STUDY SQUAD

KS2 Maths

SATs Practice Workbook

Ages 10-11

REASONING

BOOK 2

With interactive games and linked explainer videos.

Name:

twinkl

Boost test confidence and results with our curriculum-aligned bite-sized revision.

STUDY SQUAD

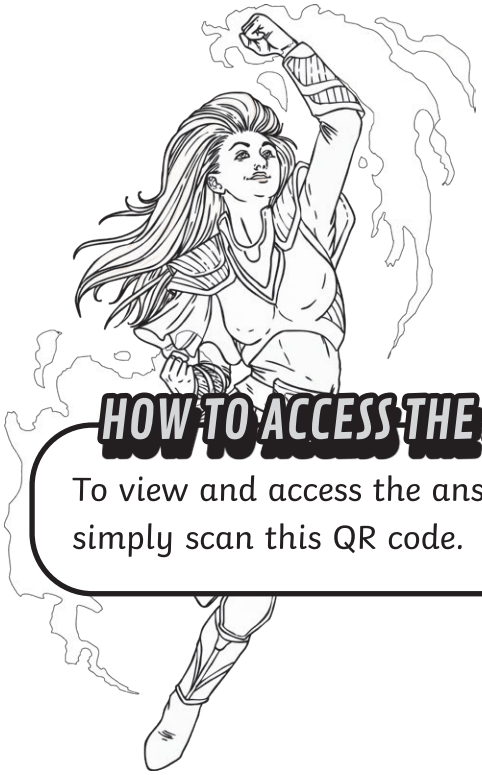
Name:

NEW RECRUIT

HOW TO ACCESS THE VIDEOS AND GAMES

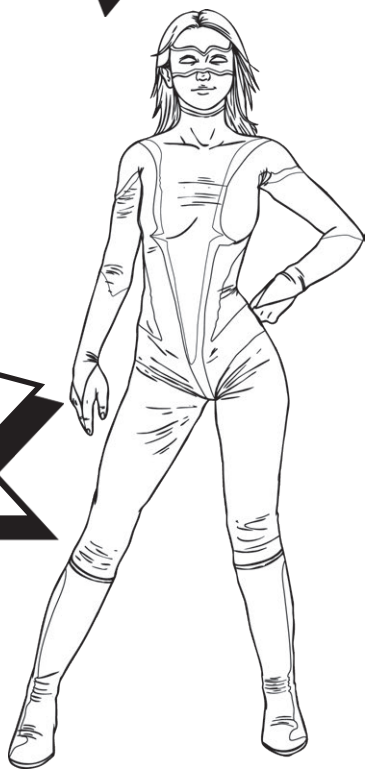
To view and access the concept revision videos, interactive Go! Games and the answer booklet, your adult will need a **Twinkl account**. If your adult doesn't already have a Twinkl account, they can create a **free account** by going to **www.twinkl.co.uk** and selecting **'Join'** in the top right-hand corner.

The QR codes throughout the workbook are a great way of accessing the interactive activities but you can also find them on the Study Squad page. Simply scan this QR code to explore the whole **Study Squad range.**



HOW TO ACCESS THE ANSWERS

To view and access the answer booklet, simply scan this QR code.



CONTENTS

Meet the Study Squad 1

Self-Reflection Instructions 2

SECTION ONE: MEASUREMENT 3-46

Estimating and Reading Scales 3

Converting between Metric Units 7

Converting between Metric and Imperial Units 11

Money 15

Telling the Time and Units of Time 19

Solving Problems Involving Time and Duration 23

Perimeter 27

Area 31

Areas of Triangles and Parallelograms 35

Volume 39

Measurement Mixed Practice 43

Progress Tracker 45

Recharge 46

SECTION TWO: PROPERTIES OF SHAPES 47-78

Angle Facts 47

Finding Missing Angles 51

Measuring Angles 55

Classifying 2D Shapes 59

Circles 63

Drawing 2D Shapes 67

3D Shapes 71

Properties of Shapes Mixed Practice 75

Progress Tracker 77

Recharge 78

SECTION THREE: POSITION AND DIRECTION 79-90

Coordinates **79**

Reflection and Translation **83**

Position and Direction Mixed Practice **87**

Progress Tracker **89**

Recharge **90**

SECTION FOUR: STATISTICS 91-114

Tables and Pictograms **91**

Bar Charts **95**

Line Graphs **99**

Pie Charts **103**

Finding the Mean **107**

Statistics Mixed Practice **111**

Progress Tracker **113**

Recharge **114**

HELP PAGES 115-125

Perimeter **115**

Area Help **116**

Properties of 2D Shapes **117**

Properties of 3D Shapes **118**

Types of Triangles **119**

Finding Angles and Lengths in Quadrilaterals **120**

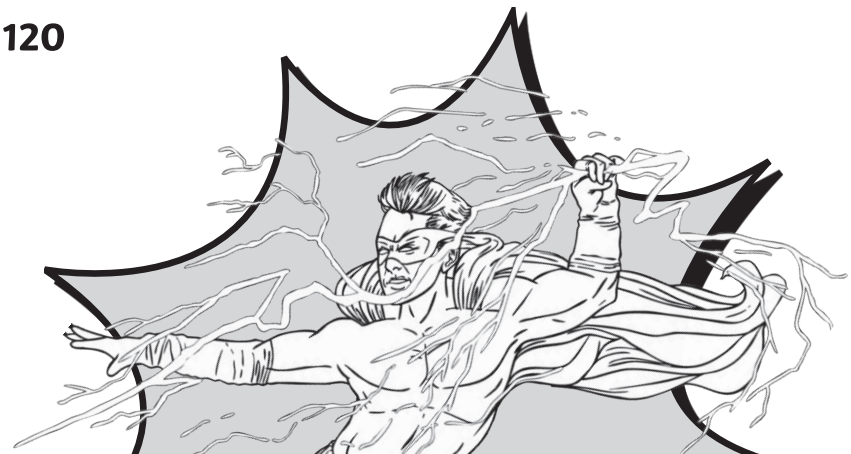
Finding Missing Angles **121**

How to Use a Protractor **122**

Types of Lines **123**

Coordinates **124**

Reflection and Translation **125**



MEET THE STUDY SQUAD

STUDY SQUAD

Each of the **Maths Heroes** has a superpower relating to a particular unit of maths. Together, they will guide you through the concepts in this workbook.

MEASURE MACHINE

QUICK QUADRANT

THE DATA DEFENDER

THE SHAPE SAVIOUR

On each page, the Study Squad have included a game and video to help you boost your maths superpower. Scan the QR codes, using a device with a camera and internet access, to continue your hero training.

You'll get to know the **Study Squad** children as they pop up throughout the workbook.

FELIX

DREW

JIA

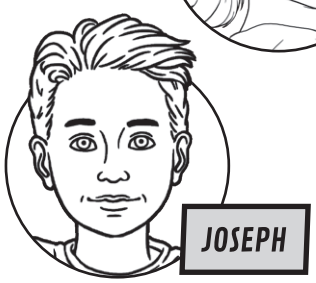
EMILY

ELENA

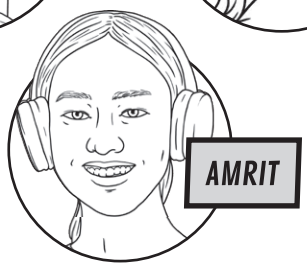
ABI

ELIAS

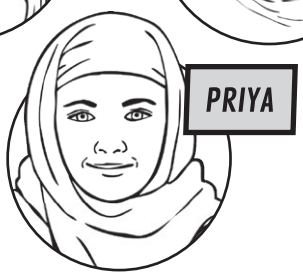
BARTEK



JOSEPH



AMRIT



PRIYA

ZEKE

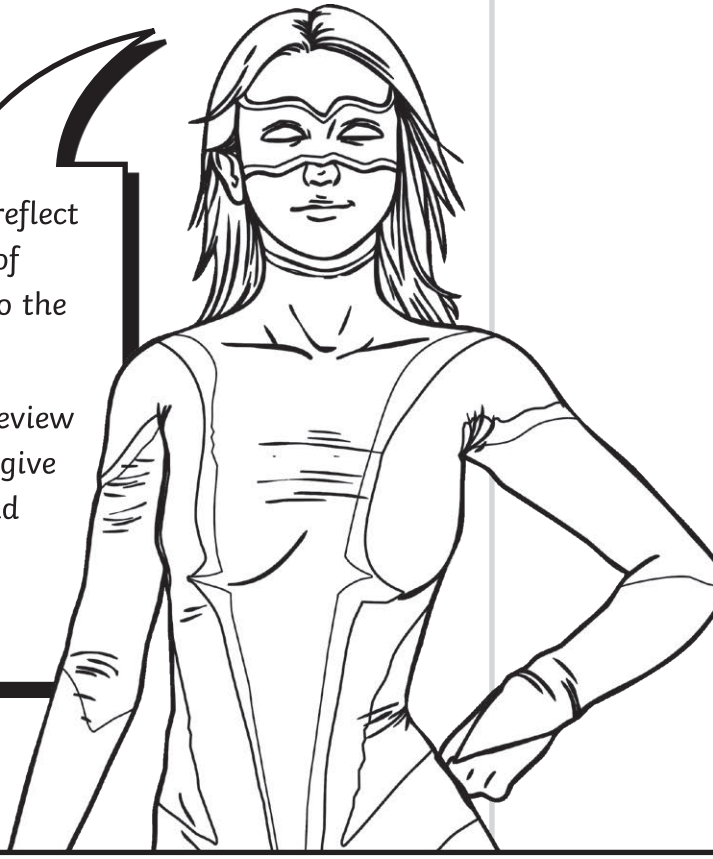
HARI

SELF-REFLECTION INSTRUCTIONS

After each concept, you will have the opportunity to reflect on your understanding. Once you have answered all of the questions, colour or shade in the superhero next to the statement that you most agree with.

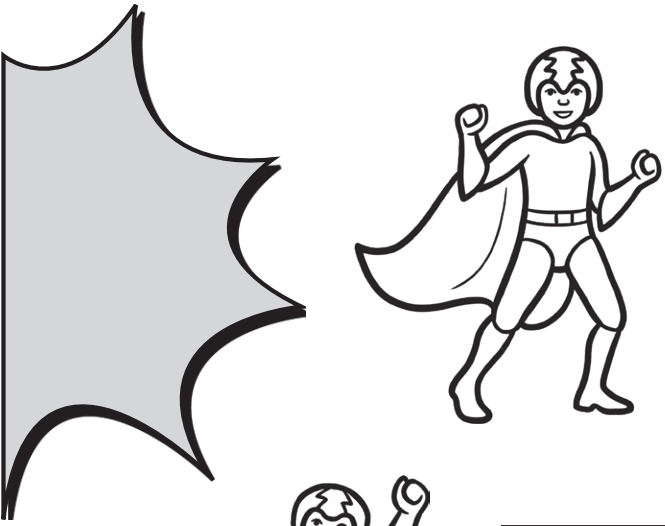
At the end of each concept, use the self-reflection to review which areas you found trickier than others. This will give you an idea of which areas you need support with and which areas you are more confident with.

Ready for your first maths mission?



I DON'T UNDERSTAND THIS YET!

I found this tricky. I need support with this.



I MOSTLY UNDERSTAND THIS!

I can do this mostly but sometimes I need support. I may need some more practice.

I COMPLETELY UNDERSTAND THIS!

I can do this by myself. I could explain how to solve these questions to someone else.

ESTIMATING AND READING SCALES

SUPERCHARGE!

SCORE: /2

Measure out 345ml using combinations of the tablespoon, the egg cup and the drinking glass. Which combination uses the **fewest** objects? Show your working out.

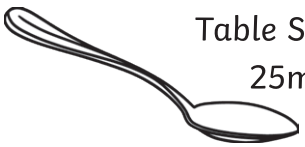


Table Spoon
25ml

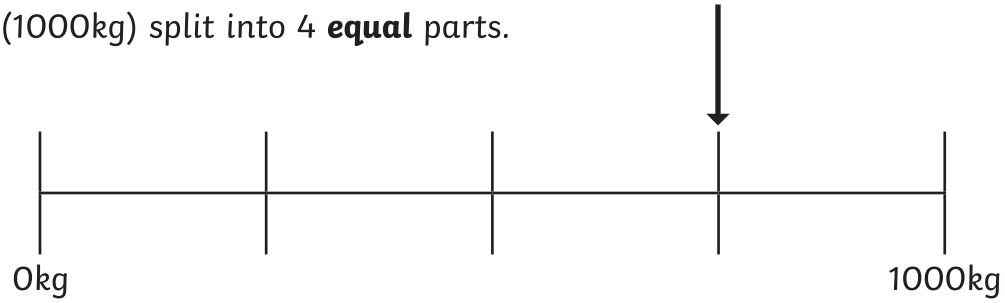
Egg Cup
40ml

Drinking Glass
200ml

Answers: 1 drinking glass, 3 egg cups and 1 tablespoon. (given in any order)

BOOST YOUR SUPERPOWERS

When reading scales, we first need to establish how many parts the scale has been divided into. This example scale shows 1 tonne (1000kg) split into 4 **equal** parts.

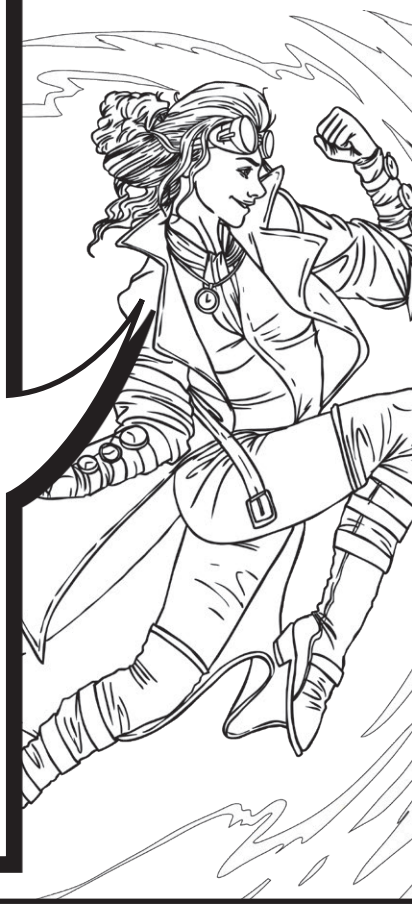


1 tonne (1000kg)			
250kg	250kg	250kg	250kg

1000kg ÷ 4 = 250kg
This scale is counting in multiples of 250kg.

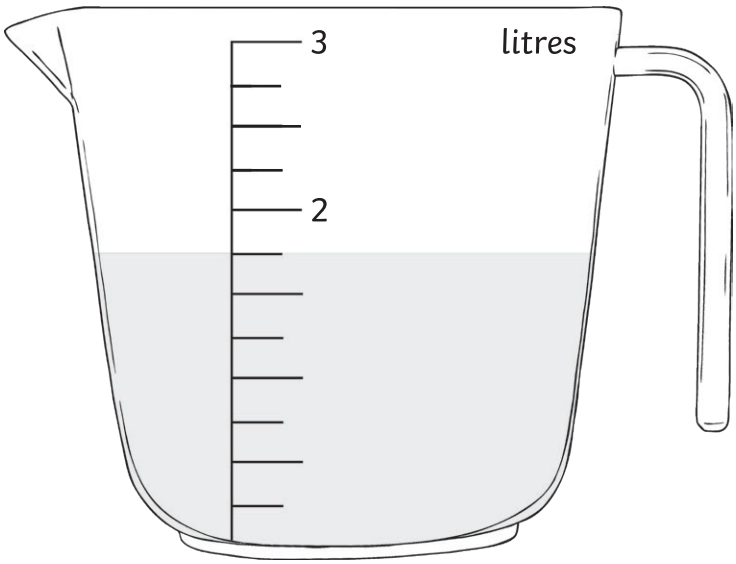
Now that we know the scale is counting in multiples of 250kg, we can see that the arrow is pointing to the third interval, which is worth 750kg (250kg + 250kg + 250kg).

REVISION VIDEO SCAN ME



MATHS MISSION

1 A chef makes gravy in a jug.

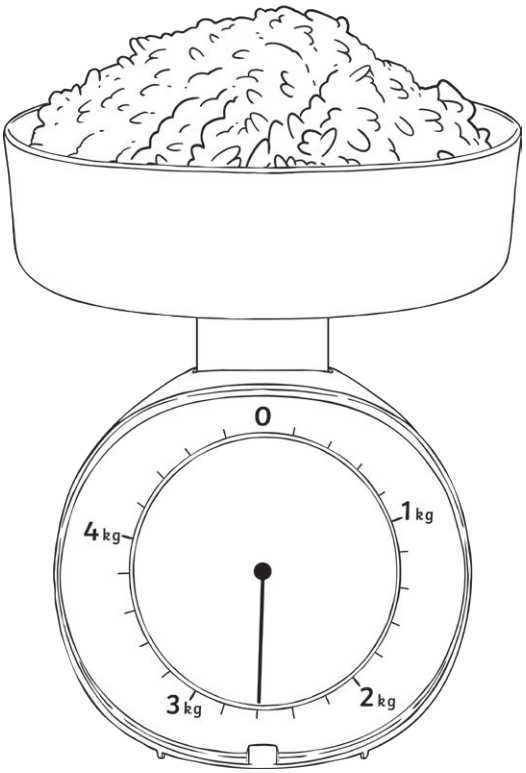


In litres, how much gravy is in the container?

litres

1 mark

2 This scale shows how much the rice weighs.

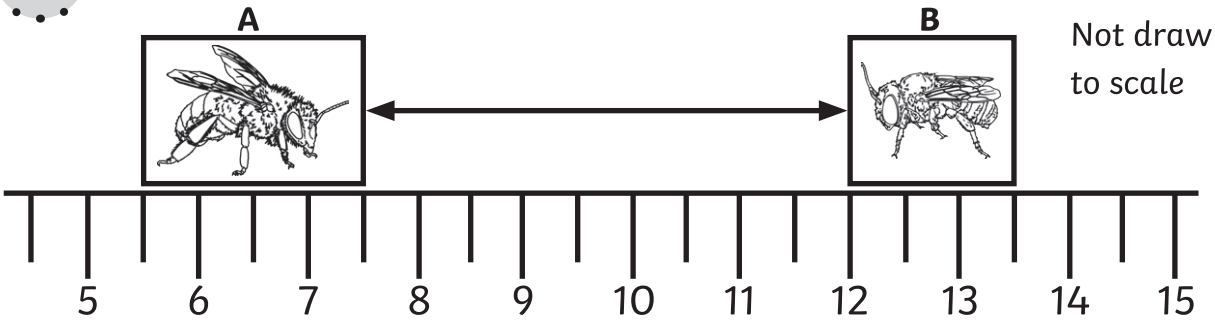


In **kilograms**, how much does the rice weigh?

kg

1 mark

3 Here are two bees on a centimetre scale.



Not drawn to scale

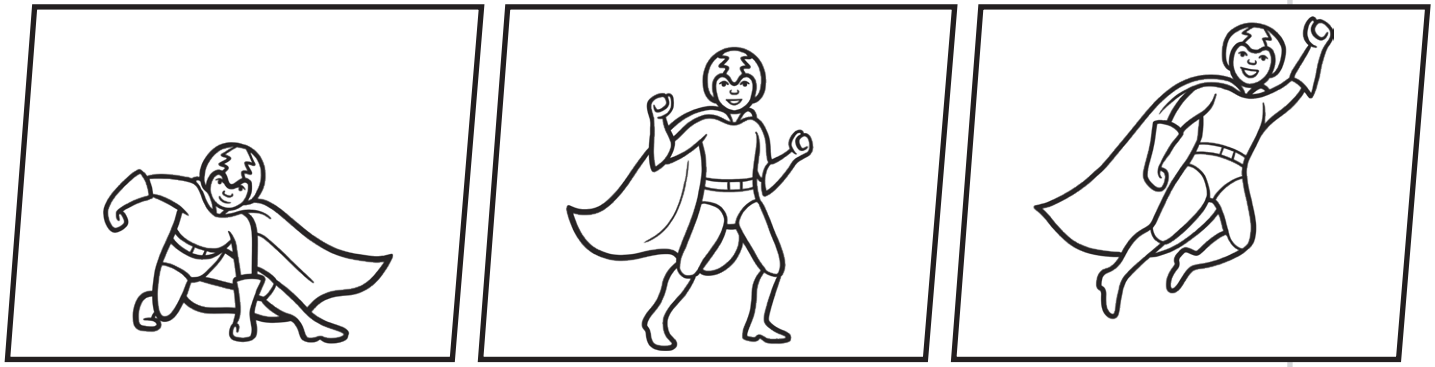
a) What is the distance between the two bees? ____ **cm** 1 mark

b) How long is bee A? ____ **cm** 1 mark

c) What is the difference in lengths of the two bees? ____ **cm** 1 mark

/5 **TOTAL**

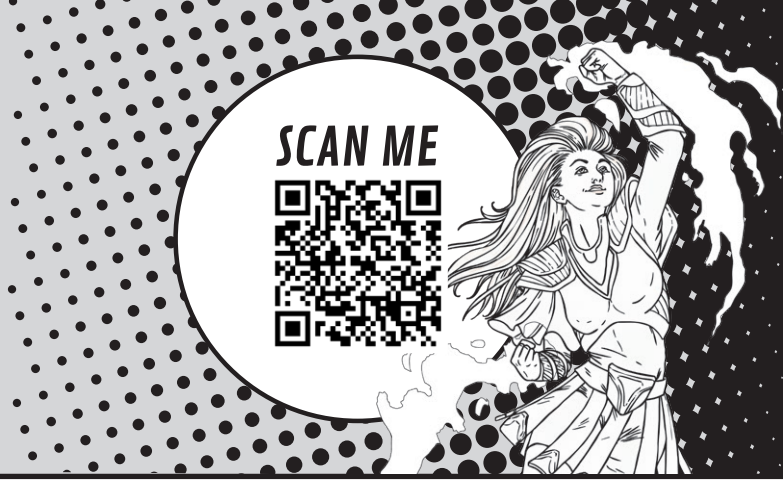
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

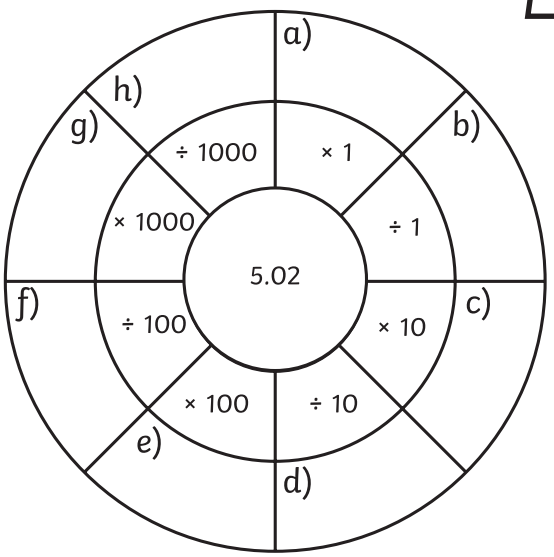
WORKING OUT

CONVERTING BETWEEN METRIC UNITS

SUPERCHARGE!

SCORE: /8

Write the answer to each calculation in the outer ring of the wheel.
Give your answers up to 3 decimal places.



Answers: a) 5.02 b) 5.02 c) 50.2 d) 0.502 e) 502 f) 0.050 g) 5020 h) 0.005

BOOST YOUR SUPERPOWERS

Metric units use a base ten system so to convert between units, we divide and multiply by powers of ten.

1 tonne = 1000kg

1000g = 1kg

$\frac{1}{2}$kg = 0.5kg = 500g

$\frac{1}{10}$kg = 0.1kg = 100g

1000ml = 1l

$\frac{1}{2}$l = 0.5l = 500ml

$\frac{1}{10}$l = 0.1l = 100ml

$\frac{1}{100}$l = 0.01l = 10ml

1000m = 1km

100cm = 1m

10mm = 1cm

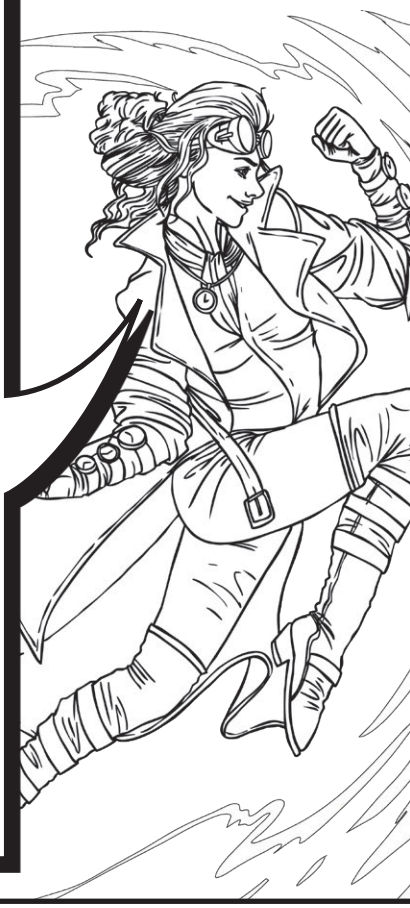
$\frac{1}{2}$m = 0.5m = 50cm

$\frac{1}{4}$m = 0.25m = 25cm

$\frac{3}{4}$m = 0.75m = 75cm

$\frac{1}{10}$m = 0.1m = 10cm

REVISION VIDEO SCAN ME



MATHS MISSION

1 1 litre is 1000 millilitres.

