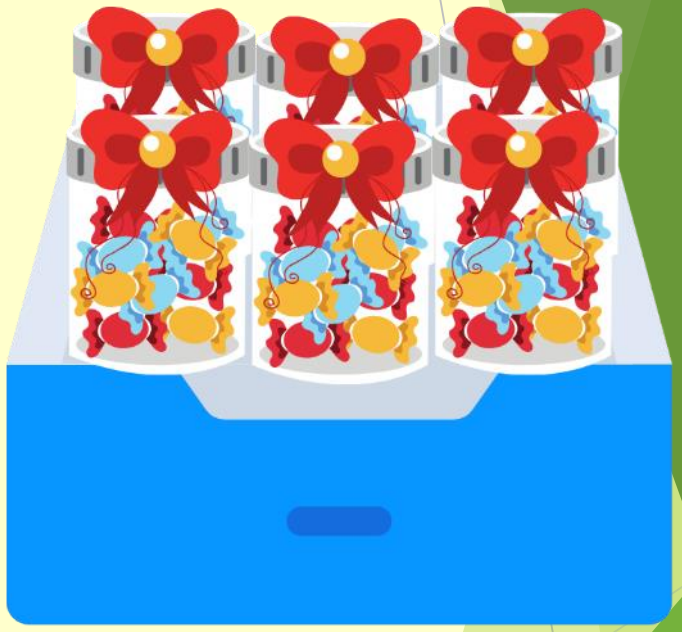
Do you agree?

Explain your answer.

I agree/I disagree because...

Reflection Time - ANSWERS

450 g



No, I do not agree.

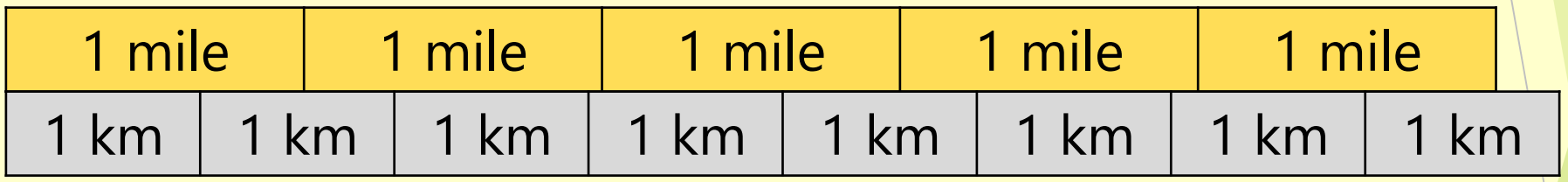
A tray weighs 450g x 6 = 2,700g (2.7kg), so a box weighs 2,700g x 20 = 54,000g (54kg).

Converting Units

Day 4

Starter

Use the scale provided to complete the statements below using <, > or =.



1 mile	○	2 km
3 km	○	2 miles
4 miles	○	5 km

Starter - ANSWERS

1 mile	<	2 km
3 km	<	2 miles
4 miles	>	5 km

Date: Day 4

LO: To convert between miles and km.

Key Vocabulary

Date: Day 4

LO: To convert between miles and km.

Success Criteria

I can use my knowledge of approximate conversions between miles and km to convert distance and speed measurements as well as competing calculations that require converting between miles and km.

I can explain my reasoning.

Descriptive Doing

1. What might we measure in miles and km?
2. Where might you see these measurements used in real-life scenarios?
3. Can you think of a scenario where you'd need to convert between miles and km?