A bath has a capacity of 320l.

How many millilitres of water is needed to fill the bath?

ml

1 mark

2 Elena has five different lengths of ribbon.

Write the lengths of Elena's ribbons in order, starting with the longest.

1500cm	1m	150m	1.5m	105cm

longest **shortest**

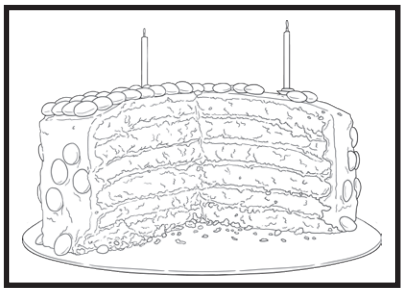
1 mark

3 A bag contained 1.5kg of flour.

Zeke used 125g for each cake he baked.

He used all of the flour.

How many cakes did Zeke bake?



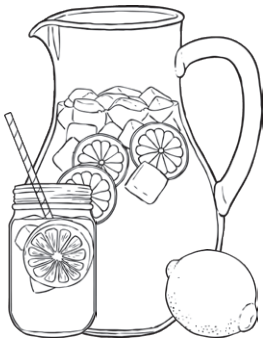
show your method

cakes

2 marks

4 There are 42 guests at Priya's party.
Priya has 20 litres of lemonade.
She pours 450 millilitres for every guest at the party.

How much lemonade is left over?



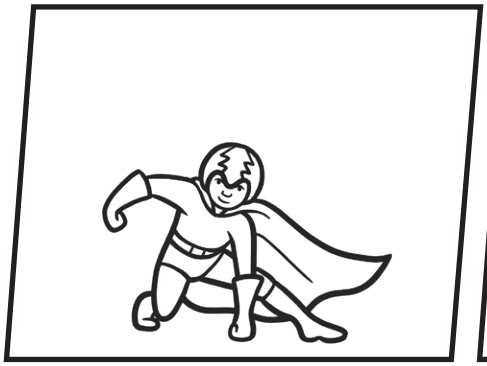
show your method

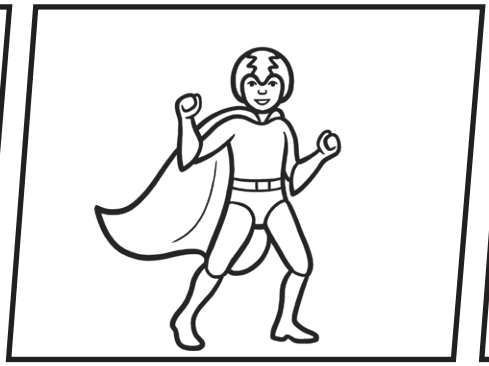
3 marks

/7

TOTAL

MISSION COMPLETE!

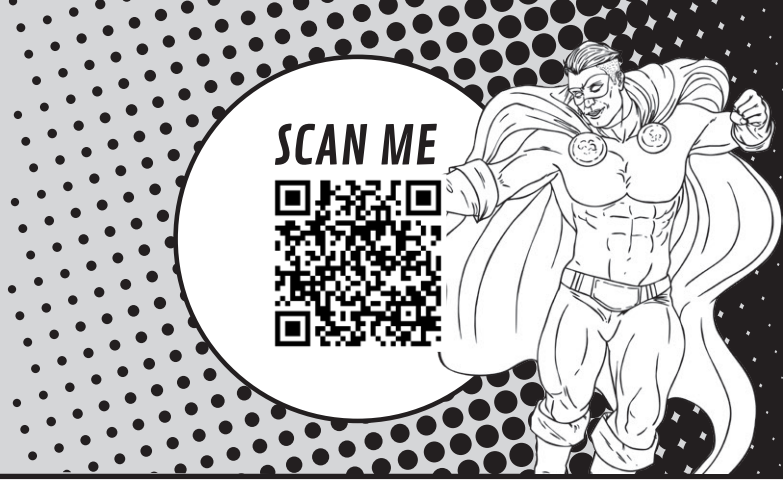




How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

CONVERTING BETWEEN METRIC AND IMPERIAL UNITS

SUPERCHARGE!

SCORE: /3

a) Drew measured a box that was 150 centimetres long. How many metres long was the box?

b) Felix needed 6 litres of water to water his herb garden. How many millilitres did Felix need?

c) Abi ran 500 metres. How many kilometres did she run?

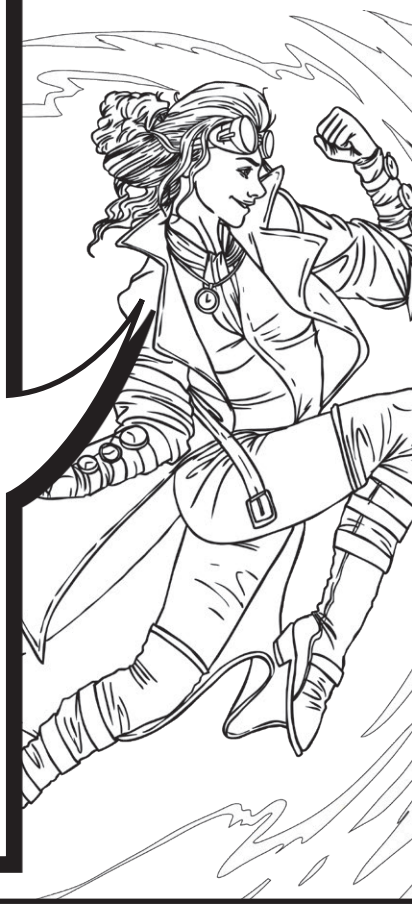
Answers: a) 1.5m b) 6000ml c) 0.5km or $\frac{1}{2}$ km

BOOST YOUR SUPERPOWERS

= equals an approximate conversion.

Capacity	pints (pt) gallons (gal)	8 pints = 1 gallon	1pt = 570ml 1l = 1.8pt
Length	inches (in) feet (ft) yard (yd) miles (mi)	12in = 1ft 3ft = 1yd 1760yd = 1mi	1in = 2.5cm 1ft = 30cm 1mi = 1.6km 1km = 0.6 miles
Mass	ounces (oz) pounds (lb) stones (st)	16oz = 1lb 14lb = 1st	1oz = 28g 100g = 3.5oz 1lb = 450g 1kg = 2.2lb 1st = 6.4kg

REVISION VIDEO SCAN ME



1 Write the missing numbers.

5 inches ≈ ☐ cm

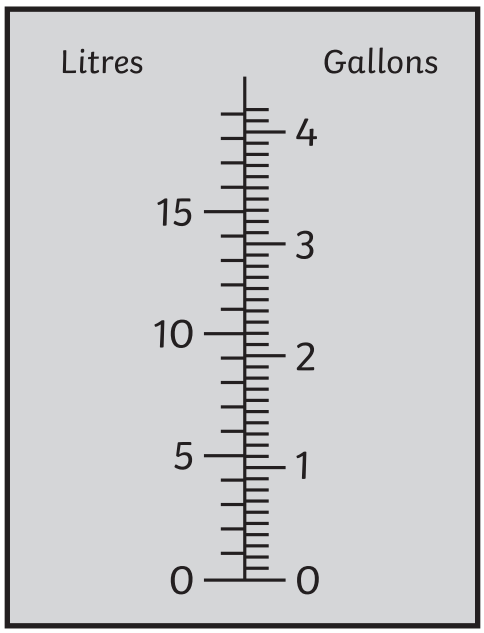
2 litres ≈ ☐ pints

10 ounces ≈ ☐ g

4 miles ≈ ☐ km

2 marks

2 Here is a scale for converting litres and gallons.



a) Approximately how many litres are there in 2 gallons?
Give your answer to the **nearest litre.**

litres

1 mark

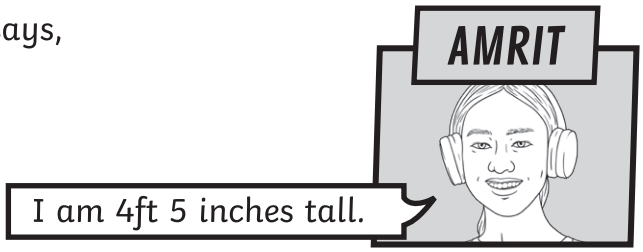
b) Approximately how many gallons are there in 8 litres?
Give your answer to **1 decimal place**.

gallons

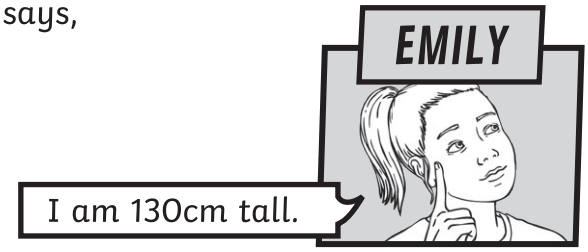
1 mark

3 Two children are discussing their heights.

Amrit says,



Emily says,



Who is the tallest?

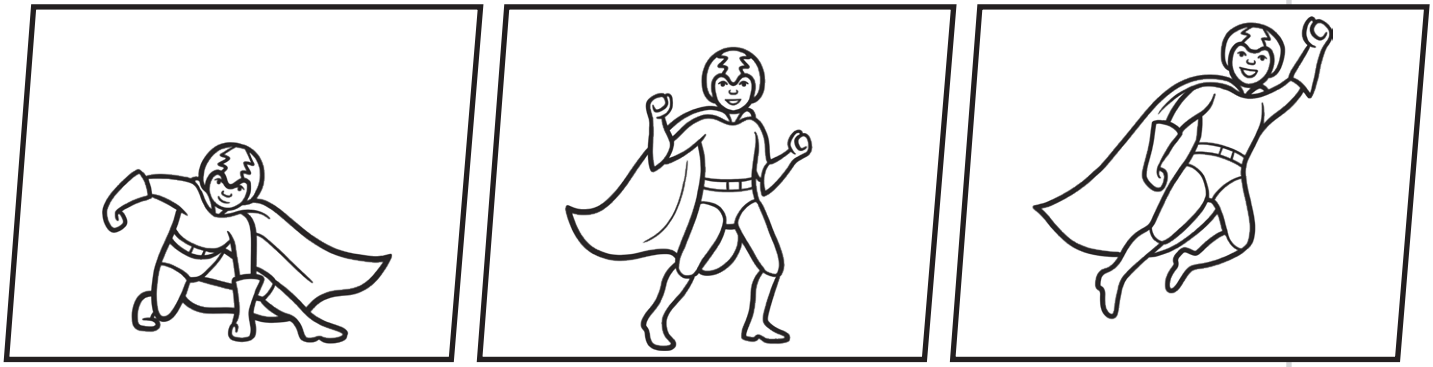
Explain your answer.

1 mark

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

SUPERCHARGE!

SCORE: /6

Convert the prices of Doctor Digit's clothes into pence.
One has been done for you.

shirt: £7.49 = **749p**

a) trousers: £8.95 = ____ p

b) cape: £19.50 = ____ p

c) socks: £2.00 = ____ p

Convert the prices of The Ratio Rescuer's accessories into pounds.
One has been done for you.

mask: 560p = **£5.60**

d) gloves: 999p = £____

e) boots: 2545p = £____

f) belt: 1500p = £____

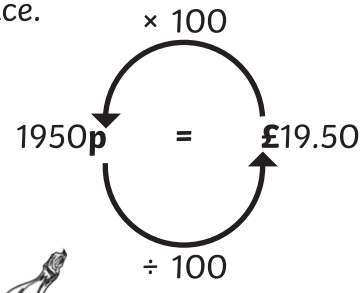
Answers: a) 895p b) 1950p c) 200p d) £9.99 e) £25.45 f) £15.00 or £15

BOOST YOUR SUPERPOWERS

Remember: £1 = 100p

We can convert between amounts written in pounds and amounts written in pence by multiplying or dividing by 100.
The decimal point separates pounds and pence.

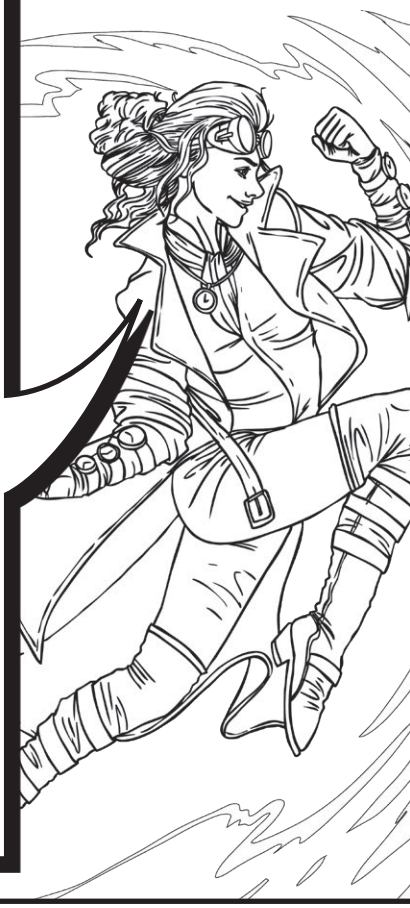
Remember, there are always two digits after the decimal point in amounts of money.



We can also use calculations to solve problems involving money, e.g.
Abi buys two bananas.
She pays with a £2 coin and gets £1.44 change.
How much does one banana cost?
Write your answer in pence.

£2.00 − £1.44 = £0.56 (two bananas)
£0.56 ÷ 2 = £0.28 (one banana)
= 28p

REVISION VIDEO SCAN ME



MATHS MISSION

1 Amrit and Felix share **all** of these coins so that they each have the same **amount** of money.

Felix chooses his coins first. Amrit takes the rest of the coins.
Which coins could Felix choose?

1 mark

2 Use the clues to match each of Measure Machine's accessories to each cost.

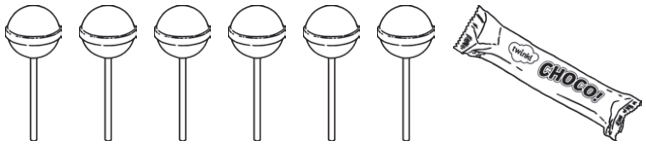
The goggles cost seven pence more than the scarf.
The watch is the most expensive item.
The scarf costs ten pence less than the watch.
The buckle costs twenty pence less than the goggles.

goggles	£4.95
watch	£4.82
scarf	£5.05
buckle	£5.02

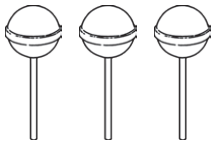
2 marks

3 Emily and Bartek are helping to buy supplies for the class stall at the school fair.

Emily buys 6 lollipops and a chocolate bar. She pays £4.19 altogether.



At the same shop, Bartek buys 3 lollipops and pays £1.65 altogether.



How much does a chocolate bar cost?

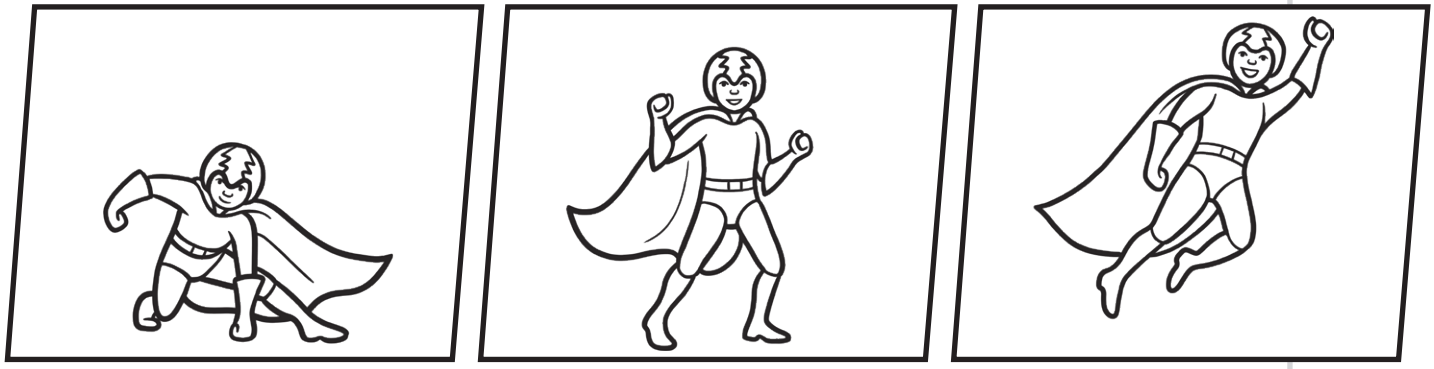
show your method

2 marks

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

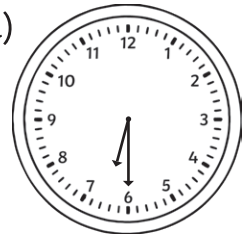
WORKING OUT

TELLING THE TIME AND UNITS OF TIME

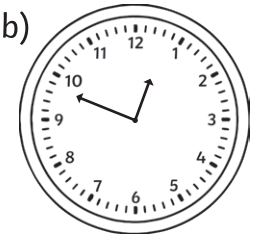
SUPERCHARGE!

SCORE: /4

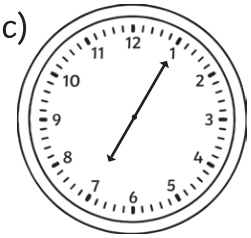
Match the analogue clock with the digital time.

a) 

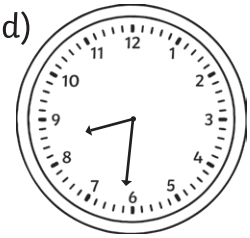
12:48

b) 

19:05

c) 

20:31

d) 

18:30

Answers: a) 18:30 b) 12:48 c) 19:05 d) 20:31

BOOST YOUR SUPERPOWERS

Months of the year:

Months with 31 days:
January, March, May, July, August, October and December.

Months with 30 days:
April, June, September and November.

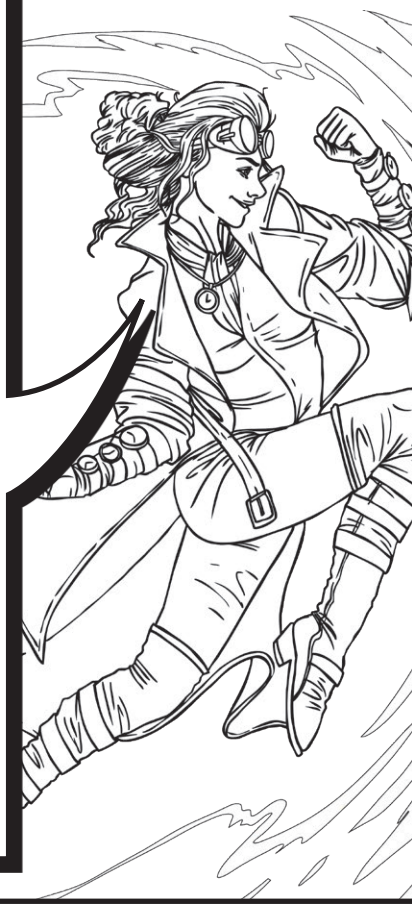
February has 28 days except during a leap year when it has 29 days.

Units of time:

1 minute = 60 seconds
1 hour = 60 minutes
1 day = 24 hours
1 week = 7 days
1 year = 365 days
1 year = 12 months

The Earth takes **365.25 days** to orbit the Sun so every fourth year has 366 days. This is known as a **leap year**.

REVISION VIDEO SCAN ME



MATHS MISSION

1 Write the missing numbers.

96 hours = ☐ days

56 days = ☐ weeks

144 months = ☐ years

2 marks

2 How many days are there in April, June and November altogether?

☐ **days**

1 mark

3 In April, Priya drinks 6, 7 or 8 glasses of water a day.

In the first 12 days, Priya drinks 83 glasses of water **altogether**.

There are 30 days in April.

What is the **greatest** number of glasses Priya can drink in April?

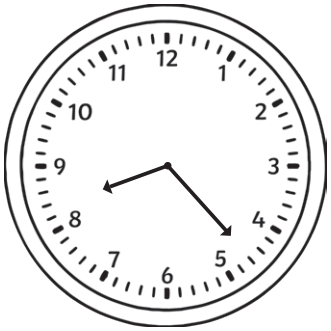
show your method

☐ **glasses**

2 marks

4 A clock shows this time twice a day.

Tick (✓) the two digital clocks that show this time.



8:23	4:41	20:20	20:23	18:41

1 mark

5 The length of a day on Earth is 24 hours.

The length of a day on Venus is 243 times the length of a day on Earth.

How many hours **longer** is a day on Venus than Earth?

show your method

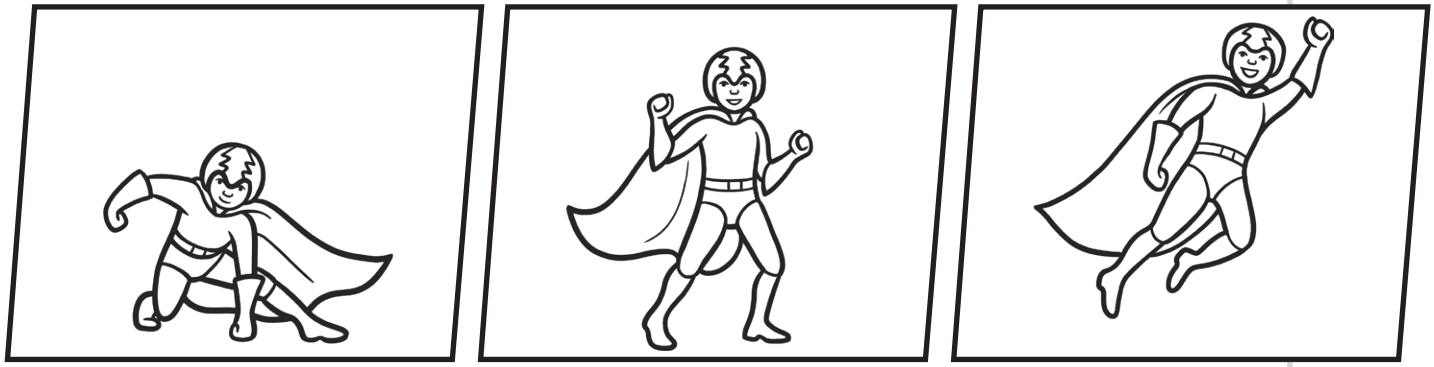
hours

2 marks

/8

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

SOLVING PROBLEMS INVOLVING TIME AND DURATION

SUPERCHARGE!

SCORE: /8

Sort the times into the table.

a) a.m.	b) p.m.

05:28 12:41

23:19 00:14

10:55 17:19

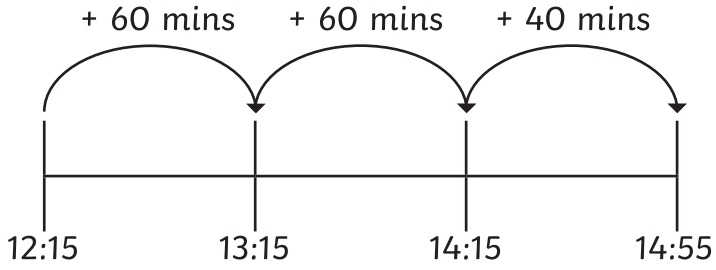
07:19 15:28

Answers: Award one mark for each correctly sorted time given in any order.
a) 05:28, 07:19, 00:14 and 10:55 b) 12:41, 23:19, 17:19 and 15:28

BOOST YOUR SUPERPOWERS

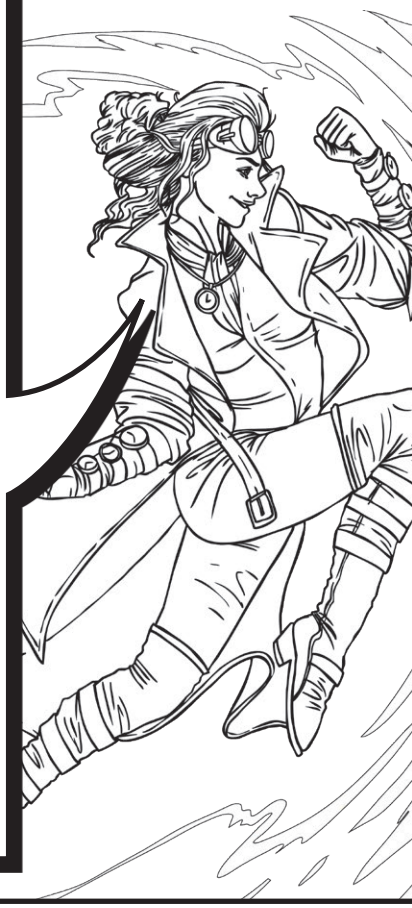
To find the duration of events, we need a start time and an end time.

Example:
A film starts at 12:15 and ends at 14:55
What is the duration of the film in minutes?



The total duration is 60 + 60 + 40 = **160 minutes.**

REVISION VIDEO SCAN ME



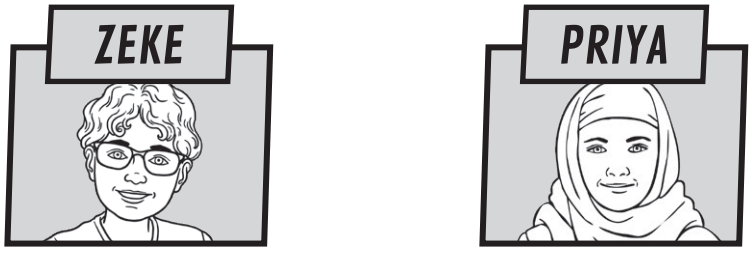
MATHS MISSION

1 What is 437 minutes in hours and minutes?

hours	minutes

1 mark

2 a) Priya finished 8 laps of the pool in 17 minutes and 28 seconds.



Zeke finished the 8 laps 1 minute and 17 seconds after Priya.

How long did Zeke take?

min	sec

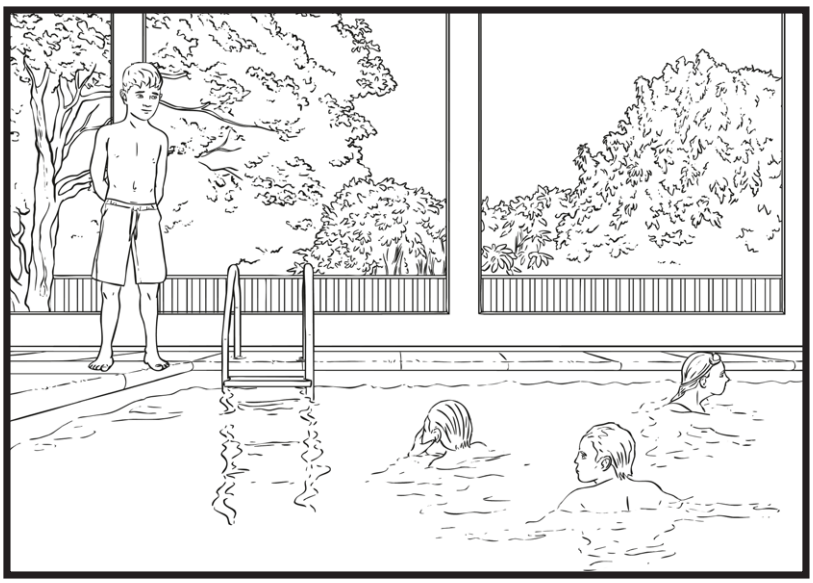
1 mark

b) Elena finished the 8 laps 1 minute and 35 seconds before Priya.

How long did Elena take?

min	sec

1 mark



3 Here is a timetable of films shown at a cinema.

a) Complete the table with the duration of all of the films.

Film	Start	End	Duration
The True Way Home	11:35	13:32	**mins**
Spy Sisters	12:50	14:31	**mins**
Don't Lose the Dog	13:15	14:51	**mins**
Measure Machine: The Movie	14:55	17:03	**mins**

2 marks

b) Match the film title to the order of duration from shortest to longest.

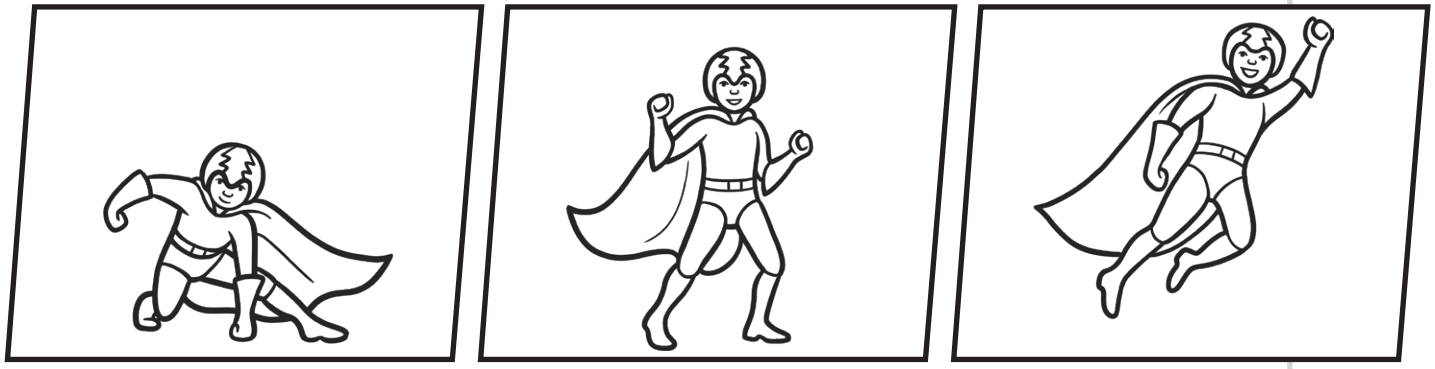
The True Way Home	1st	shortest
Spy Sisters	2nd	
Don't Lose the Dog	3rd	
Measure Machine: The Movie	4th	longest

2 marks

/7

TOTAL

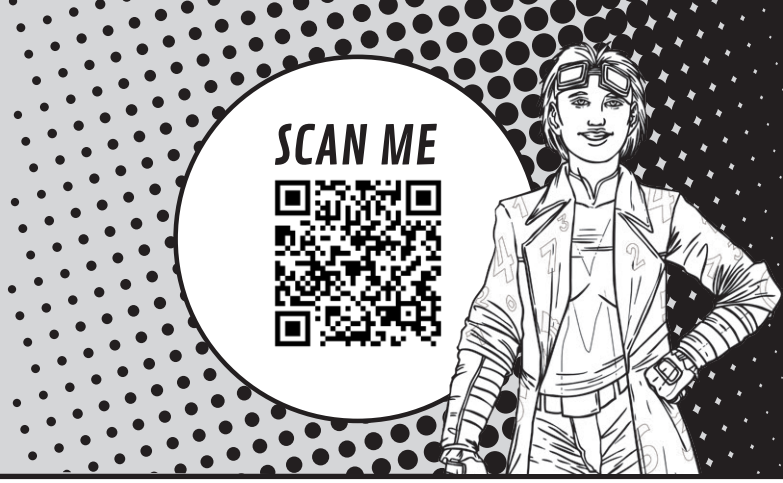
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

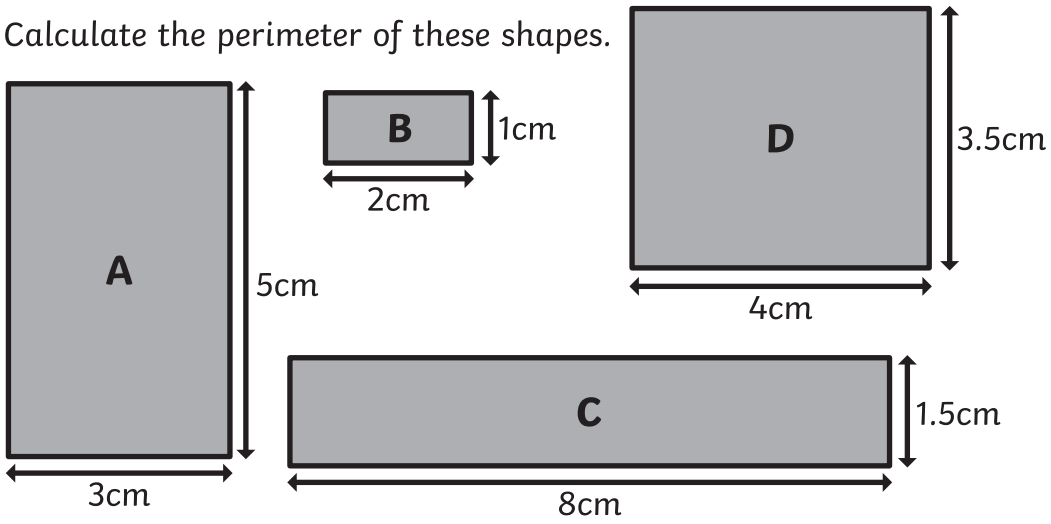
WORKING OUT

PERIMETER

SUPERCHARGE!

Calculate the perimeter of these shapes.

Not to scale



SCORE: /4

A = _____cm

B = _____cm

C = _____cm

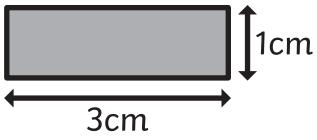
D = _____cm

Answers: a) 16cm b) 6cm c) 19cm d) 15cm

BOOST YOUR SUPERPOWERS

The perimeter is the total distance around the edge of a 2D shape.

The perimeter of a rectangle can be calculated with the formula:



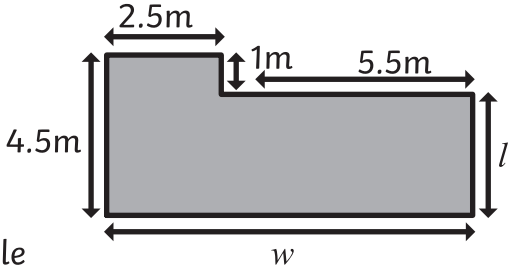
perimeter = (2 × length) + (2 × width)

To find the perimeter of a **rectilinear shape** or a **compound shape, add all up the lengths** of the outside edges of the shape.

You may have to use reasoning skills to find the **missing sides**.

l = 4.5m − 1m = <u>3.5m</u>

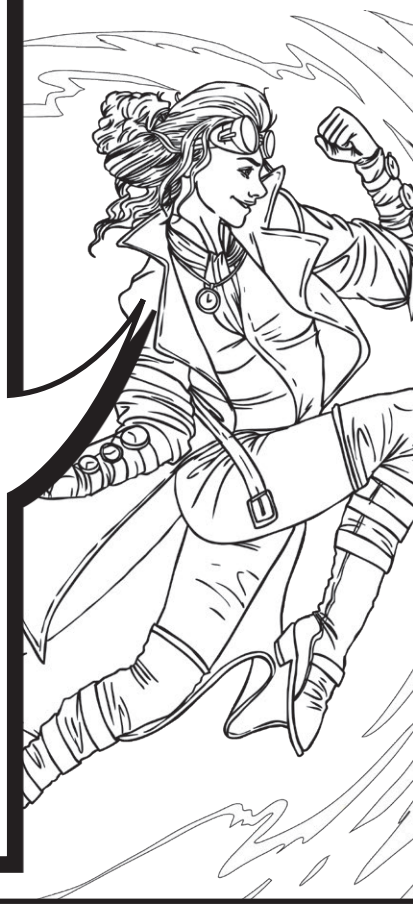
w = 2.5m + 5.5m = <u>8m</u>



REVISION VIDEO SCAN ME

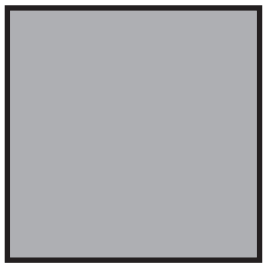
Not drawn to scale

perimeter = 4.5m + 2.5m + 1m + 5.5m + <u>3.5m</u> + <u>8m</u> = **25m**

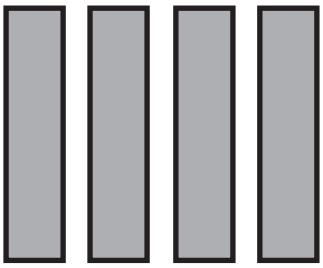


MATHS MISSION

1 The perimeter of a square is **64 centimetres.**



The square is cut into quarters to create 4 identical rectangles.



What is the perimeter of one of the rectangles?

show your method

cm

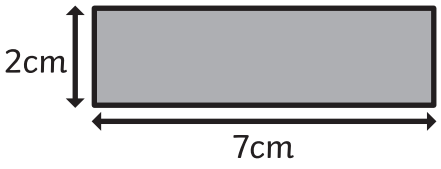
2 marks

2 The following shapes all have a perimeter of 24cm.
Here is a table to show the length of each side.
Complete the table. One shape has been done for you.

	side lengths			
Rhombus	6cm	6cm	6cm	6cm
Rectangle	5cm	____cm	____cm	____cm
Rectangle	8cm	____cm	____cm	____cm
Equilateral triangle	8cm		____cm	____cm

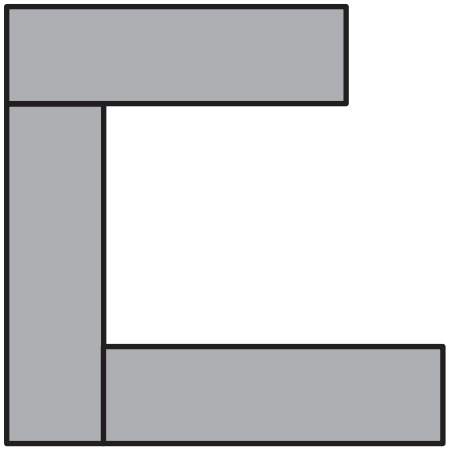
2 marks

3 Joseph has some identical rectangles.



Not drawn to scale

He makes this shape using three of the rectangles.



Calculate the perimeter of Joseph's new shape.

show your method

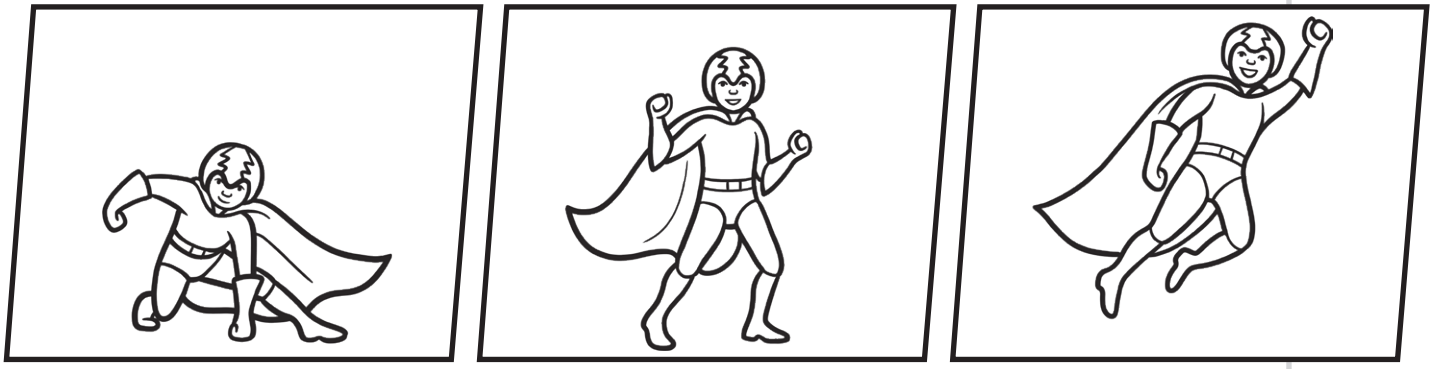
cm

2 marks

/6

TOTAL

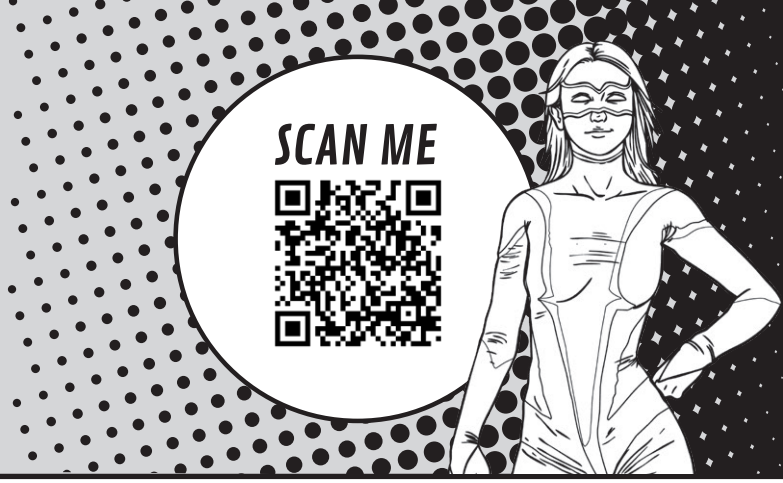
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



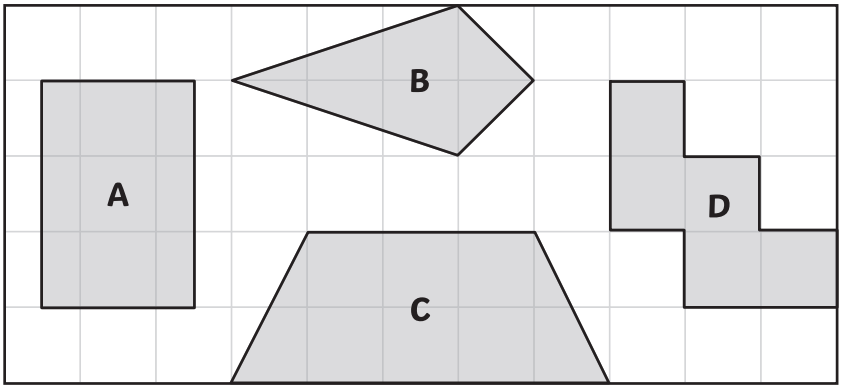
NOTES

WORKING OUT

SUPERCHARGE!

SCORE: /4

Calculate the area of each these shapes, shown on a 1cm square grid, by counting the squares.



A = _____cm²

B = _____cm²

C = _____cm²

D = _____cm²

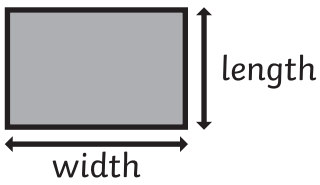
Answers: a) 6cm² b) 4cm² c) 8cm² d) 5cm²

BOOST YOUR SUPERPOWERS

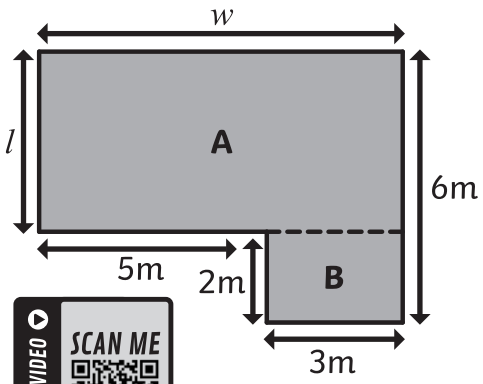
Area is measured in 'square' units. It means the surface area of a 2D shape.

The area of a rectangle can be calculated with the formula:

area = length × width



To find the area of a **rectilinear shape** or a **compound shape**, it is easier to split it up into different sized rectangles.



You may have to use reasoning to find the **missing lengths.**

l = 6m − 2m = 4m

w = 5m + 3m = 8m

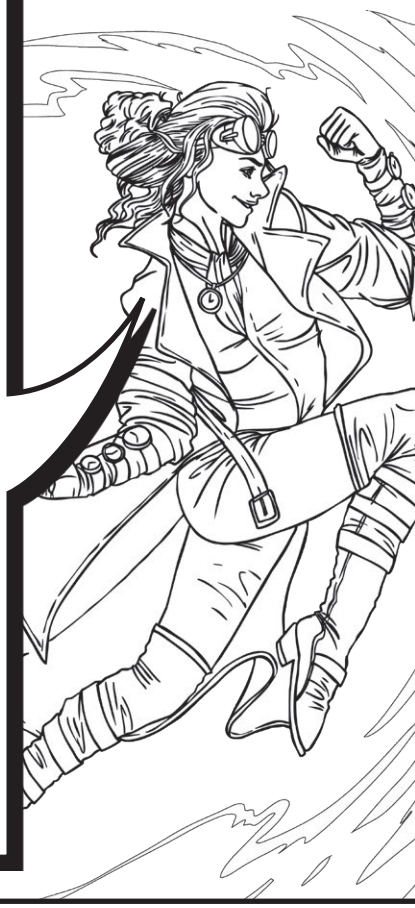
area A = 8m × 4m = 32m²

area B = 2m × 3m = 6m²

total area = 32m² + 6m² = 38m²

REVISION VIDEO SCAN ME

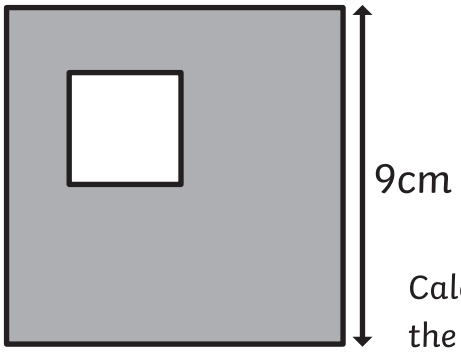
Not drawn to scale



MATHS MISSION

1 The diagram shows a shaded shape with a side length of 9cm.
The side length of the white square is one-third of the side length of the shaded shape.

Not drawn to scale



Calculate the area of the **shaded shape.**

show your method

cm²

2 marks

2 Amrit says,

If two rectangles have different perimeters, they must have different areas.

Is Amrit correct? Circle Yes or No. Yes / No

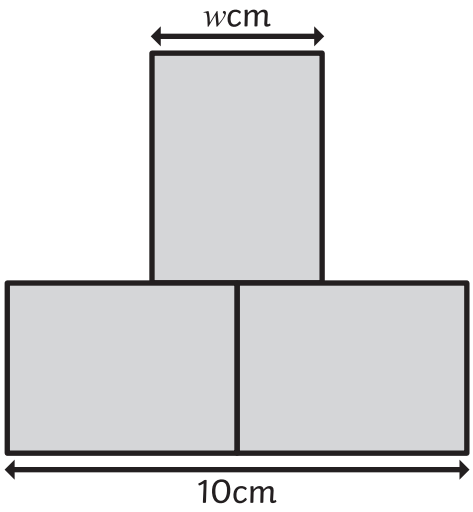
Explain your answer.

1 mark

3 Here is a T-shape made from three identical rectangles.

The area of the T-shape is **60cm²**.

Not drawn to scale



Work out the value of w.

show your method

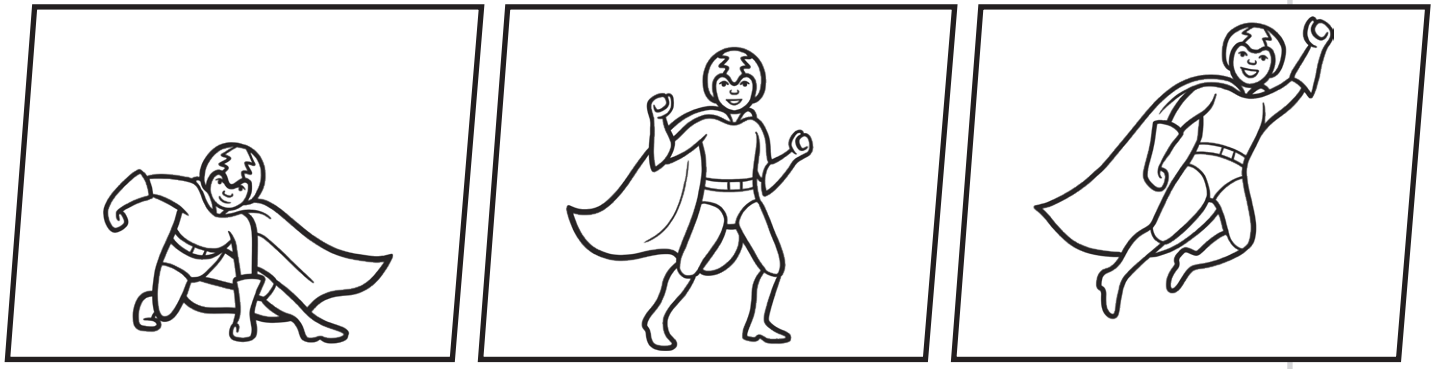
cm

2 marks

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

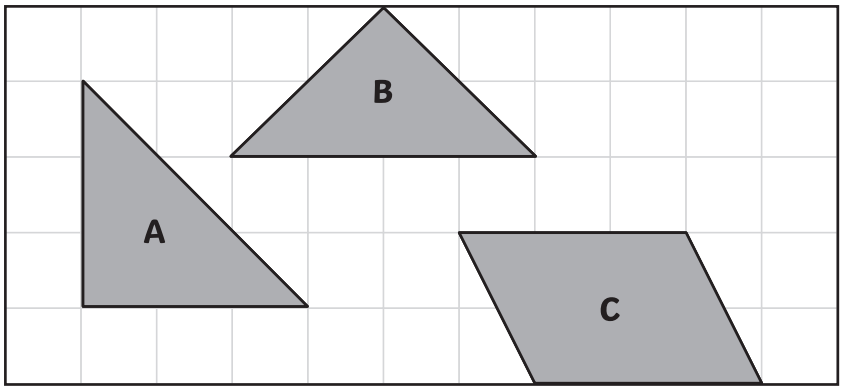
WORKING OUT

AREAS OF TRIANGLES AND PARALLELOGRAMS

SUPERCHARGE!

SCORE: /3

Calculate the area of each of these shapes, shown on a 1cm square grid, by counting the squares.