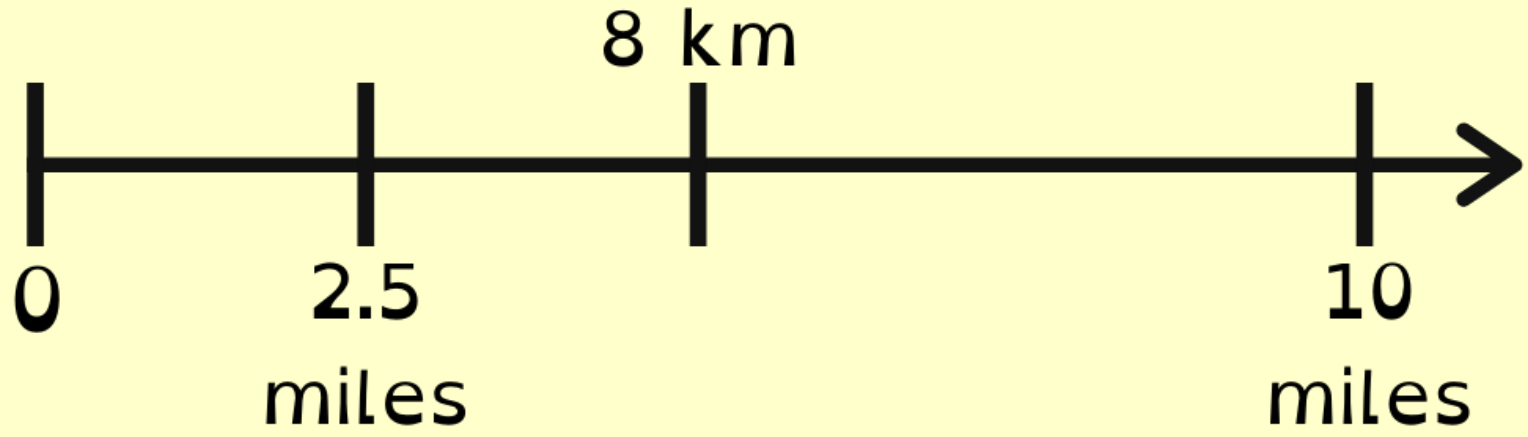
Create a list in your book.

Descriptive Doing - ANSWERS

1. Various lengths/distances.
2. E.g. river lengths, roads, distances between cities (nationally and internationally), dimensions of countries…
3. In countries that use miles of km, for visitors to use the opposite unit of measurement.

Descriptive Teaching

Using the approximate conversion 5 miles ≈ 8km, fill in the blanks on the number line below.



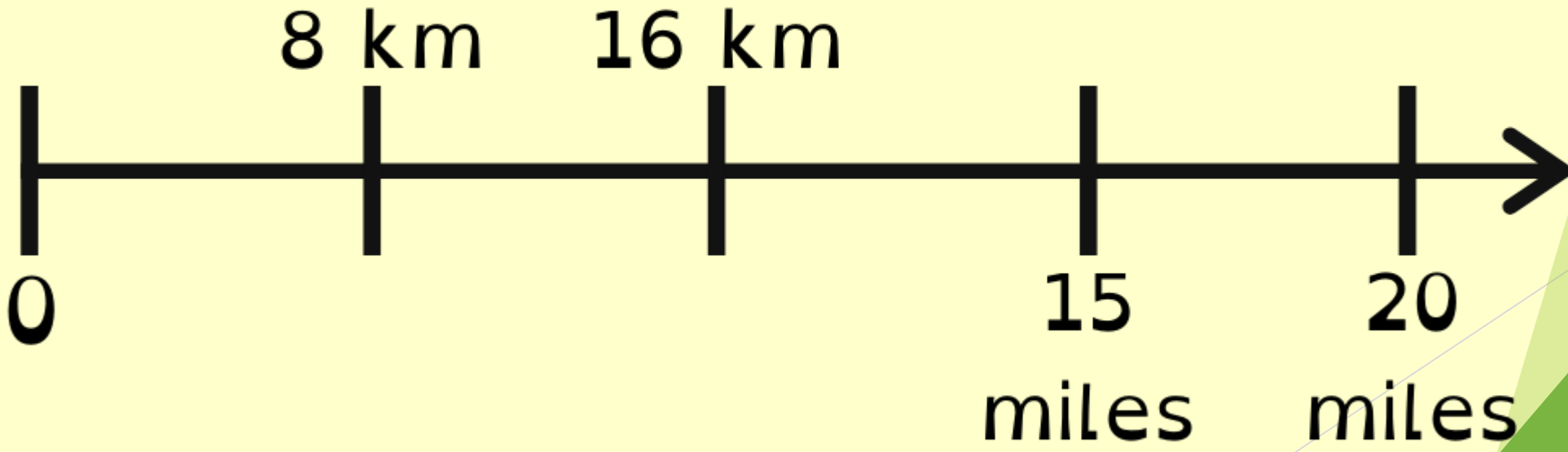
8km = 5 miles

5 miles ÷ 2 = 2.5 miles, so 8km ÷ 2 = 4km.