A = _____cm²

B = _____cm²

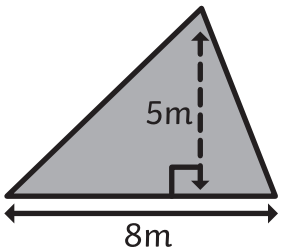
C = _____cm²

Answers: a) 4.5cm² b) 4cm² c) 6cm²

BOOST YOUR SUPERPOWERS

The area of a triangle can be calculated with the formula:

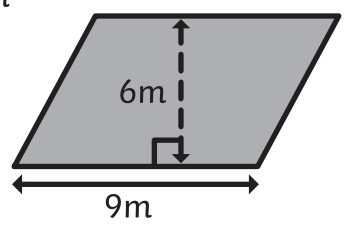
area = (base × height) ÷ 2



Not drawn to scale

area = (8m × 5m) ÷ 2
= **20m²**

Not drawn to scale

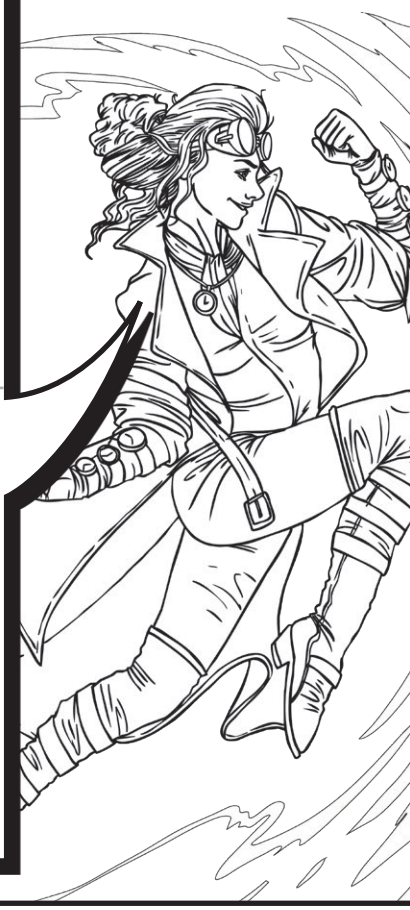


The area of a parallelogram can be calculated with the formula:

area = base × height

area = 9m × 6m
= **54m²**

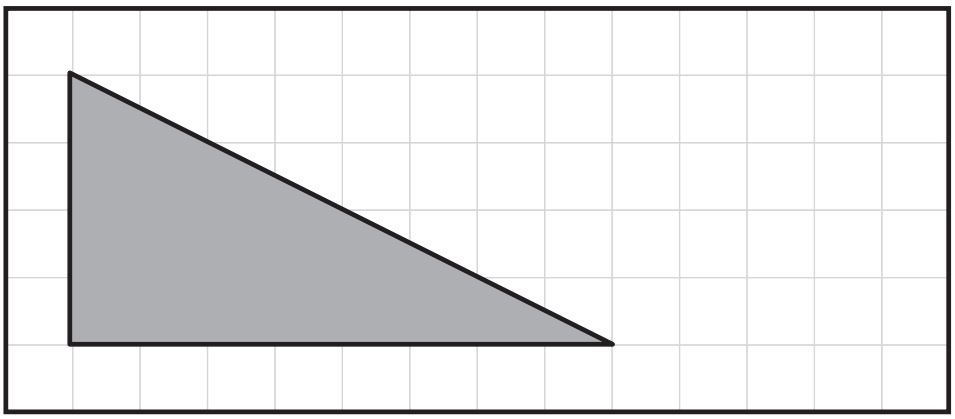
REVISION VIDEO SCAN ME



MATHS MISSION

1 Draw a rectangle on the grid that has half of the area of the shaded triangle. Use a ruler.

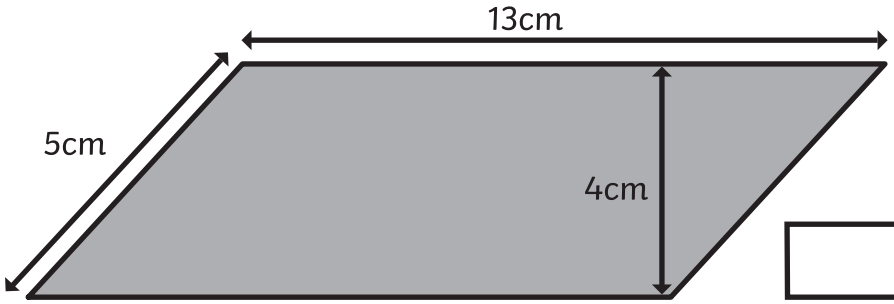
Not drawn to scale



1 mark

2 Calculate the area of this parallelogram.

Not drawn to scale

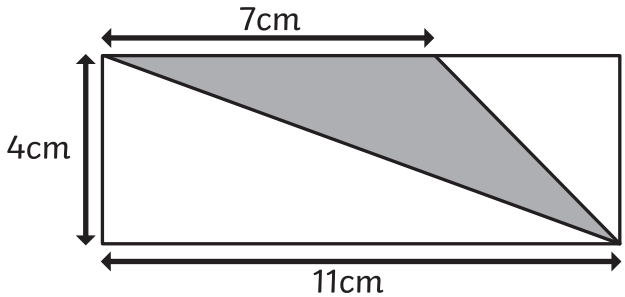


cm²

1 mark

3 The diagram shows a shaded triangle inside a rectangle.

Not drawn to scale



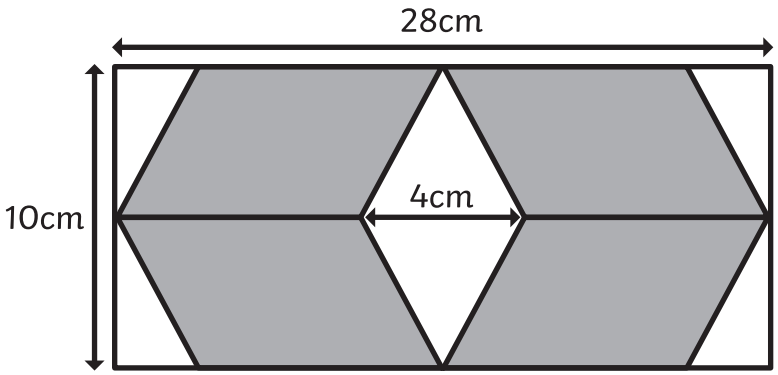
Calculate the area of the **shaded triangle.**

show your method

cm²

2 marks

4 The diagram shows **4 identical parallelograms** in a rectangle.



Not drawn to scale

The rectangle measures **28cm** by **10cm.**

The width of the white rhombus is **4cm.**

Calculate the **area** of **one shaded parallelogram.**

show your method

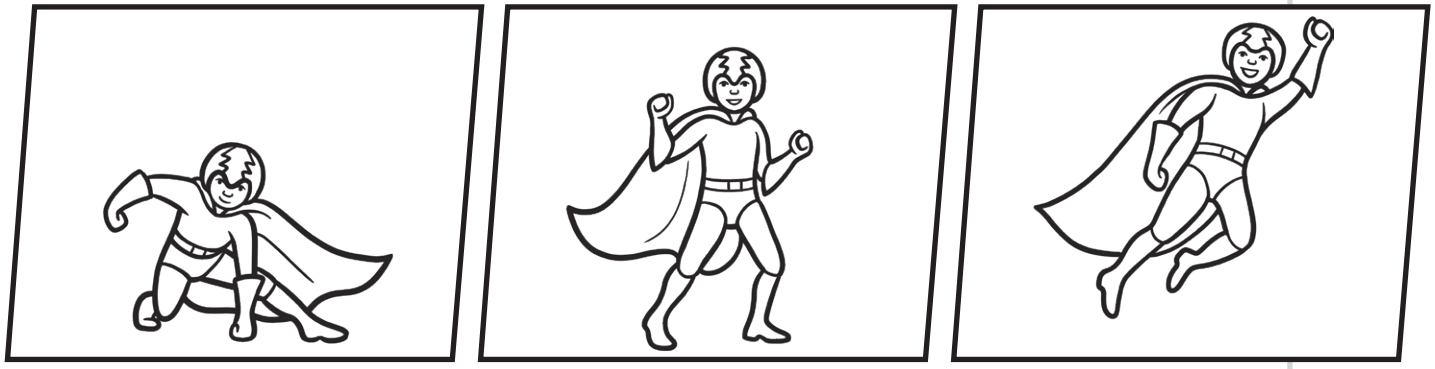
cm²

2 marks

/6

TOTAL

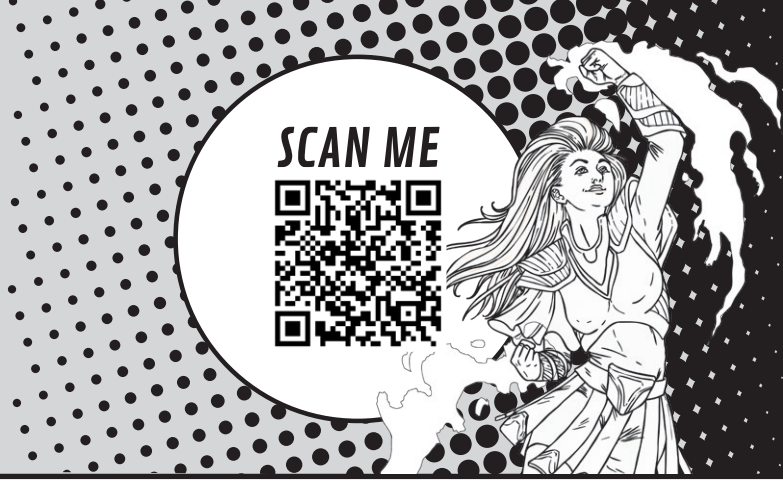
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

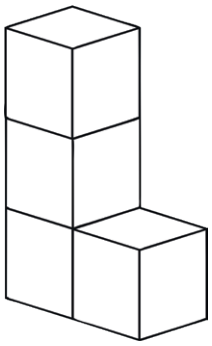
VOLUME

SUPERCHARGE!

SCORE: /3

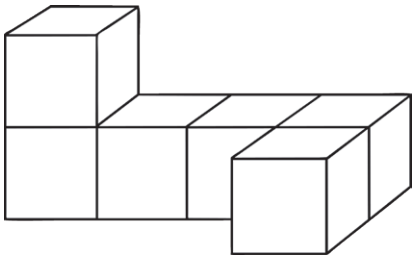
Find the volume of these shapes by counting the cubes.

a)



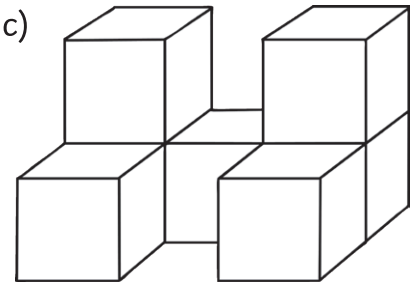
_____ cubes

b)



_____ cubes

c)



_____ cubes

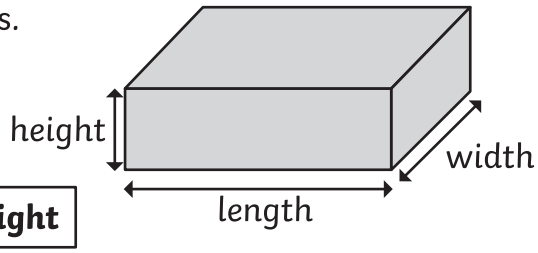
Answers: a) 4 cubes b) 6 cubes c) 7 cubes

BOOST YOUR SUPERPOWERS

Volume is measured in 'cubed' units. It is the measure of how much space a 3D object occupies.

The volume of a cuboid can be found using the formula:

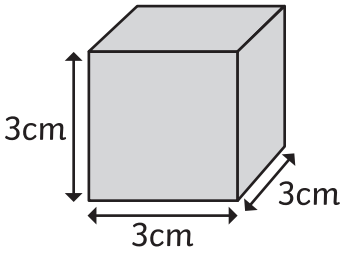
volume = length × width × height



Not drawn to scale

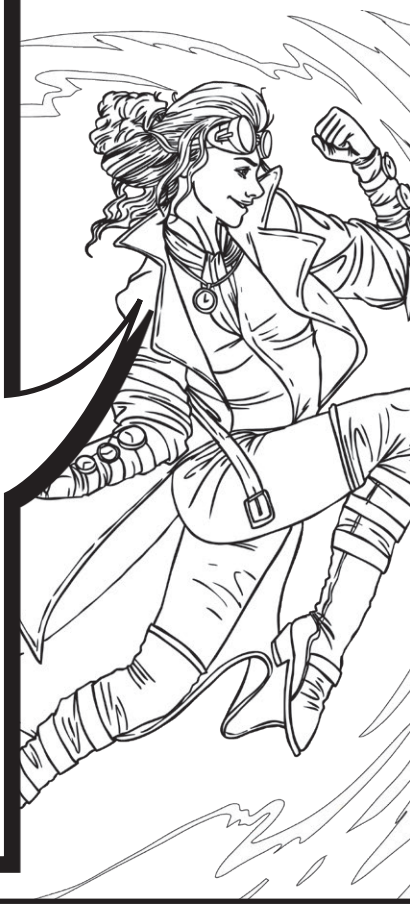
The volume of a cube can be found using the formula:

volume = length of side^3



volume = 3cm × 3cm × 3cm = **27cm^3**

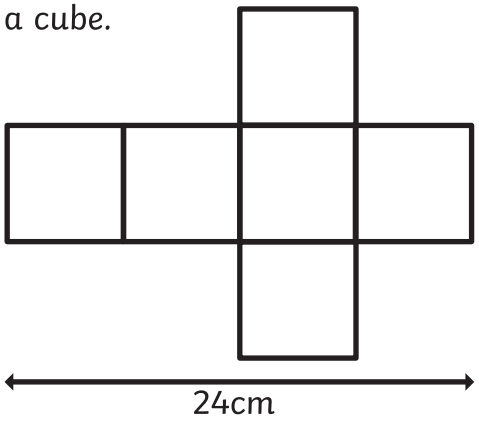
REVISION VIDEO SCAN ME



MATHS MISSION

1 This is the net of a cube.

Not drawn to scale

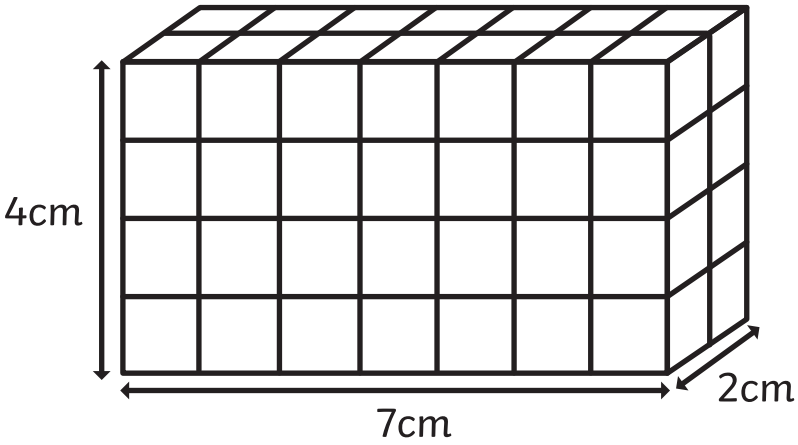


What is the **volume** of the cube?

cm³

1 mark

2 Joseph made this cuboid using centimetre cubes.



Not drawn to scale

Hari makes a cuboid that is 3cm longer, 3cm taller and 3cm wider than Joseph's cuboid.

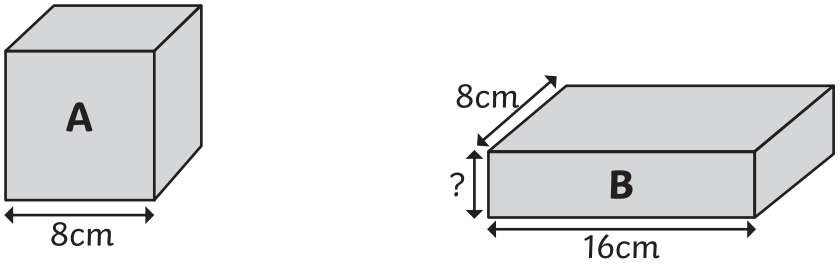
What is the **difference** between the **volumes** of Hari's and Joseph's cuboids?

show your method

cm³

2 marks

3 Cube A and cuboid B have the same volume.



Calculate the missing length on cuboid B.

show your method

cm

2 marks

4 Jia has 80 centimetre cubes.

She wants to make a larger cube with edges that are 5cm long.

How many more centimetre cubes does she need?

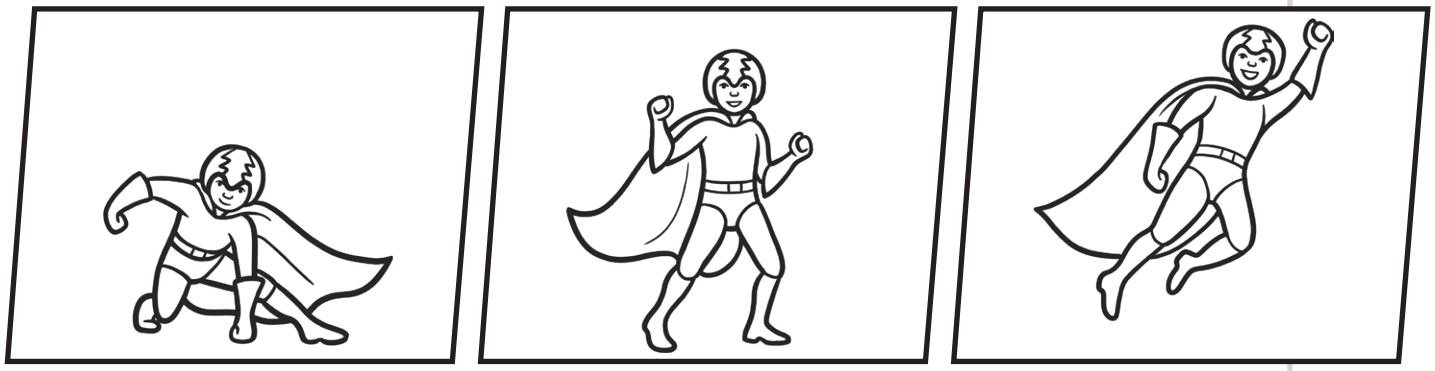
more

1 mark

/6

TOTAL

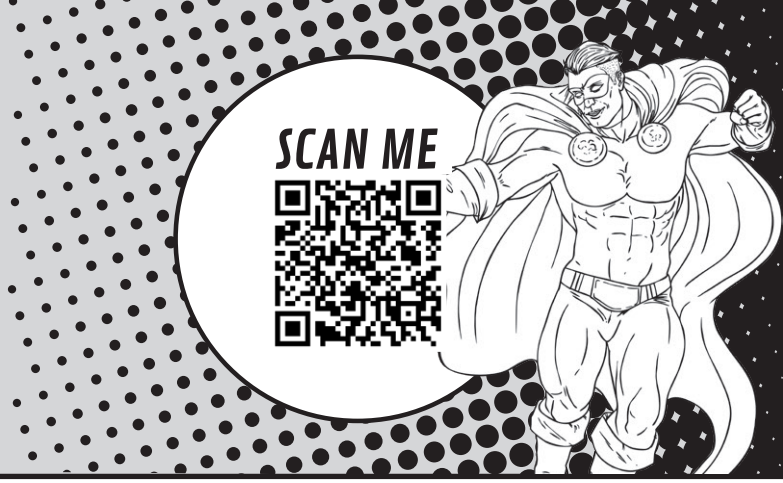
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

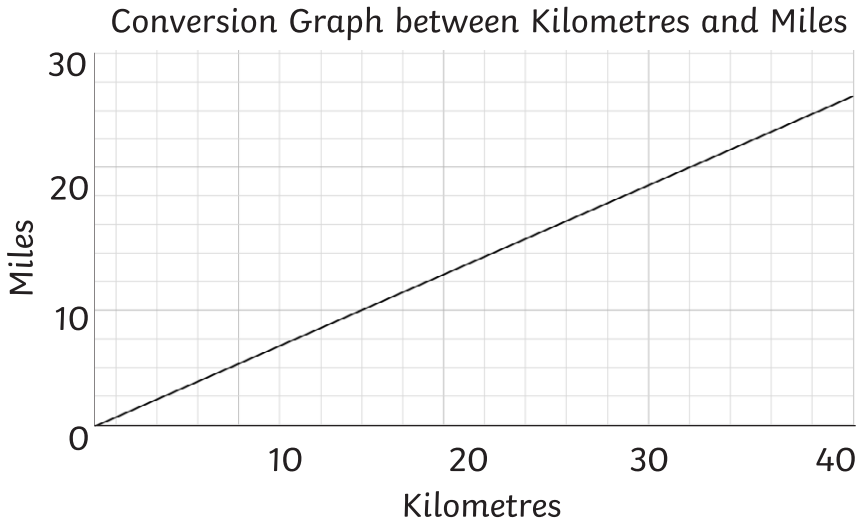


NOTES

WORKING OUT

MEASUREMENT MIXED PRACTICE

1 Use the graph to work out the following conversions.



How many kilometres are equal to 20 miles? **km**

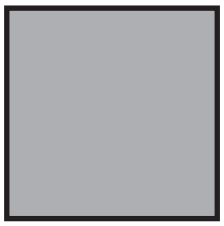
1 mark

How many miles are equal to 30km? **miles**

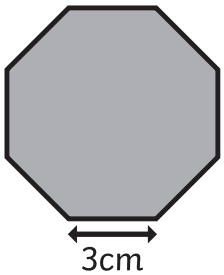
1 mark

2 These two shapes have the **same perimeter**.
What is the **area** of the **square**?

square



regular octagon



show your method

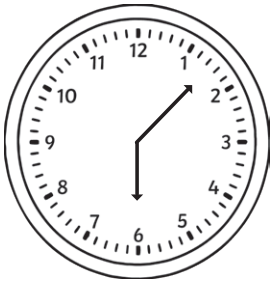
cm²

2 marks

3 Jia's clock shows 7 minutes past 6.

The clock is 11 minutes **fast**.

What is the correct time?

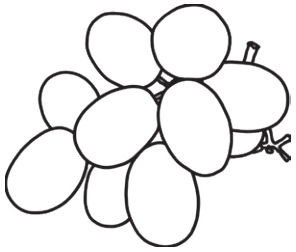


1 mark

4 Elias buys $1\frac{1}{2}$ kg of raspberries and $\frac{1}{2}$ kg of grapes.

raspberries

£4.50 per kg



grapes

£3.40 per kg

How much change does he get from £10?

show your method

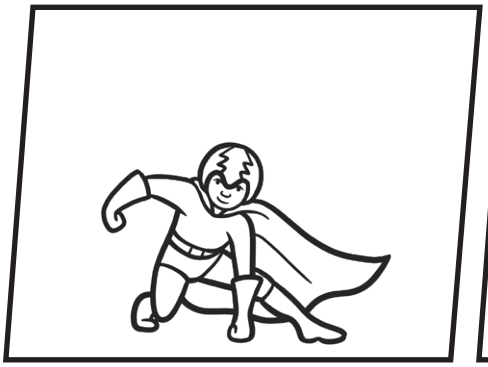
£

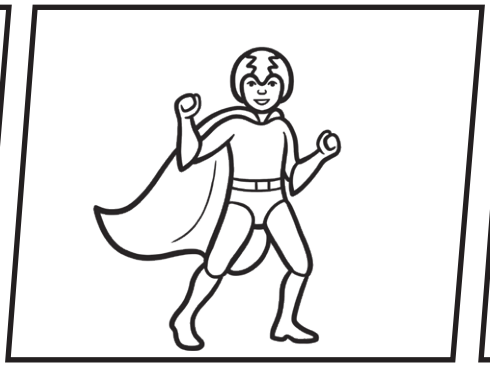
2 marks

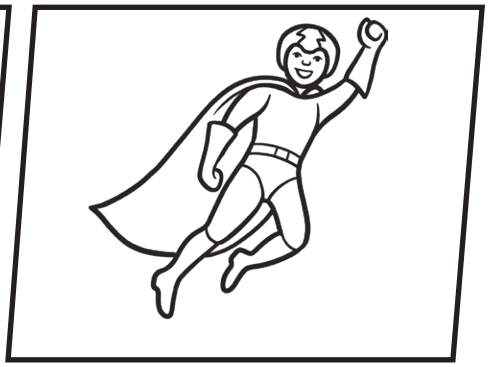
/7

TOTAL

MISSION COMPLETE!







How confident do you feel?

PROGRESS TRACKER

Write your scores from each step in this unit to track your progress.

Estimating and Reading Scales	**/ 5**
Converting between Metric Units	**/ 7**
Converting between Metric and Imperial Units	**/ 5**
Money	**/ 5**
Telling the Time and Units of Time	**/ 8**
Solving Problems Involving Time and Duration	**/ 7**
Perimeter	**/ 6**
Area	**/ 5**
Areas of Triangles and Parallelograms	**/ 6**
Volume	**/ 6**
Measurement Mixed Practice	**/ 7**
TOTAL	**/ 67**

SELF-REFLECTION

What went well:

_____

_____

My target to improve:

_____

_____

RECHARGE

It's time to recharge ready for the next unit with this mindfulness colouring page.

ANGLE FACTS

SUPERCHARGE!

SCORE: /5

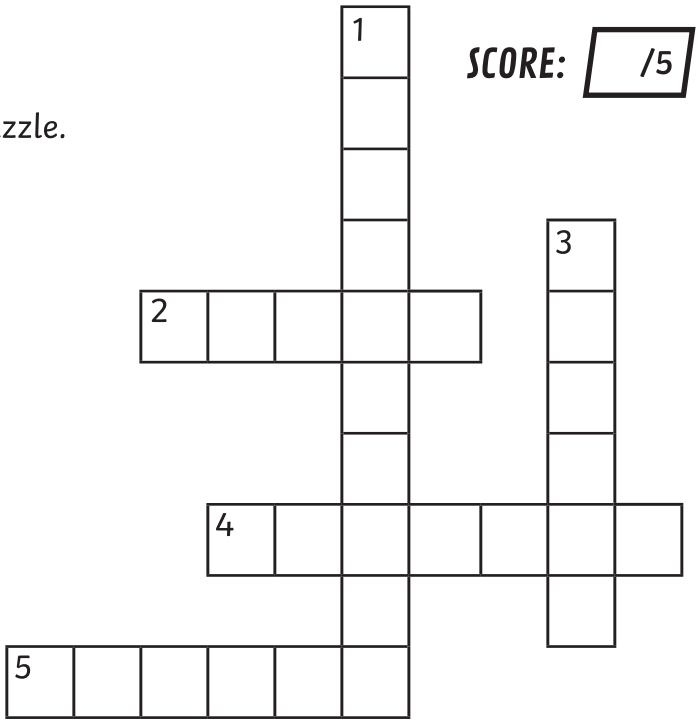
Use the clues to complete the crossword puzzle.

Across

2) An angle that is less than 90°
4) The unit of measure for angles.
5) An angle that is greater than 90° but less than 180°

Down

1) An angle that is exactly 90°
3) An angle that is greater than 180°

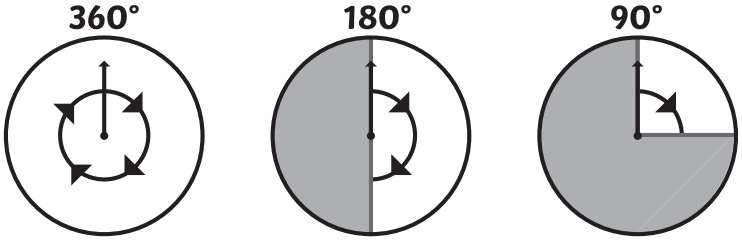


Answers: 1) right angle 2) acute 3) reflex 4) degrees 5) obtuse

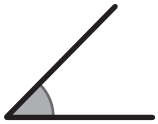
BOOST YOUR SUPERPOWERS

Angles as Description of a Turn

One **whole turn** is a complete rotation of 360°. Therefore, **a half turn** is 180° and a **quarter turn** is 90° (a **right angle**).

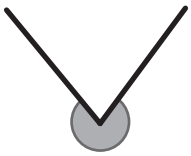


Recognising Types of Angles



Acute
Less than 90°

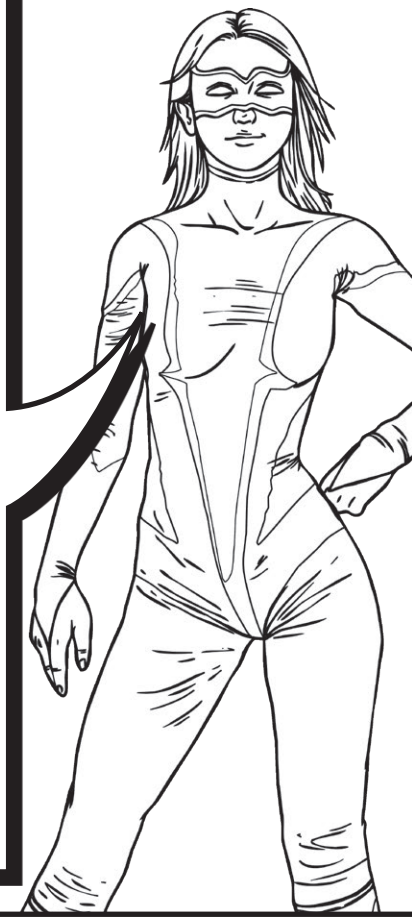
Obtuse
Greater than 90° but less than 180°



Reflex
Greater than 180°

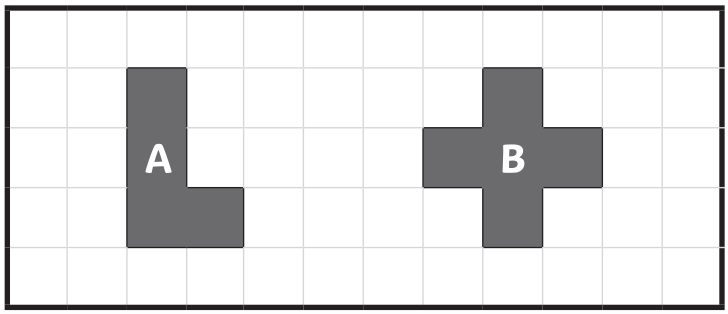
Right Angle
Exactly 90°

REVISION VIDEO SCAN ME



MATHS MISSION

1 Here are two shapes on a square grid.
Write how many **interior right angles** each shape has.



A ☐

B ☐

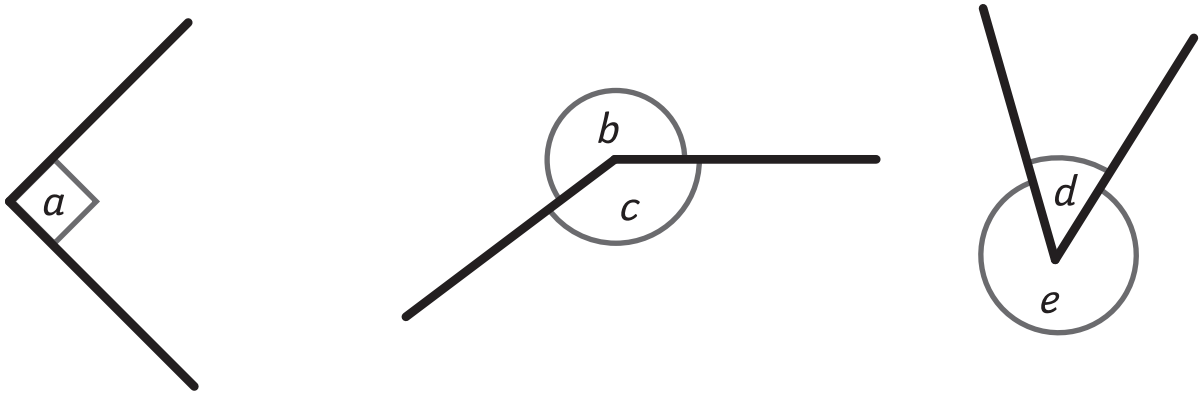
1 mark

2 A dancer completes a one-and-a-quarter turn when dancing.
How many **degrees** does the dancer turn through?

☐ °

1 mark

3 Look at angles ***a***, ***b***, ***c***, ***d*** and ***e***.



Write the angles in order of size, starting from the smallest.

☐ ☐ ☐ ☐ ☐

smallest greatest

1 mark

4 Joseph says,

If you halve the size of an obtuse angle, you will always get an acute angle.

Do you agree? Circle **Agree** or **Disagree**. Agree / Disagree

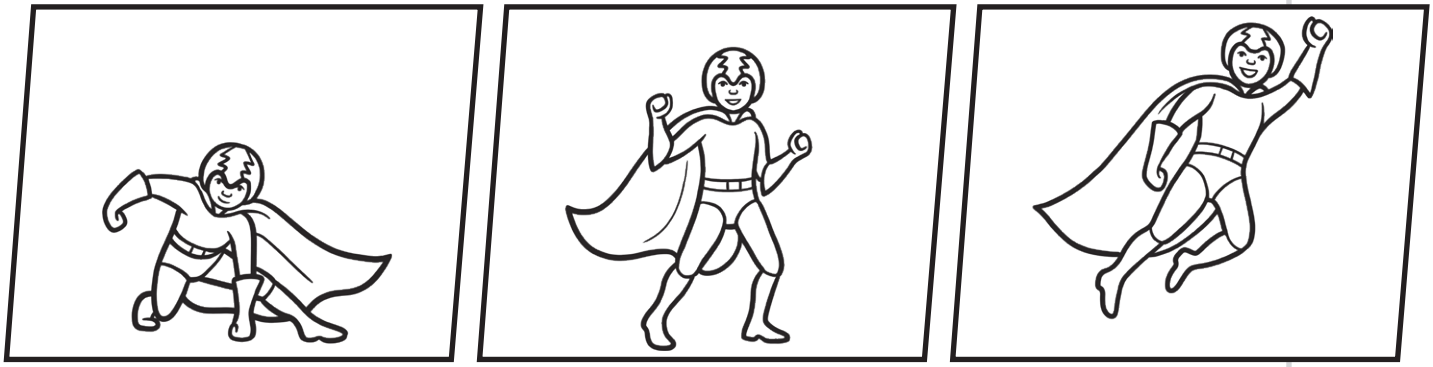
Explain your answer.

1 mark

/4

TOTAL

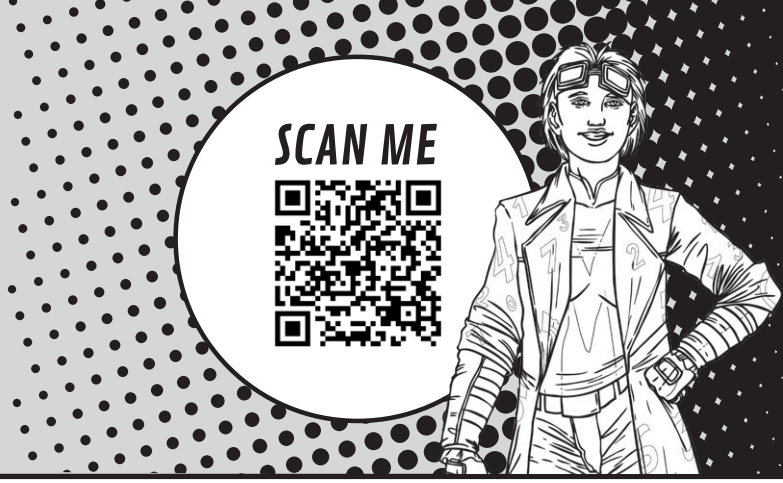
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

FINDING MISSING ANGLES

SUPERCHARGE!

SCORE: /2

a) I have three sides and three vertices.
I have two acute angles.
I have one 90° angle.
Two of my sides are perpendicular.
If my two perpendicular sides are equal in length, I have one line of symmetry.
I have no parallel sides.
What am I?

_____

b) I have four sides and four vertices.
I have two acute angles.
I have two obtuse angles.
I have one pair of parallel sides.
I have no perpendicular sides.
If two of my opposite sides are equal in length, I have one line of symmetry.
What am I?

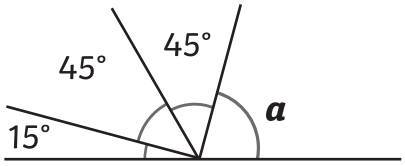
_____

Answers: a) right-angled triangle b) trapezium

BOOST YOUR SUPERPOWERS

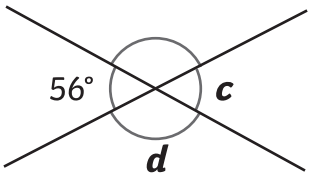
When finding missing angles, remember these key facts:

Straight Line (180°)



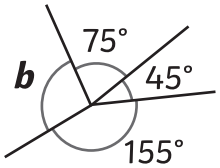
15° + 45° + 45° = 105°
180° − 105° = 75°
a = 75°

Opposite Angles on Intersecting Lines



c = 56° (opposite angles)
56° + 56° = 112°
360° − 112° = 248°
248 ÷ 2 = 124°
d = 124°

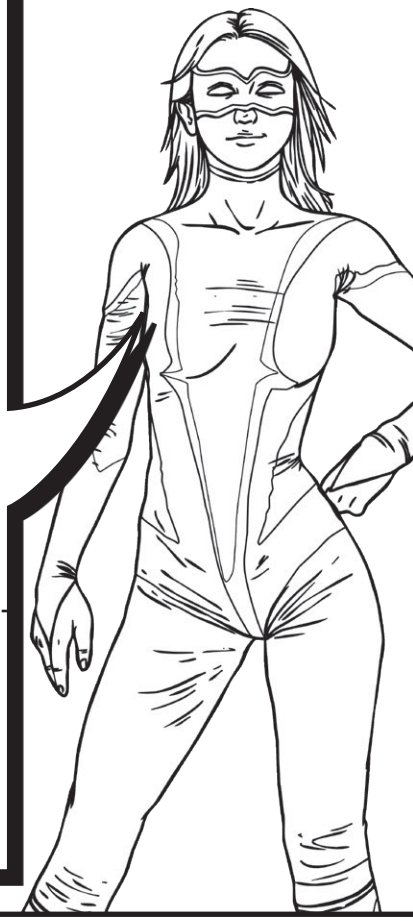
Around a Point (360°)



75° + 45° + 155° = 275°
360° − 275° = 85°
b = 85°

For further help, check out the missing angles help page at the back of the book.

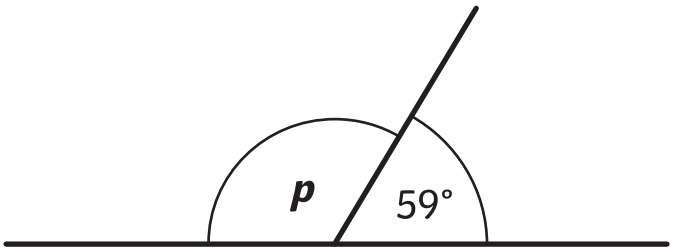
REVISION VIDEO SCAN ME



MATHS MISSION

1 **Calculate** the size of angle ***p*** in the diagram.

Not drawn to scale

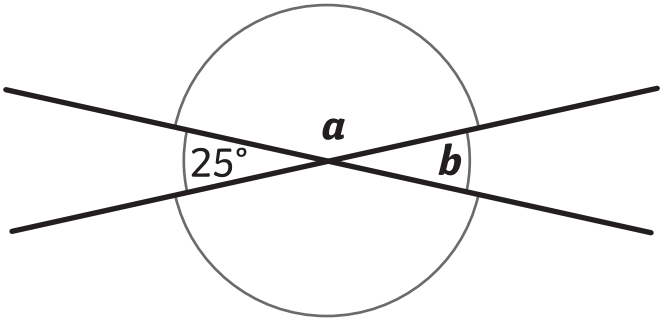


p = ____ °

1 mark

2 **Calculate** the size of angles ***a*** and ***b*** in the diagram.

Not drawn to scale



a = ____ °

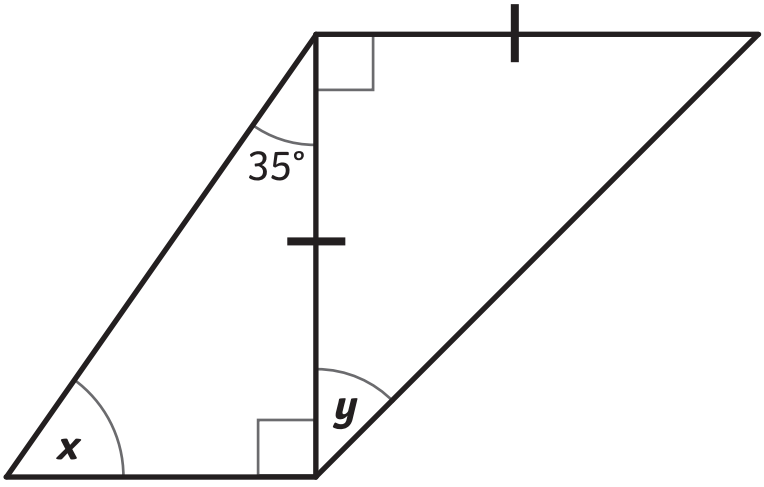
1 mark

b = ____ °

1 mark

3 **Calculate** the size of angles ***x*** and ***y*** in the diagram.
The **marked sides** are **equal** in length.

Not drawn to scale



x = ____ °

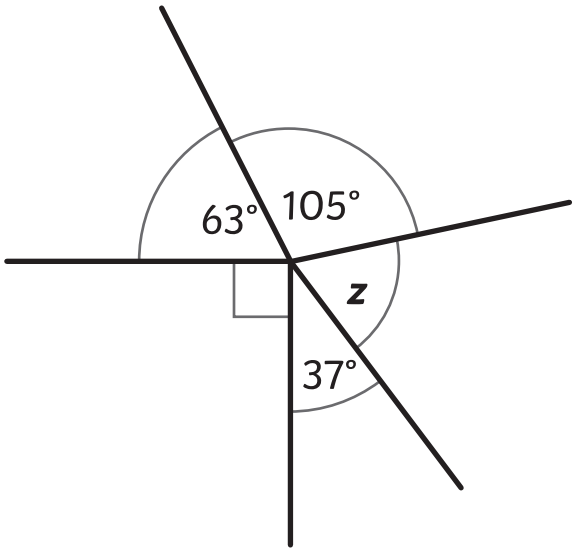
1 mark

y = ____ °

1 mark

4 **Calculate** the size of angle ***z*** in the diagram.

Not drawn to scale



show your method

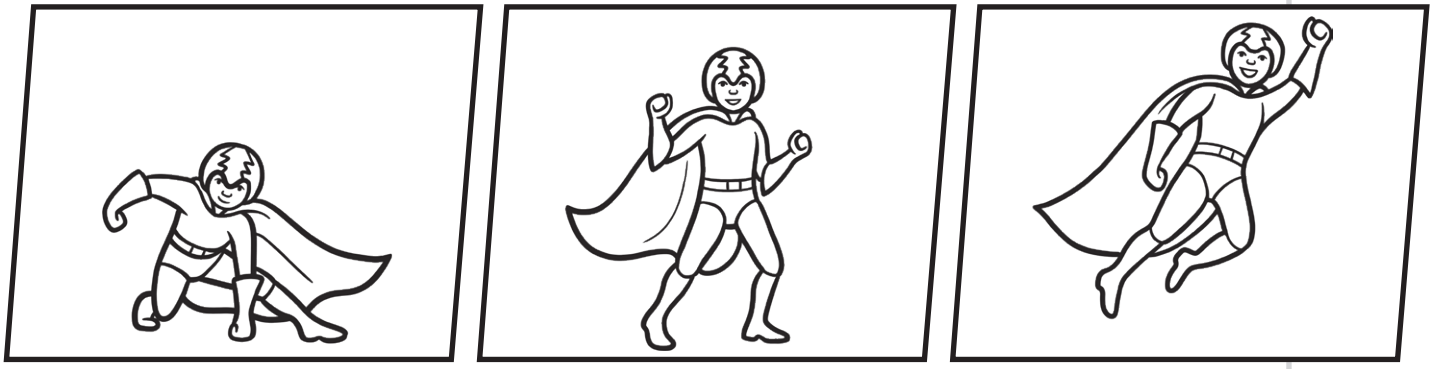
°

2 marks

/7

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

MEASURING ANGLES

SUPERCHARGE!

SCORE: /5

Answer the quiz questions.

a) If an angle measures 345°, what type of angle is it?

b) If two angles in a triangle are both 40°, what is the size of the third angle?

c) What is the name of the piece of equipment used to measure angles?

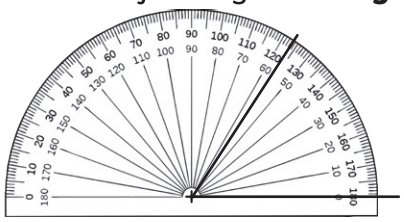
d) If an angle measures 89°, what type of angle is it?

e) How many obtuse angles are there in a parallelogram?

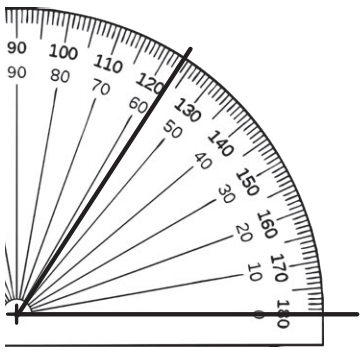
Answers: a) reflex b) 100° c) protractor d) acute e) 2

BOOST YOUR SUPERPOWERS

We use a **protractor** to measure angles accurately. The unit of measure for angles is **degrees**.



1) Place the **cross** or circle, on the protractor, at the point (**vertex**) of the angle.

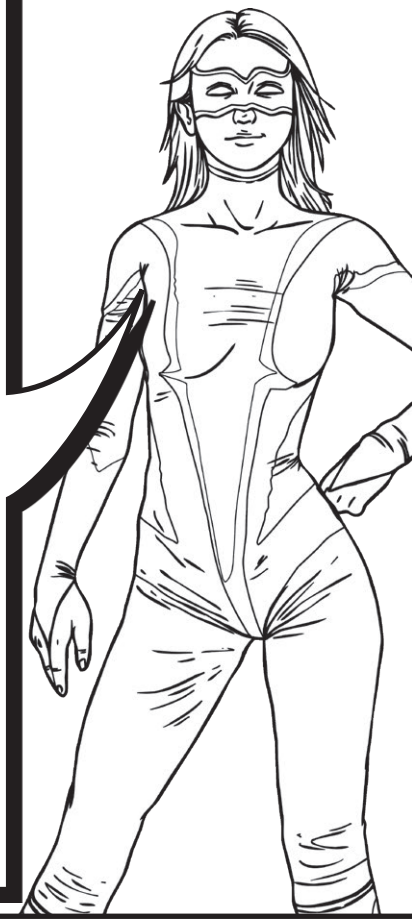


2) **Line up** one of the angle lines with **0** on either the inner or outer scale on the protractor.

3) **Count** the marked intervals carefully. Remember to **start from 0**, not 180. In this example, we must count **anti-clockwise** up to the second angle line. This lines up with the mark that is 7 after 50 (50 + 7) or 3 before 60 (60 − 3) so the angle measures **57°**.

Top Tip: **Estimate** the type of angle before measuring. We can see that this is an **acute** angle so 57° is reasonable.

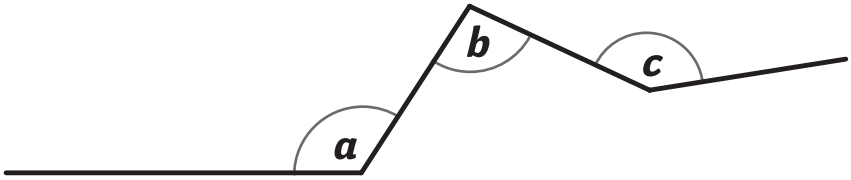
REVISION VIDEO SCAN ME



MATHS MISSION

1 This line shows the path taken by The Shape Saviour on her journey back to Hero Hideaway.

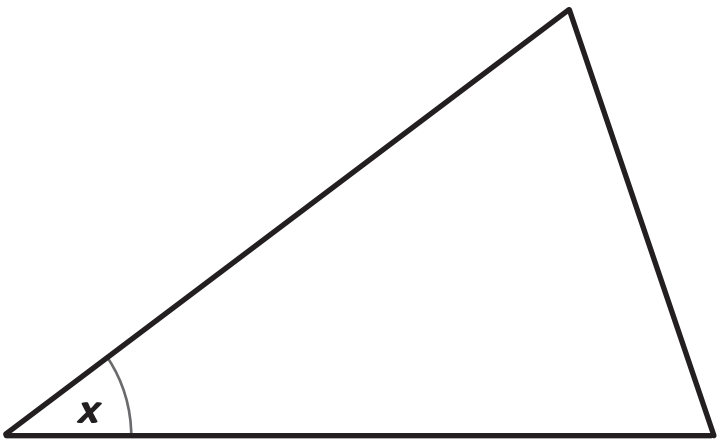
Measure each angle accurately using a **protractor** (angle measurer).



a = ____ ° ***b*** = ____ ° ***c*** = ____ °

2 marks

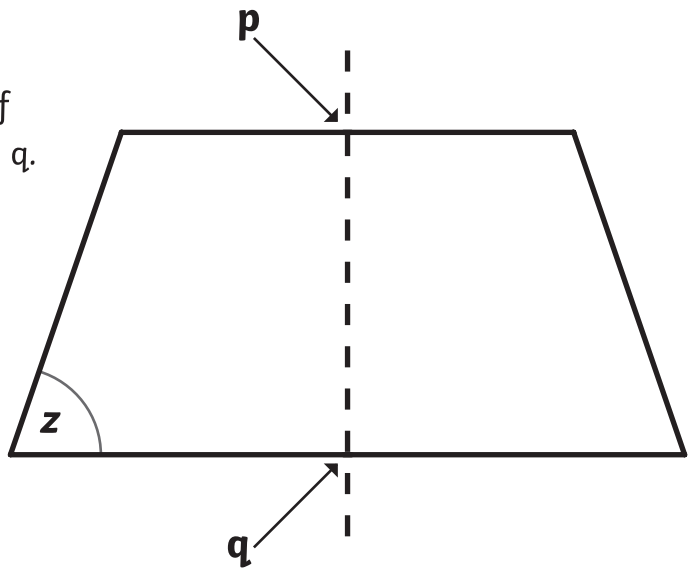
2 Measure angle ***x*** accurately using a **protractor** (angle measurer).



x = ____ °

1 mark

4 a) Use a **ruler** to measure **accurately** the **height** of the trapezium from p to q. Give your answer in **millimetres**.



mm

1 mark

b) Felix says,

Angle **z** measures 109°

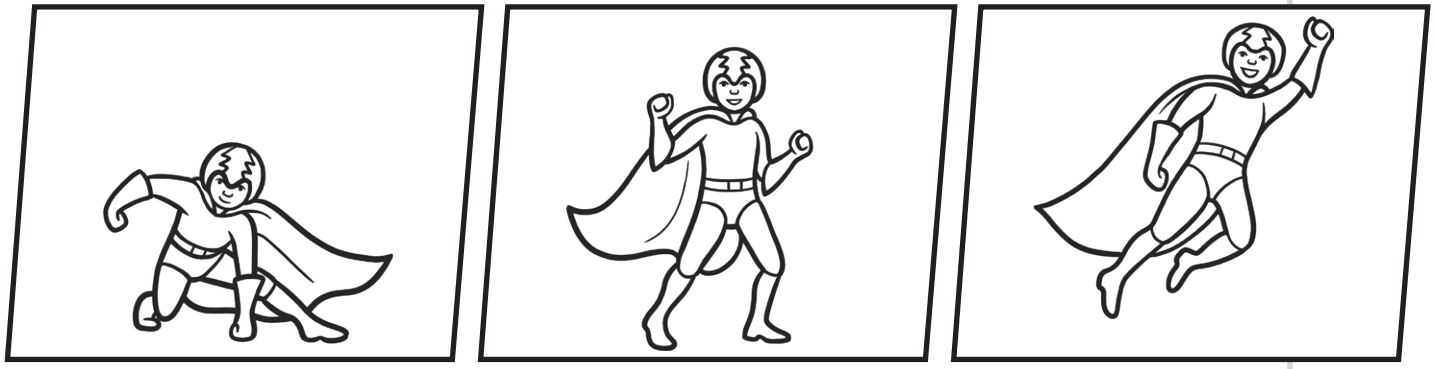
Explain why Felix is **not correct.**

1 mark

/5

TOTAL

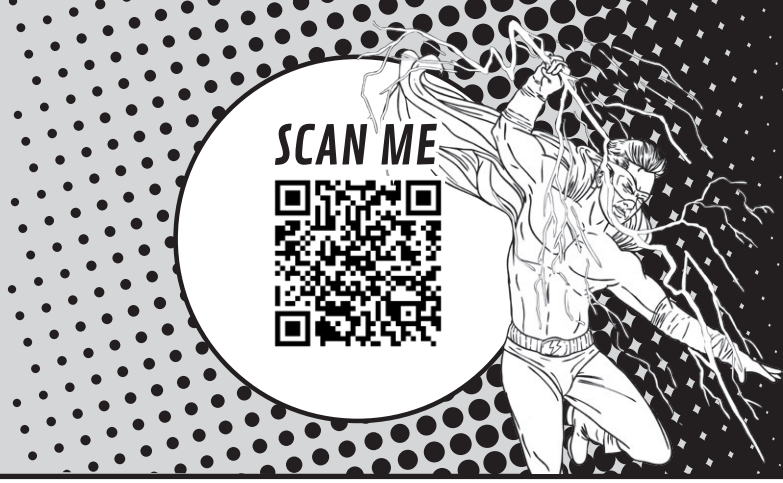
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

CLASSIFYING 2D SHAPES

SUPERCHARGE!