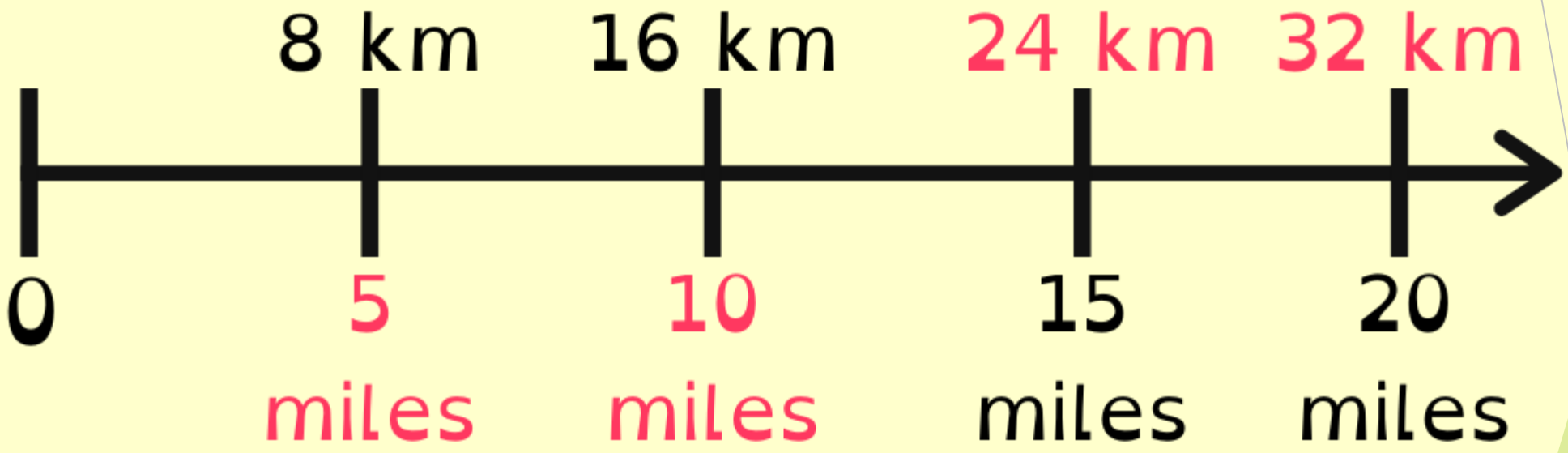
5 miles x 2 = 10 miles, so 8km x 2 = 16km

Descriptive Doing

Using the approximate conversion 5 miles ≈ 8km, fill in the blanks on the number line below.



Descriptive Doing - ANSWERS



Descriptive Doing

Using the approximate conversion 5 miles ≈ 8km, complete the table.

miles	km
10	
1	
	3.2
20	
50	
	160
	248

Copy the table into your book.

Descriptive Doing - ANSWERS

miles	km
10	16
1	1.6
2	3.2
20	32
50	80
100	160
155	248

Reflective Teaching

Assuming 5 miles ≈ 8km:

In the UK, the maximum speed limit is 20 miles per hour (mph) near schools.

In Spain, the maximum speed limit is 32 kilometres per hour (kpm).

Which country has the higher speed limit and by how much?

Convert the measurements to the same unit.

20 miles ÷ 5 miles = 4

32 km ÷ 8km = 4

The speed limits are the same, because 20mph ≈ 32kph.

Reflective Doing

Use the method shown on the slide before.

Assuming 5 miles ≈ 8km:

In Texas, USA, the maximum speed limit is 85 miles per hour (mph).

In Mexico, the maximum speed limit is 120 kilometres per hour (kph).

Which country has the higher speed limit and by how much?

Reflective Doing - ANSWERS

The USA has the higher speed limit because 85 mph ≈ 136 kph.

Alternatively, 120 kph ≈ 75 mph.

Either way, the Texan speed limit is greater.

Reflective Doing

Assuming 5 miles ≈ 8km:

1) Ruth and Jamal are running a 10km race. Ruth has run 5.5 miles; Jamal has run 8.4km. Who has the furthest left to run? By how much?
2) Chen and James are running a marathon. A marathon is approximately 26.2 miles. Chen has run 16.5 miles; James has run 32.8km. Who has the furthest left to run? By how much?

Reflective Doing - ANSWERS

1) Ruth has 1.2km left to run; Jamal has 1.6km left to run. Jamal has to run another 0.4km more than Ruth before finishing the face.
2) Chen has 9.7 miles left to run; James has 5.7 miles left to run. Chen has 4 more miles to run than James before reaching the finish line.