SCORE: /4

Match the lines to their correct mathematical description.

a)

b)

c)

d)

parallel	perpendicular	vertical	horizontal

Answers: a) horizontal b) parallel c) perpendicular d) vertical

BOOST YOUR SUPERPOWERS

Key words

regular polygon: A 2D shape formed with straight lines. All of the sides and angles are equal.

irregular polygon: A 2D shape formed with straight lines. The sides and angles are not all equal.

parallel lines: Lines that run alongside each other in pairs. They never meet and are always the same distance apart.

perpendicular lines: Two lines that meet at a right angle.

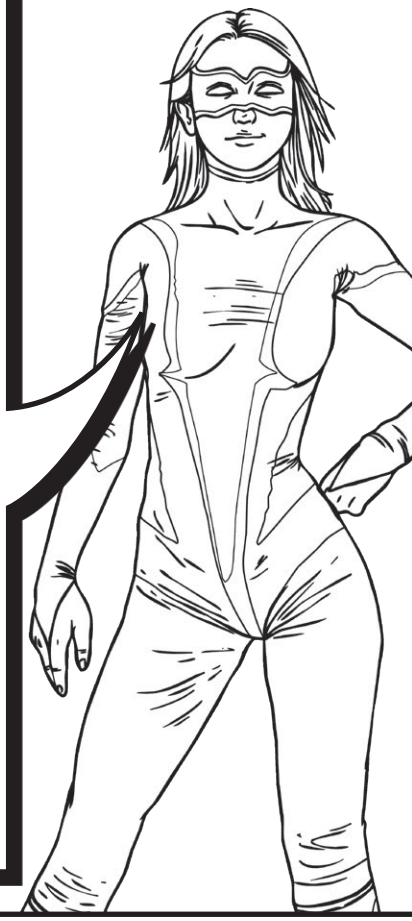
quadrilateral: A 2D shape with four straight sides.

scalene triangle: Has no equal sides or angles.

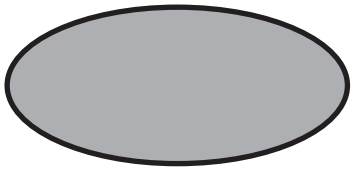
isosceles triangle: Has two equal sides and two equal angles.

equilateral triangle: Has three equal sides and three equal angles.

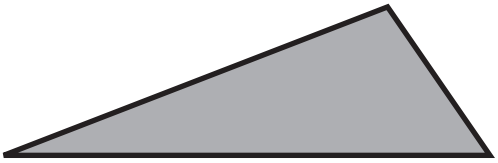
REVISION VIDEO SCAN ME



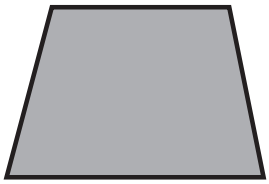
1 Here are four 2D shapes.



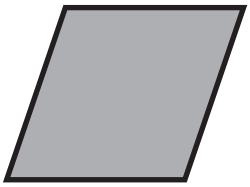
ellipse



scalene triangle



trapezium



parallelogram

a) Emily chooses one shape. She says,

It is an irregular polygon.
Its interior angles add up to 180°

Which shape did Emily choose?

1 mark

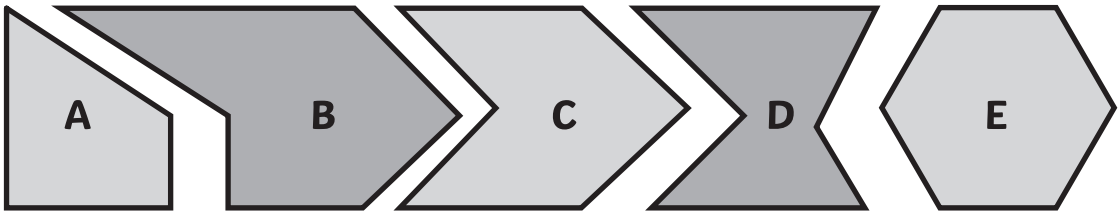
b) Bartek choses a **different** 2D shape. He says,

It is a quadrilateral.
It has one pair of parallel sides.

Which shape did Bartek choose?

1 mark

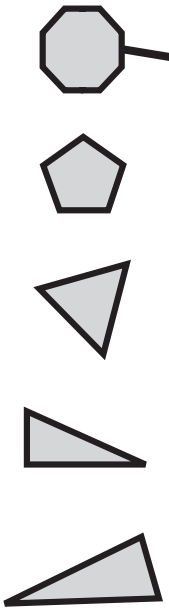
2 Here are six shapes.



Write the letter of the shape that is **not** a **hexagon.**

1 mark

3 **Match** each shape to the correct name.
One has been done for you.



scalene triangle

octagon

isosceles triangle

equilateral triangle

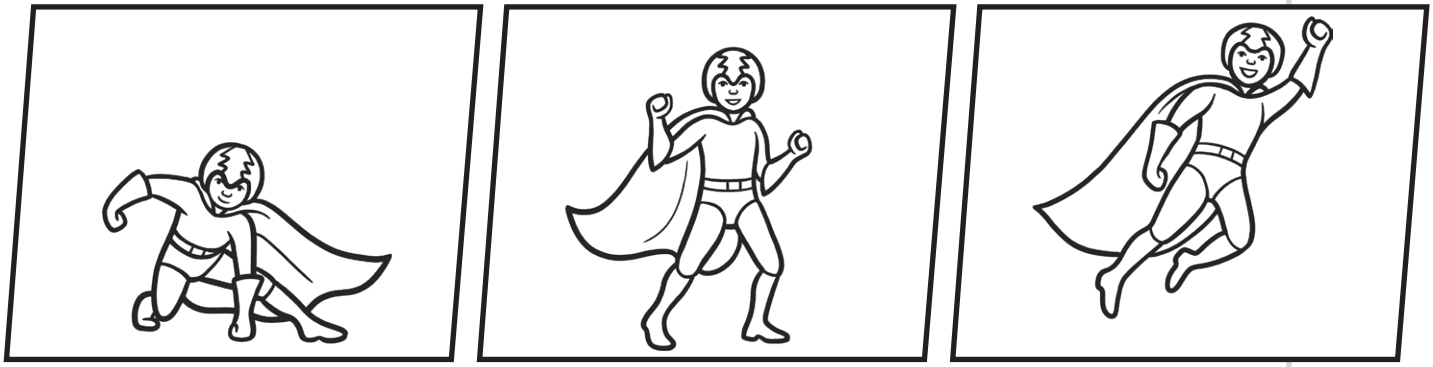
pentagon

2 marks

/5

TOTAL

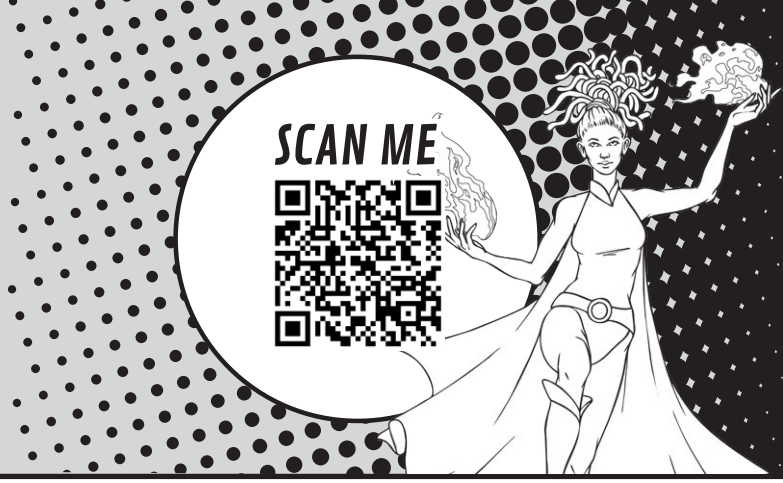
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

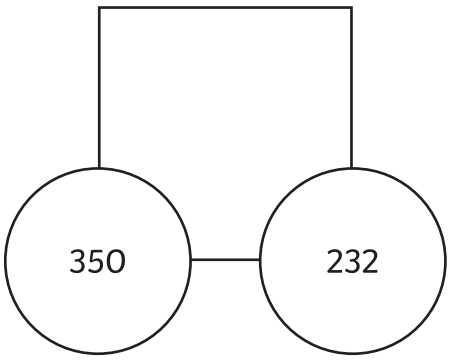
CIRCLES

SUPERCHARGE!

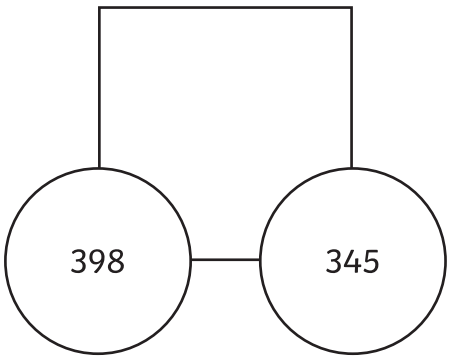
SCORE: /2

Calculate the **difference** between the two numbers in the circles. Then, **double** it to find the missing number in the square.

a)



b)



Answers: a) 236 b) 106

BOOST YOUR SUPERPOWERS

The perimeter of a circle is called the **circumference** (c).

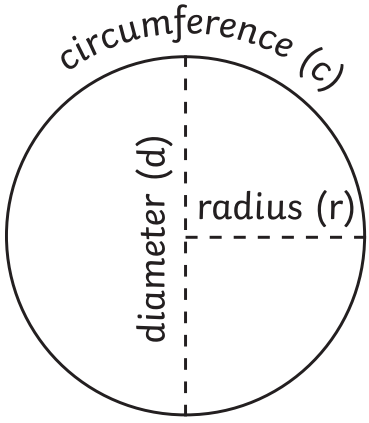
The distance across the circle, passing through the centre, is called the **diameter** (d).

The distance from the centre of the circle to the circumference is called the **radius** (r).

The diameter is twice the length of the radius...

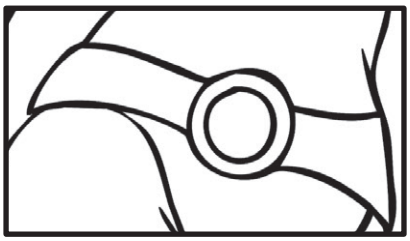
r × 2 = d **d ÷ 2 = r**

...which means that the radius is half of the diameter.



REVISION VIDEO SCAN ME

1 The Fraction Flame's belt buckle has a diameter of 72mm.



Not drawn to scale

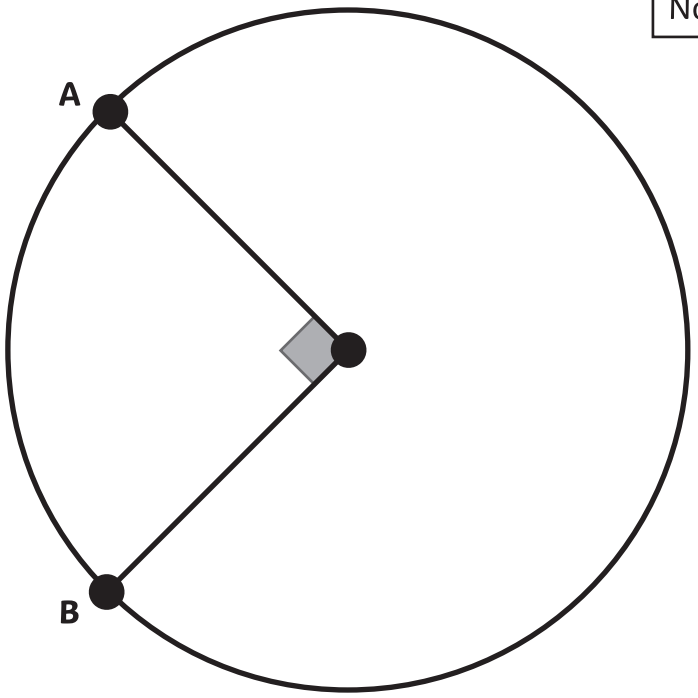
What is the **radius** of her belt buckle?

mm

1 mark

2 The circumference of this circle is 140cm.

Not drawn to scale

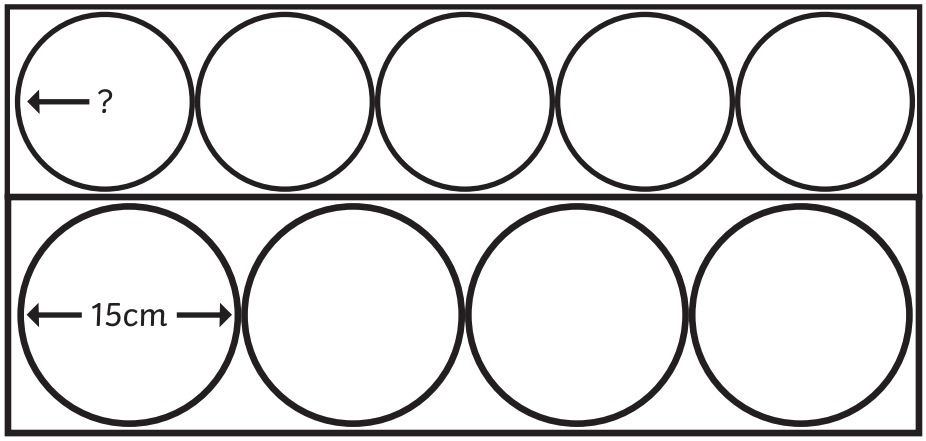


What is the distance around the edge of the circle from **A** to **B**?

cm

1 mark

3 Four large circles and five small circles fit exactly inside this rectangle.



Not drawn to scale

The **diameter** of a large circle is 15cm.

Calculate the **radius** of a **small** circle.

show your method

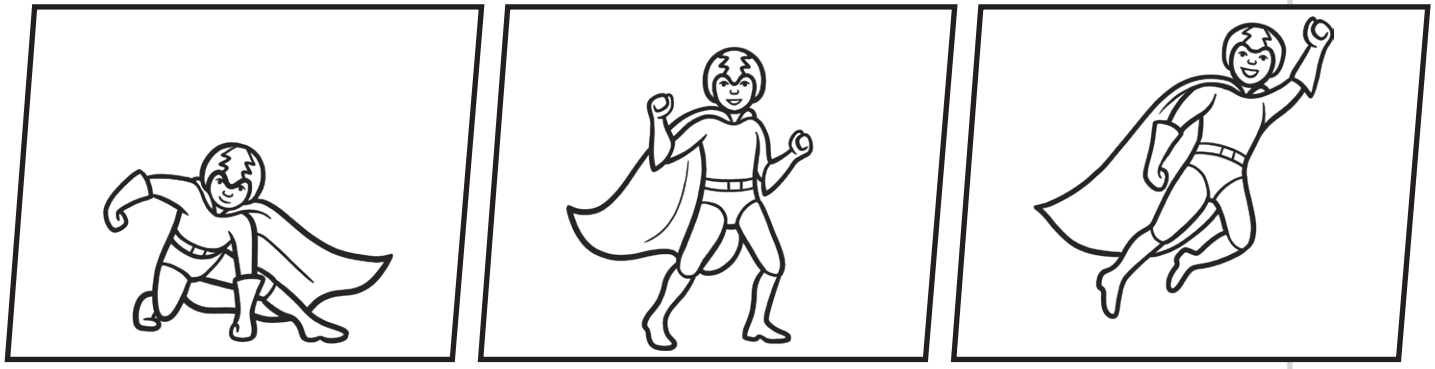
cm

2 marks

/4

TOTAL

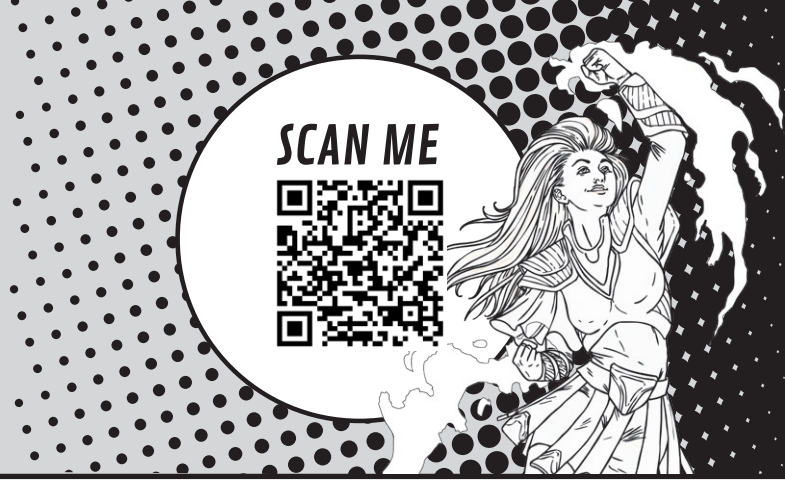
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

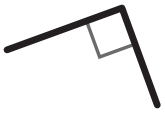
DRAWING 2D SHAPES

SUPERCHARGE!

SCORE: /4

Label each angle as acute, obtuse, reflex or a right angle.

a)

b) 

c)

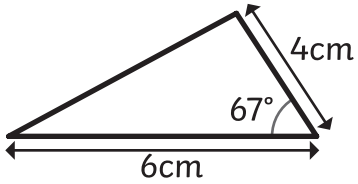
d)

Answers: a) acute b) right angle c) obtuse d) reflex

BOOST YOUR SUPERPOWERS

To draw 2D shapes accurately, we need to use a **ruler** for the **lengths** of the sides and a **protractor** for the internal **angles**.

Here is a sketch of a triangle, not drawn to scale. Draw the full-size triangle **accurately** below.

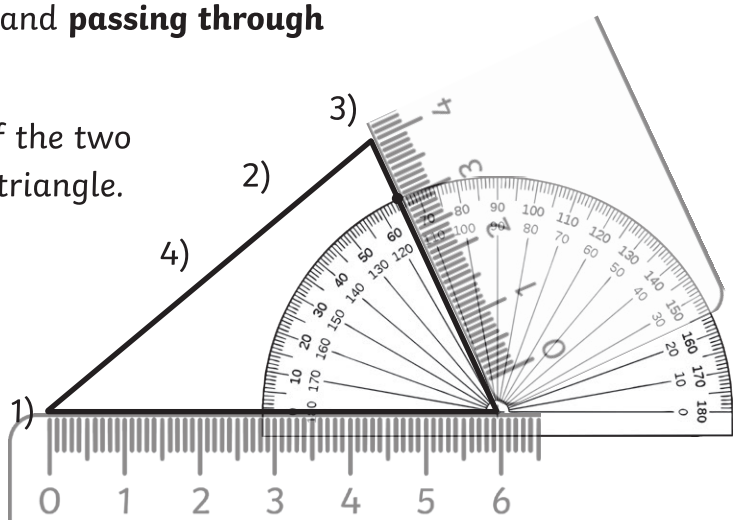


1) **Draw a line** accurately using a ruler. This will form one **side** of the shape. Remember to **start from 0**, not the very edge of the ruler.

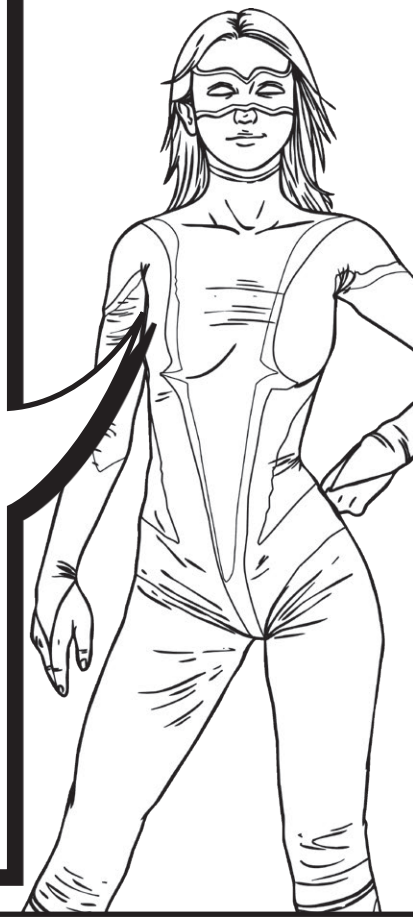
2) **Line up** the centre of the **protractor** with the end of the line and **mark** 67°, making sure to use the right scale on the protractor so you **start from 0.**

3) Draw a line measuring 4cm, starting from the end of the first side and **passing through** the 67° mark.

4) **Join** the ends of the two sides to form a triangle.



REVISION VIDEO SCAN ME



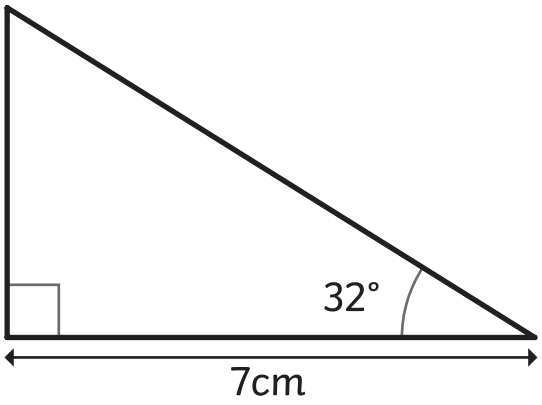
1 Draw **two lines** each measuring **5cm** which join at a **vertex**.

The **angle** should measure **147°**

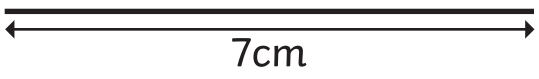
Use a **protractor** (angle measurer) and a **ruler.**

2 marks

2 Here is a sketch of a triangle. It is not drawn to scale.



Draw the full-size triangle **accurately** below. Use a **protractor** (angle measurer) and a **ruler**.
One line has been drawn for you.



2 marks

3 Here is a sketch of a parallelogram. **It is not drawn to scale**.

Complete the drawing of the full-size parallelogram **accurately** below.
Use a **protractor** (angle measurer) and a **ruler**.

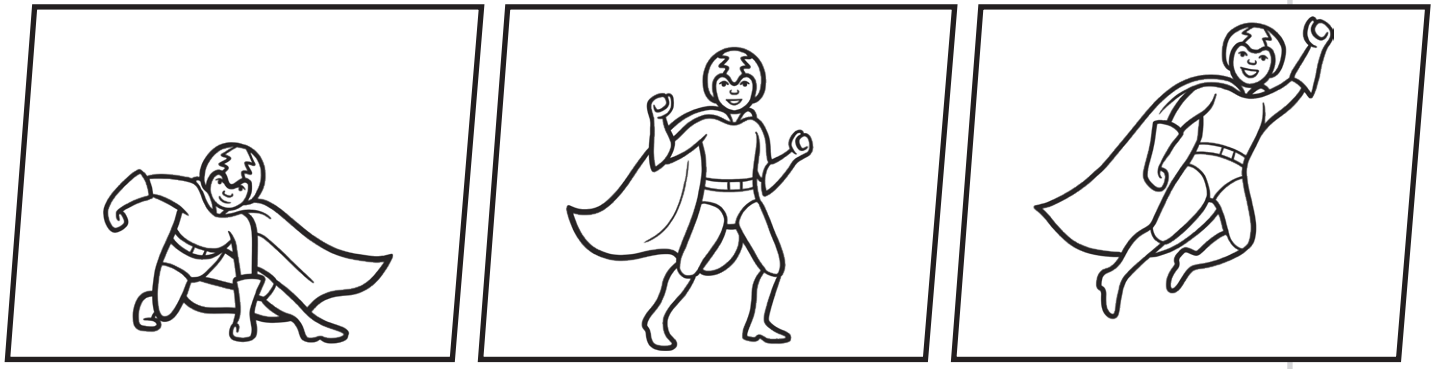
Two lines have been drawn for you.

2 marks

/6

TOTAL

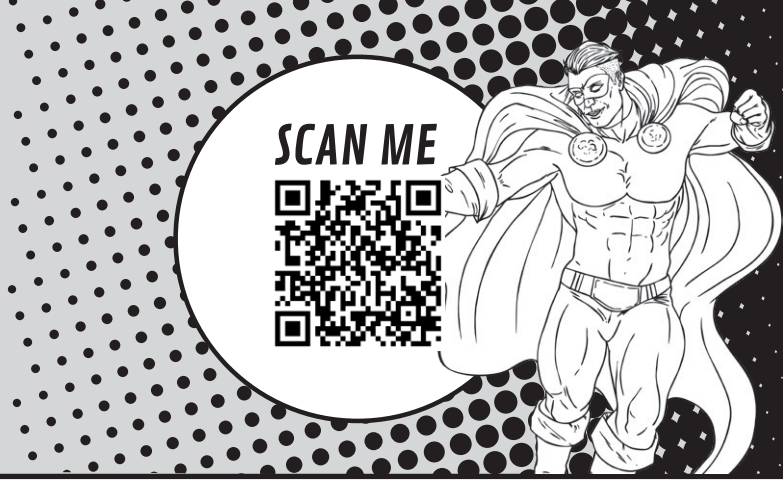
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

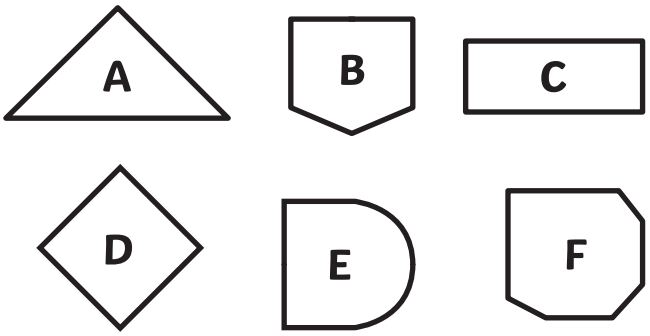
3D SHAPES

SUPERCHARGE!

SCORE: /6

Sort the 2D shapes into the correct columns.

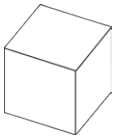
Shapes with one right angle	Shapes with two or more right angles



Answers: one right angle) A and F
two or more right angles) B, C, D, E

BOOST YOUR SUPERPOWERS

3D shapes have three dimensions: **height, width** and **length**. 3D shapes can be compared and classified according to their properties such as their **faces, edges** and **vertices**.

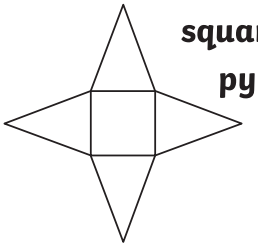


6 square faces
12 edges
8 vertices

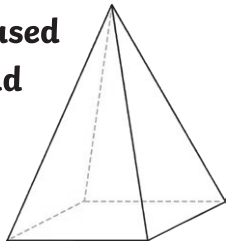
A polyhedron is a 3D shape with straight edges and flat faces that are all polygons. Spheres, cylinders and cones are not polyhedrons as they have **curved surfaces**.

A shape **net** shows which 2D shapes can be joined and folded to make a 3D shape.

When you are drawing a net, or solving a problem involving a shape net, think carefully about where the edges of the faces meet.



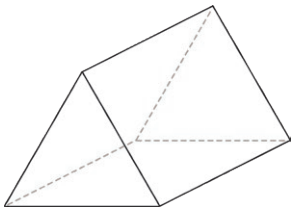
square-based pyramid



REVISION VIDEO SCAN ME

MATHS MISSION

1 Here is a 3D shape.



Complete this table about the shape.

Number of faces	Number of vertices	Number of edges

2 marks

2 Hari thinks of a 3D shape.
He says,

> It has 15 edges.
> It has 7 faces.
> Two of its opposite faces each have 5 edges.

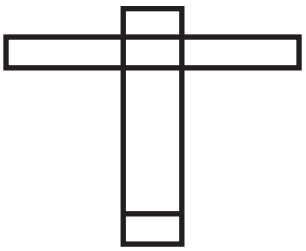
Which 3D shape is he thinking of?

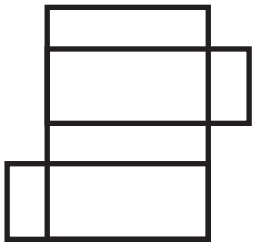
1 mark

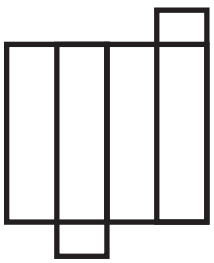
3 Look at these diagrams.

Put a tick (✓) if it **is** the net **of** a cuboid.

Put a cross (✗) if it is **not**.

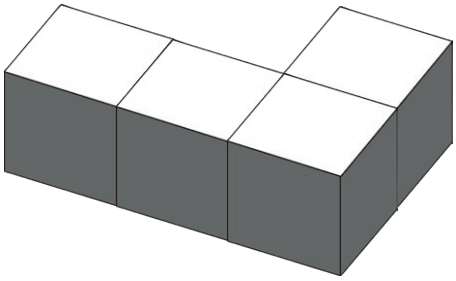






2 marks

4 Amrit has four cubes. She sticks them together to make this shape.



She paints the sides grey all the way around the shape. She leaves the top and bottom white.

How many cubes have only **two** faces painted grey?

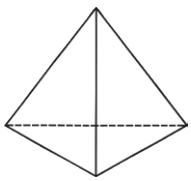
	cubes

1 mark

5 Zeke has two **tetrahedrons** that are the same size.

He sticks them together to make a new 3D shape.

How many ***faces*** and ***edges*** does the **new** 3D shape have?



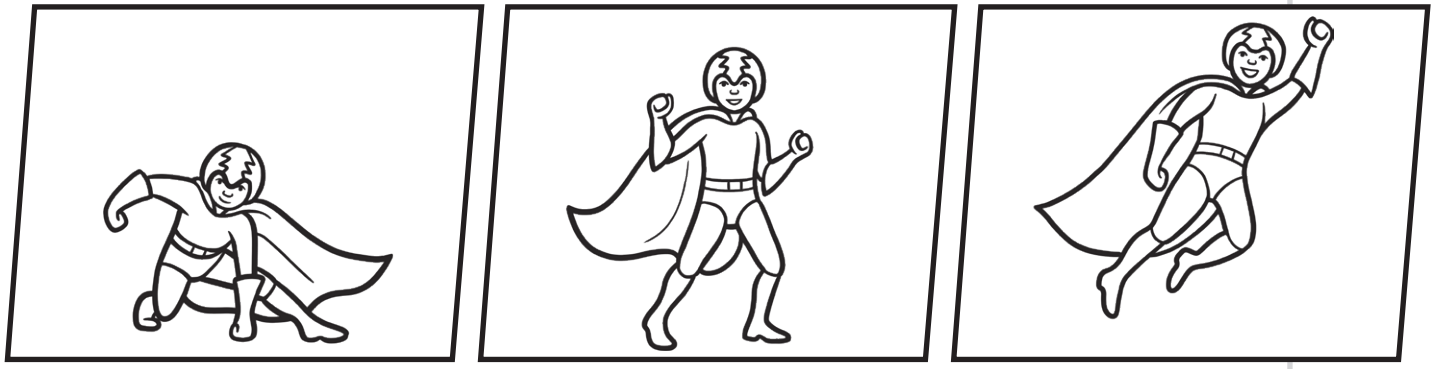
	faces and	***edges***

1 mark

/7

TOTAL

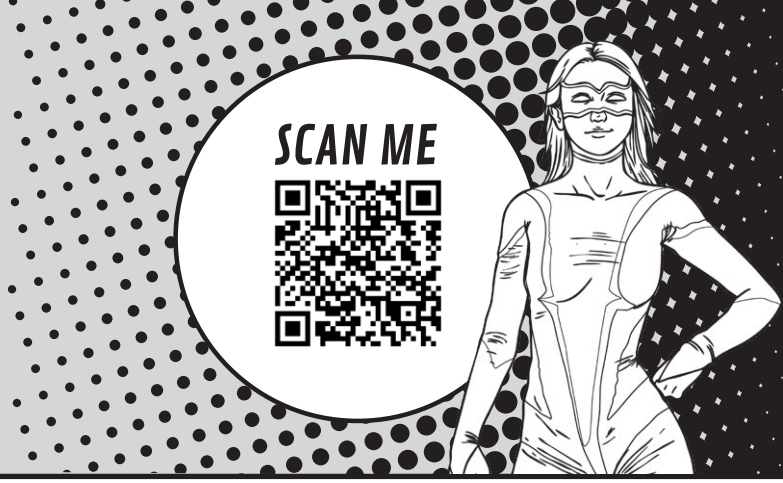
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

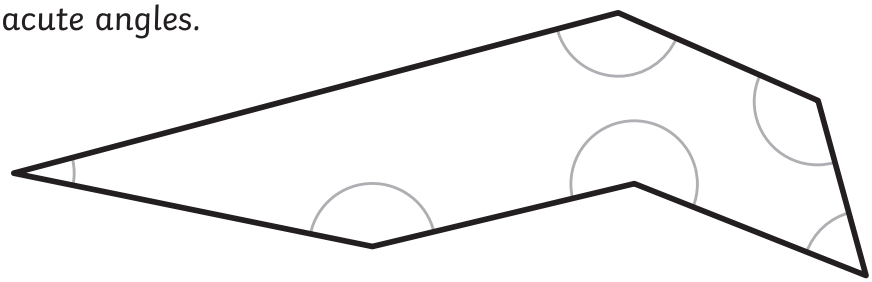


NOTES

WORKING OUT

PROPERTIES OF SHAPE
MIXED PRACTICE

1 Tick (✓) all the acute angles.



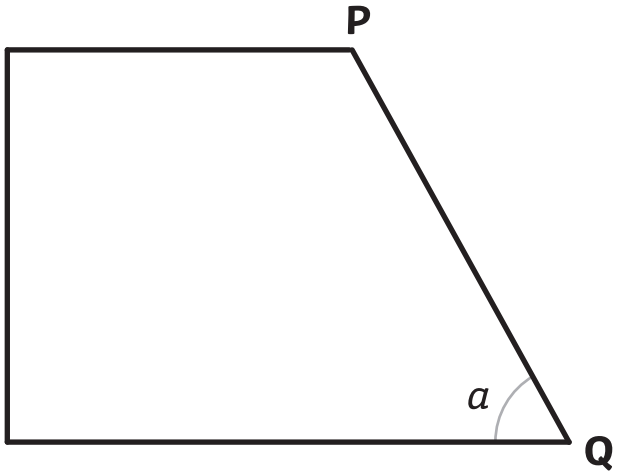
1 mark

2 Jia has three **different** triangles.
Complete the table to show the size of the angles in each triangle.

Type of triangle	Angle 1	Angle 2	Angle 3
Right-angled	45°		
Isosceles	50°		
Isosceles	50°		

2 marks

3 Look at this shape.



a) Use a ruler to accurately measure the **side** of the shape, from **P to Q**.
Give your answer in **millimeters.**

mm

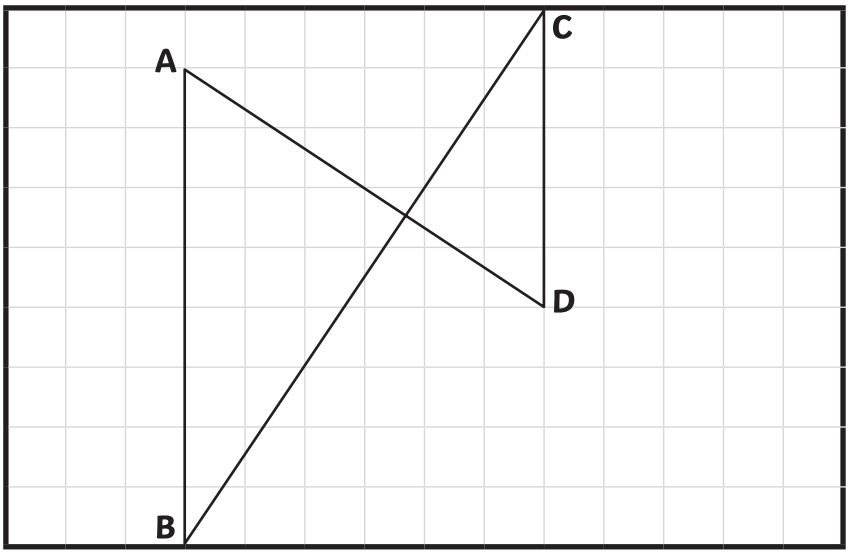
1 mark

b) Use a protractor (angle measurer) to measure **angle *a*.**

°

1 mark

4 This diagram shows four lines drawn on a squared grid.
The lines are labelled AB, BC, CD and DA.



a) **Circle** the lines that are **parallel** to each other.

AB BC CD DA

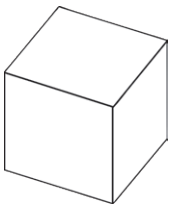
1 mark

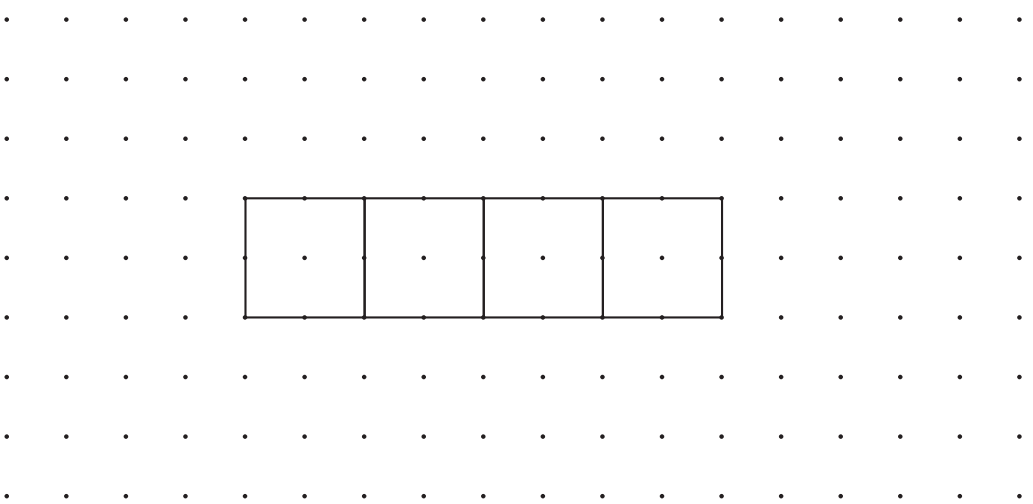
b) **Circle** the lines that are **perpendicular** to each other.

AB BC CD DA

1 mark

5 Look at the **cube**.
Draw **two** more faces to complete the net of the cube.





1 mark

6 A dinner plate has a **radius** of 13cm.
What is the **diameter** of the dinner plate?

cm

1 mark

/9

TOTAL

PROGRESS TRACKER

Write your scores from each concept in this unit to track your progress.

Angle Facts	**/ 4**
Finding Missing Angles	**/ 7**
Measuring Angles	**/ 5**
Classifying 2D Shapes	**/ 5**
Circles	**/ 4**
Drawing 2D Shapes	**/ 6**
3D Shapes	**/ 7**
Properties of Shapes Mixed Practice	**/ 9**
TOTAL	**/ 47**

SELF-REFLECTION

What went well:

_____

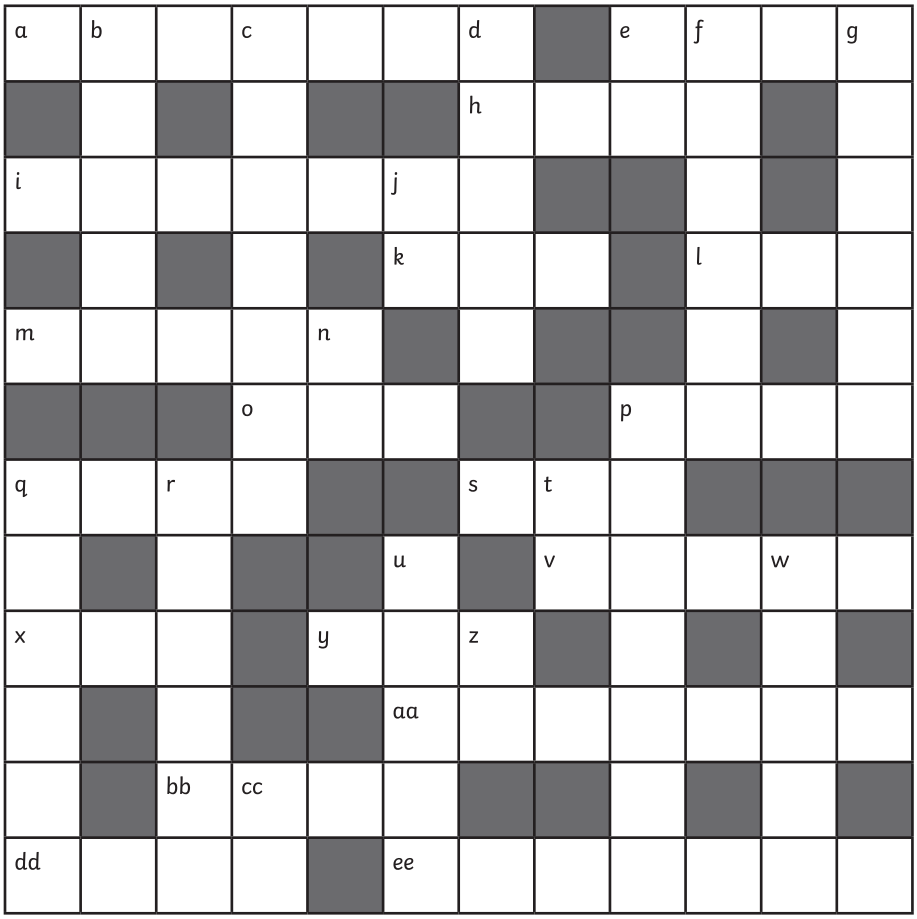
_____

My target to improve:

_____

_____

RECHARGE



Across

a. 1 000 000 + 300 000 + 40 000 + 2000 + 700 + 50 + 6

e. 5000 + 100 + 80 + 4

h. 3000 + 600 + 80 + 7

i. 1 000 000 + 600 000 + 50 000 + 4000 + 800 + 20 + 6

k. 800 + 50 + 7

l. 600 + 6

m. 80 000 + 8000 + 100 + 20 + 2

o. 300 + 60 + 7

p. 1000 + 800 + 20 + 1

q. 3000 + 40 + 5

s. 400 + 60 + 1

v. 70 000 + 6000 + 500 + 30 + 9

x. 900 + 50 + 7

y. 500 + 70 + 9

aa. 1 000 000 + 500 000 + 400 + 30 + 6

bb. 5000 + 300

dd. 9000 + 40 + 5

ee. 1 000 000 + 900 000 + 70 000 + 5000 + 50 + 3

Down

b. 30 000 + 4000 + 600 + 70 + 8

c. 2 000 000 + 400 000 + 40 000 + 9000 + 200 + 30 + 5

d. 60 000 + 3000 + 600 + 50 + 4

e. 50 + 8

f. 100 000 + 70 000 + 5000 + 600 + 8

g. 400 000 + 50 000 + 5000 + 600 + 10 + 1

j. 20 + 8

n. 20 + 6

p. 1 000 000 + 100 000 + 60 000 + 5000 + 90 + 5

q. 300 000 + 9000 + 60 + 9

r. 400 000 + 60 000 + 7000 + 800 + 50 + 4

t. 60 + 7

u. 60 000 + 7000 + 100 + 1

w. 30 000 + 1000 + 300 + 20 + 5

z. 90 + 5

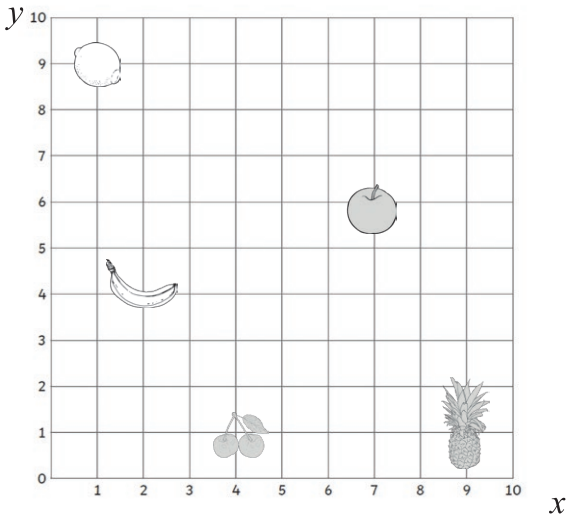
cc. 30 + 5

COORDINATES

SUPERCHARGE!

SCORE: /4

Find the fruit on the grid.



a) Which fruit is at (9, 1)?

b) Which fruit is at (4, 1)?

c) Which fruit is at (7, 6)?

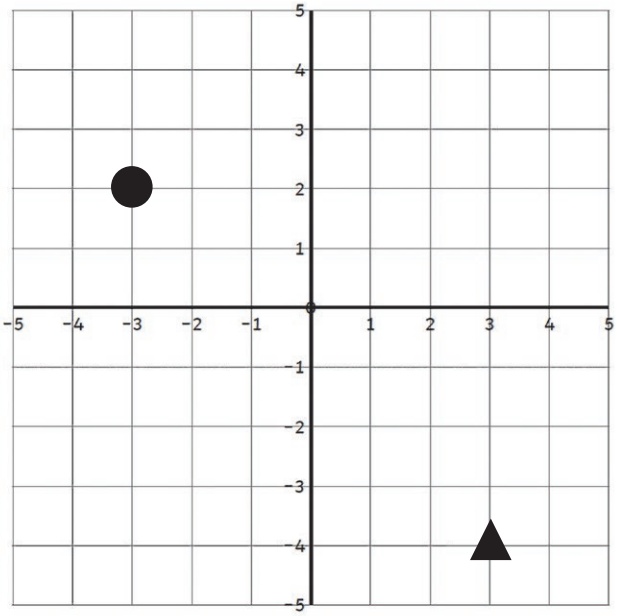
d) Which fruit is at (2, 4)?

Answers: a) pineapple b) cherry c) apple d) banana

BOOST YOUR SUPERPOWERS

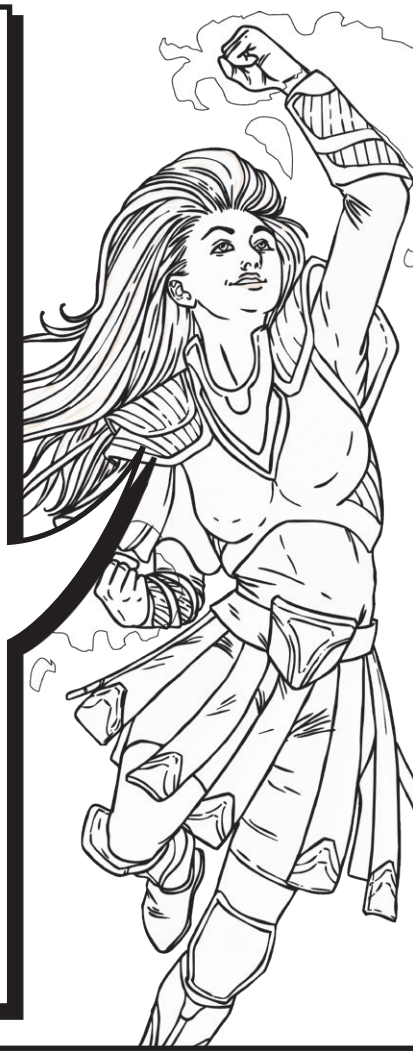
Coordinates are **pairs** of numbers which show **position** on a **grid**.

The **first** number shows the position along the **horizontal** x-axis. The **second** number shows the position along the **vertical** y-axis. The point where these two lines on the axis meet is the **coordinate** position.