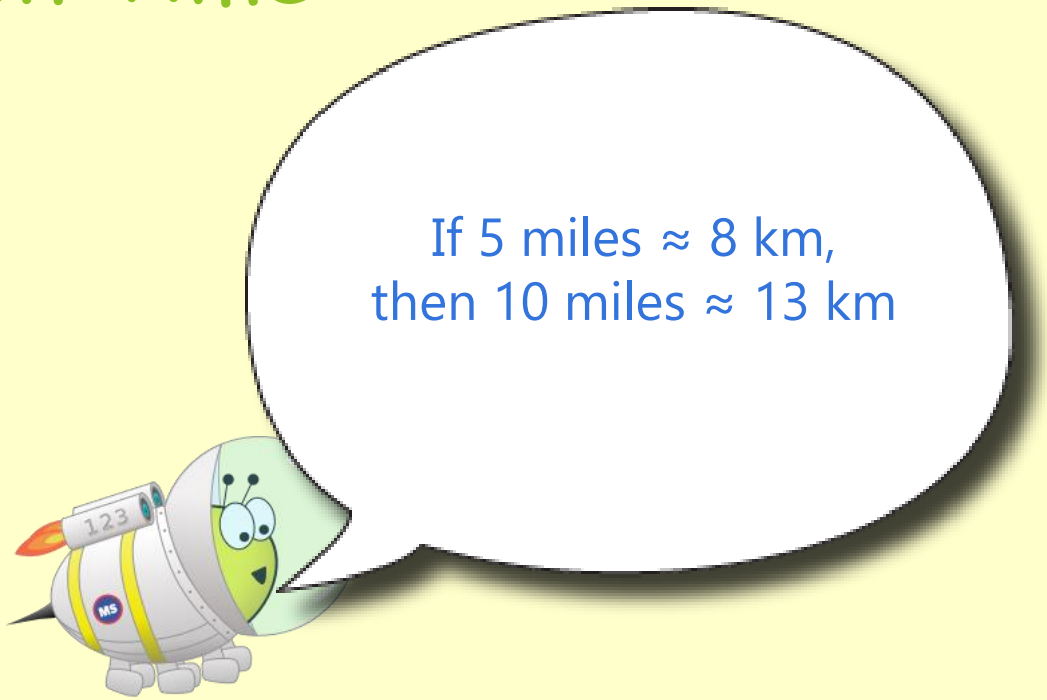
Choose your challenge

Challenges can be found on the document named ‘Maths Challenges Day 4’.

Choose an appropriate challenge OR work through green, orange and red.

Answers can be found at the bottom of the document.

Reflection Time



Do you agree?

Explain your answer.

I agree/I disagree because…

Reflection Time - ANSWERS

No, I do not agree.

Astrobee has added 5 to both measurements. Instead, the miles measurement has been doubled as 2 x 5 = 10.

So, the correct statement is 10 miles ≈ 16km, because 2 x 8 = 16.

Converting Units

Day 5

Starter

Which one doesn't belong?

km	ml	kg
miles	cm	

Explain your answer.

Think about metric/imperial measurements.

Starter - ANSWERS

Miles doesn't belong as it is an imperial measurement.

Date: Day 5

LO: To convert between imperial units and between metric and imperial units of measurement.

Key Vocabulary

Date: Day 5

LO: To convert between imperial units and between metric and imperial units of measurement.

Success Criteria

I can use my knowledge of converting between metric measurement units to convert between imperial units of measurement.

I can explain my reasoning.

Descriptive Teaching

	Metric	Imperial
Length	millimetre, centimetre, metre, kilometre	inch, foot, yard, mile
Mass	milligram, gram, kilogram	ounce, pound, stone
Capacity	millilitre, centilitre, litre	pint, gallon

You may wish to create a poster to distinguish between metric and imperial measurements.

Descriptive Doing

Copy the table into your book.

Complete the table below, using the words: centimeter, foot, gram, gallon, inch, kilogram, kilimetre, litre, metre, millilitre, millimetre, ounce, pound, stone, yard

	imperial	metric
capacity / volume	gallon	
distance / length	foot	centimetre
mass / weight	ounce	

Descriptive Doing - ANSWERS

	imperial	metric
capacity / volume	gallon (fluid ounce)	litre millilitre
distance / length	foot inch yard	centimetre kilometre metre millimetre
mass / weight	ounce pound stone	gram kilogram

Descriptive Doing

Use the conversion chart provided to fill in the blanks.

2 feet = __ inches

3 gallons = __ pints

32 ounces = __ pounds

__ stone = 28 pounds

smaller unit	larger unit
1 foot	12 inches
1 gallon	8 pints
1 pound	16 ounces
1 stone	14 pounds

Descriptive Doing - ANSWERS

2 feet = **24** inches

3 gallons = **24** pints

32 ounces = **2** pounds

2 stone = 28 pounds

Reflective Teaching

If 1 inch ≈ 2.54 cm, convert the measurements to cm.

The world's longest snake, a python, is 30 feet and 3 inches long.

How long is the snake in inches?

1 foot ≈ 12 inches (x 12)

30 feet x 12 = 360 inches

360 inches + 3 inches = 363 inches

363 inches x 2.54 cm = 922.02cm

Reflective Doing

Use your knowledge of imperial unit conversions to solve:

The world's shortest man is 21.5 inches tall. What is the man's height in feet and inches?

Use the method shown before.

If 1 inch ≈ 2.54 cm, convert the measurements to cm.

Reflective Doing - ANSWERS

The man is 1 foot and 9.5 inches tall.

He is 54.61cm tall.

Reflective Doing

2.5cm ≈ 1inch; 1 foot = 12 inches

Jamal's father is 5 foot and 8 inches tall.

Jamal's mother is 164cm tall.

Who is taller and by how much?

Express your answer in cm.

Reflective Doing – ANSWERS

Jamal's father is 170cm tall, as 1 foot = 30cm (12 x 2.5cm), 5 x 30cm = 150cm and 150cm + (8 x 2.5cm) = 150cm + 20cm = 170cm.

So, Jamal's father is 6cm taller than his mother, as 170cm – 164cm = 6cm.

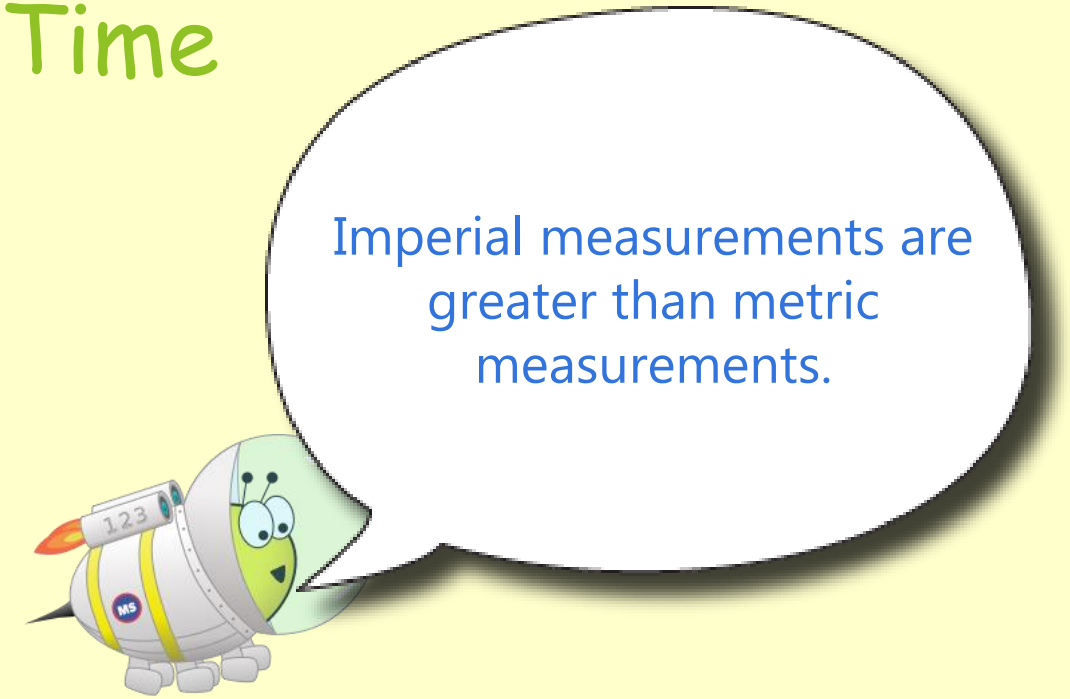
Choose your challenge

Challenges can be found on the document named ‘Maths Challenges Day 5’.

Choose an appropriate challenge OR work through green, orange and red.

Answers can be found at the bottom of the document.

Reflection Time



The statement is ___ true because…

Is Astrobee's statement always, sometimes or never true?

Explain your answer.

Reflection Time - ANSWERS

Astrobee's statement is only sometimes true. For example, an inch is worth more than a cm, as an inch is approximately 2.5cm or 2.54cm. However, a kg is worth more than a lb, as there are approximately 2.2lbs in a kg.