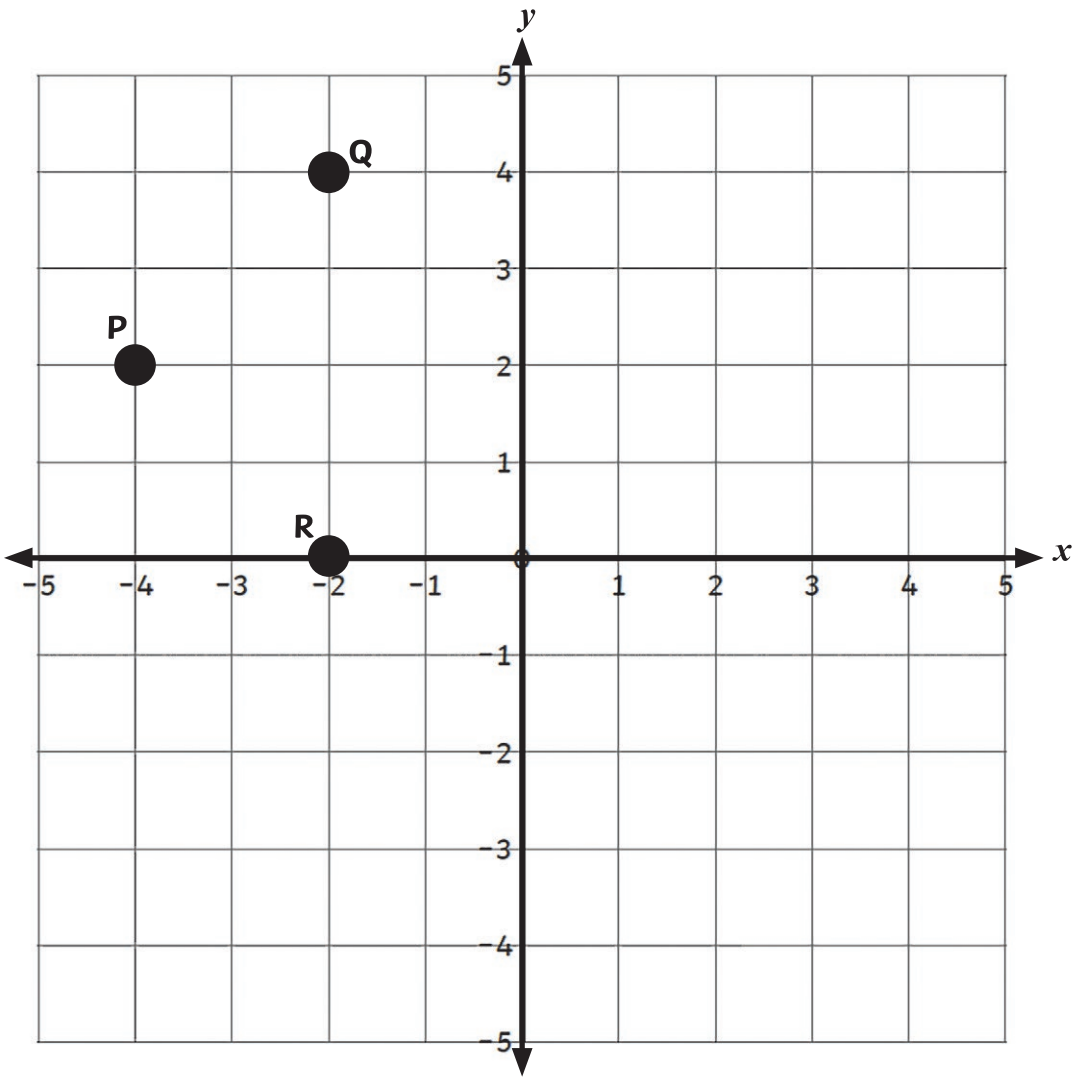
● (-3, 2) ▲ (3, -4)

REVISION VIDEO SCAN ME



1 Abi draws a **square** on this coordinate grid.

Three of the vertices are marked.



a) What are the coordinates of vertex **P**?

(,)

1 mark

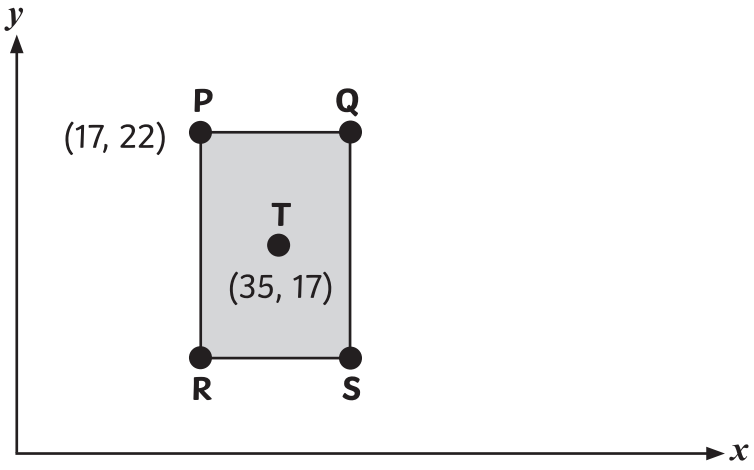
b) What are the coordinates of the **missing** vertex?

(,)

1 mark

2 PQRS is a rectangle on coordinate axes.

The sides of the rectangle are parallel to the axes.



Not drawn to scale

Point T is the **centre** of the rectangle.

a) What are the coordinates of point **Q**? (,)

1 mark

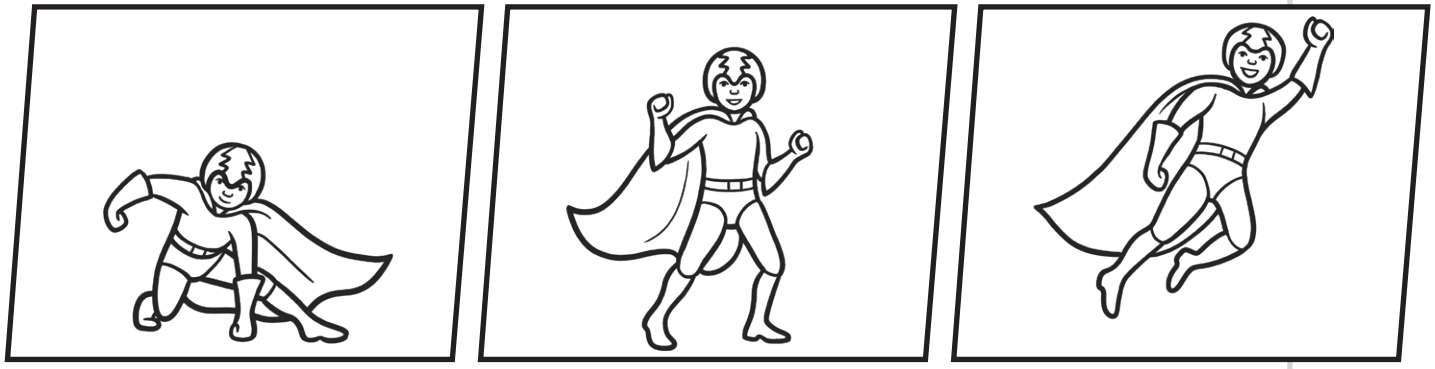
b) What are the coordinates of point **R**? (,)

1 mark

/4

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

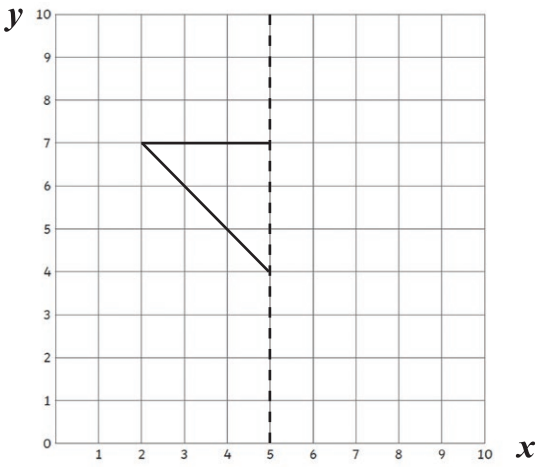
REFLECTION AND TRANSLATION

SUPERCHARGE!

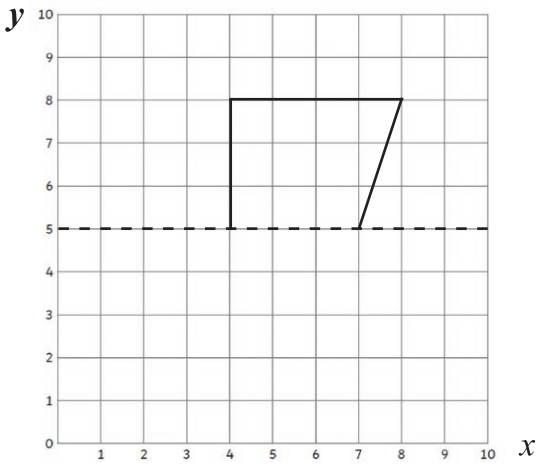
SCORE: /2

Find the coordinates needed to complete the symmetrical shape.

a)

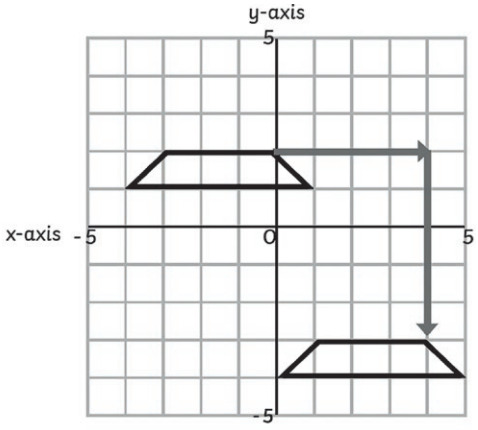


b)



Answers: a) (8,7) b) (4,2) and (8,2)

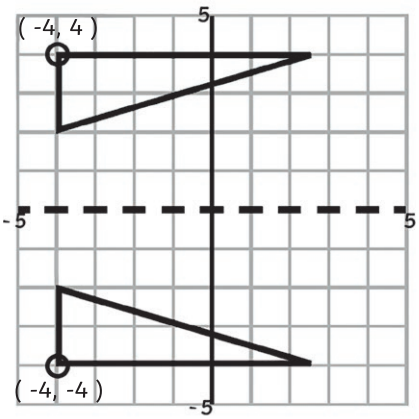
BOOST YOUR SUPERPOWERS

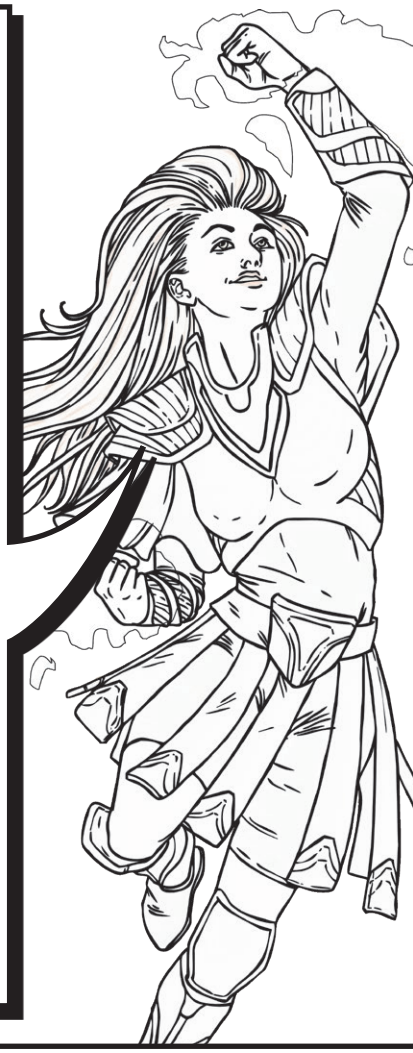


Translations can **move** a coordinate point horizontally, vertically or both. If a polygon is being translated, every point must be translated in the same direction to ensure that the shape doesn't change.

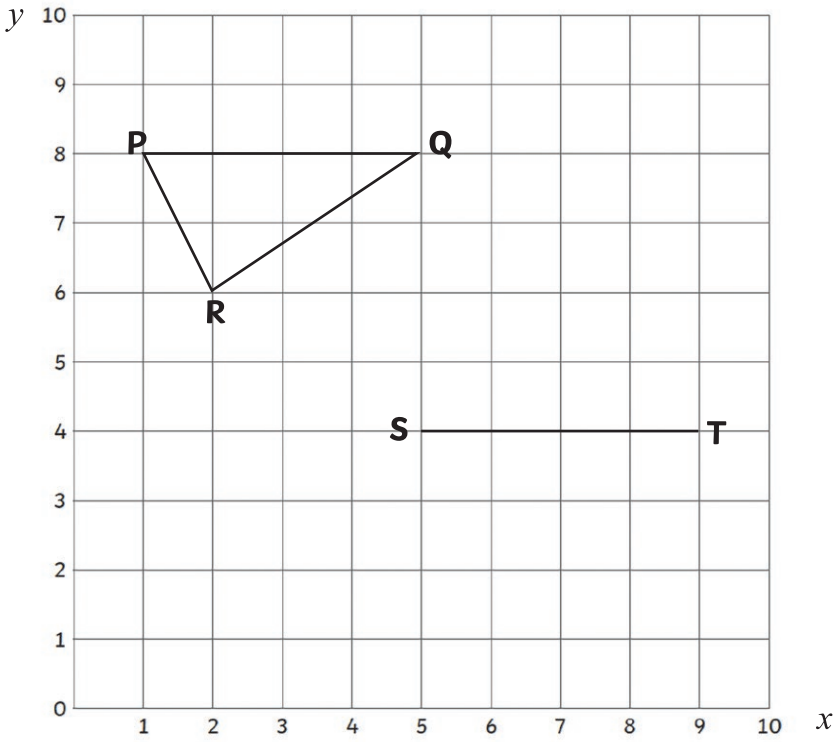
Coordinate positions can be **reflected** on a coordinate grid. Reflection flips a shape over a mirror line. The **mirror line** may be on the *x*-axis, the *y*-axis or it may be a dashed, straight line shown anywhere on the coordinate grid.

REVISION VIDEO SCAN ME





1 Joseph has drawn triangle PQR on this grid.



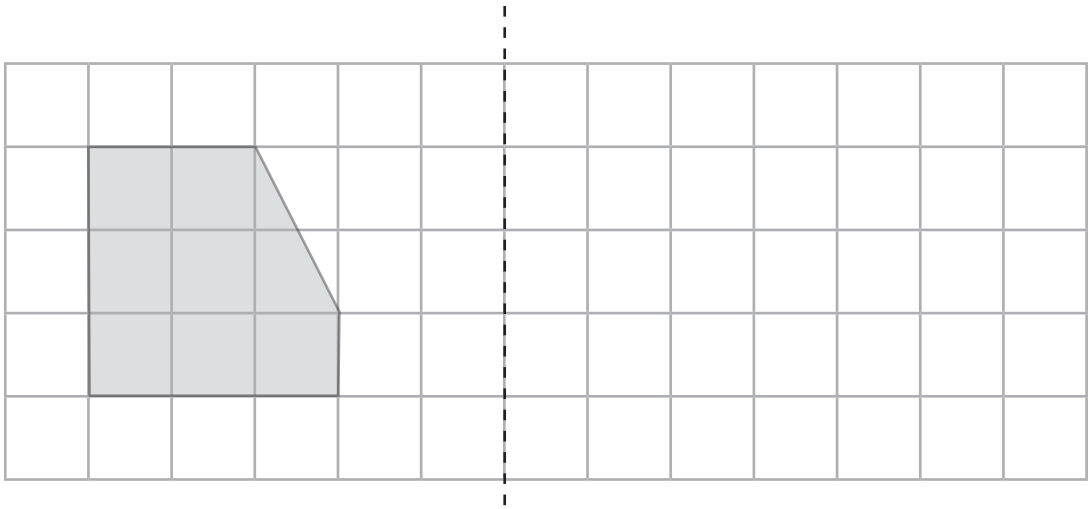
Jia has started to draw an identical triangle STU.

What will be the coordinates of point U?

(,)

1 mark

2 Here is a shaded shape on a square grid.
Reflect the shape in the mirror line using a ruler.



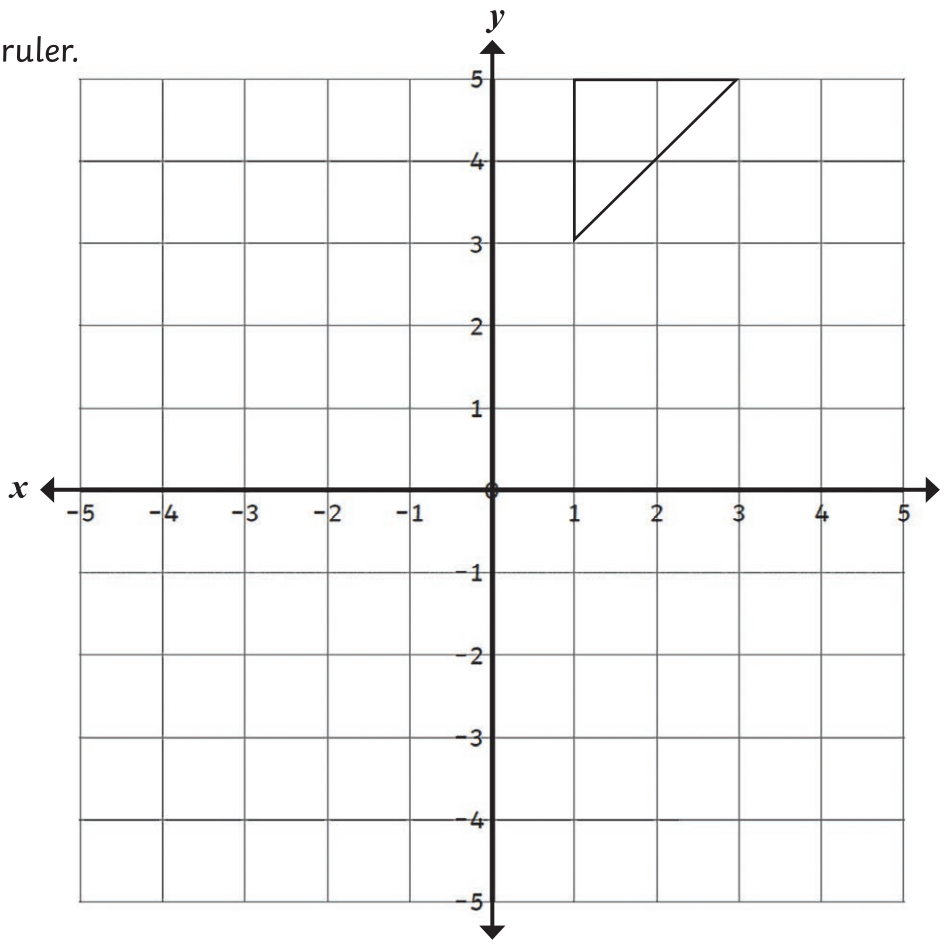
1 mark

3 The triangle is to be transformed on the grid below as follows:

- First **translate** the shape 8 down. Label this triangle A.
- Then **reflect** the translated triangle on in the y-axis. Label this triangle B.

Draw the new triangle on the grid **after each** transformation.

Use a ruler.

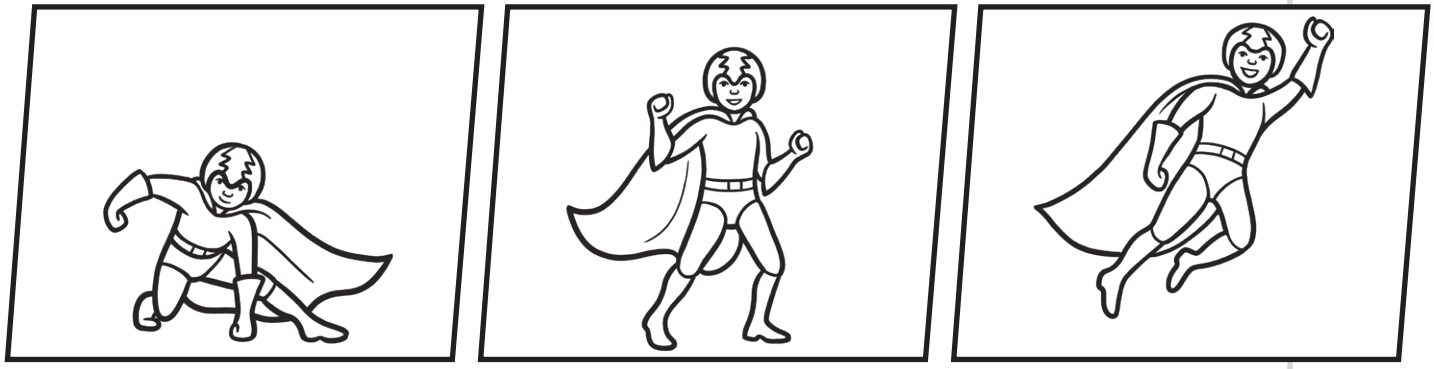


2 mark

/4

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

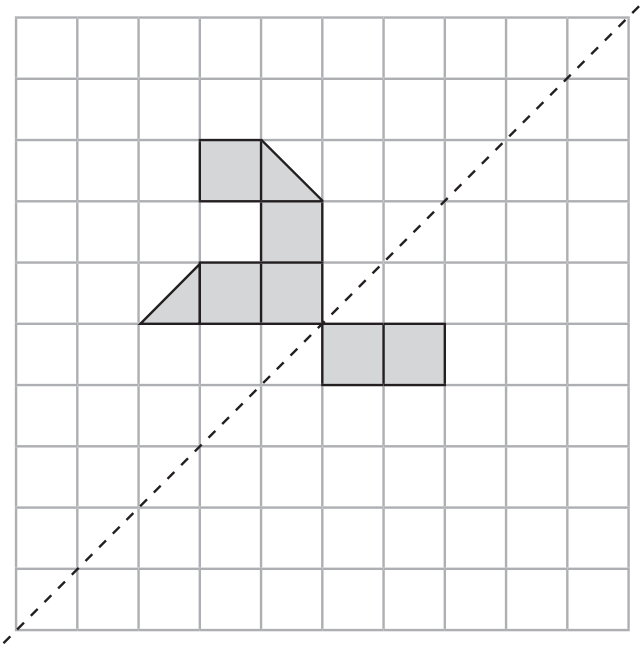
Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

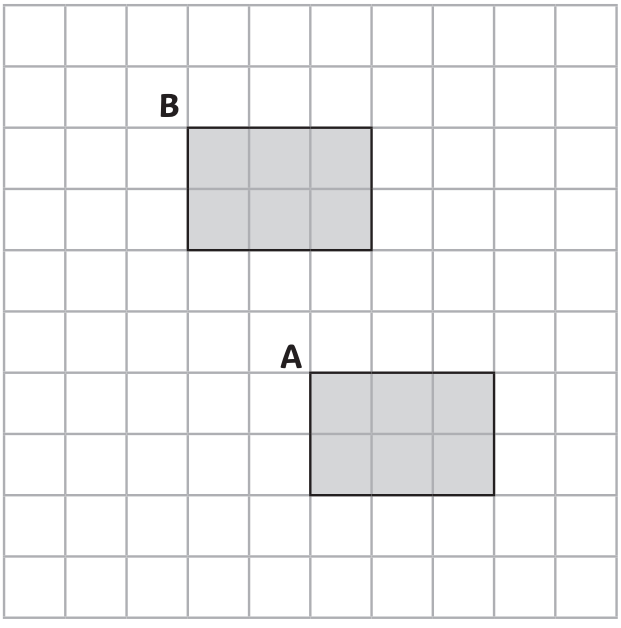
POSITION AND DIRECTION MIXED PRACTICE

1 Shade **2** squares and **2** triangles to make this design symmetrical.



1 mark

2 A rectangle is translated from position **A** to position **B**.



Complete the sentence.

The rectangle has moved ☐ squares to the left and ☐ squares up.

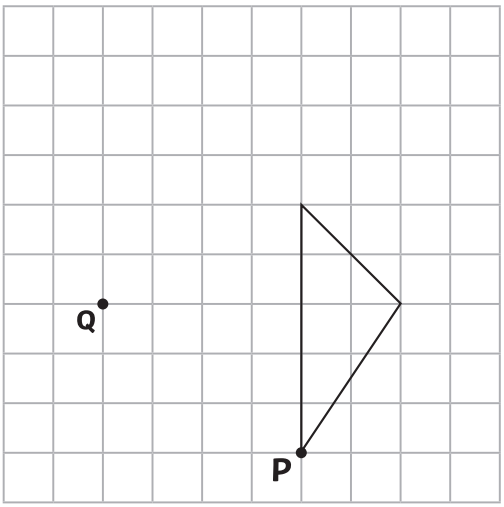
1 mark

3 Here is a triangle on a square grid.

The triangle is translated so that point **P** moves to point **Q**.

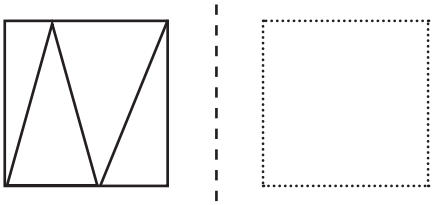
Draw the triangle in its new position.

Use a ruler.



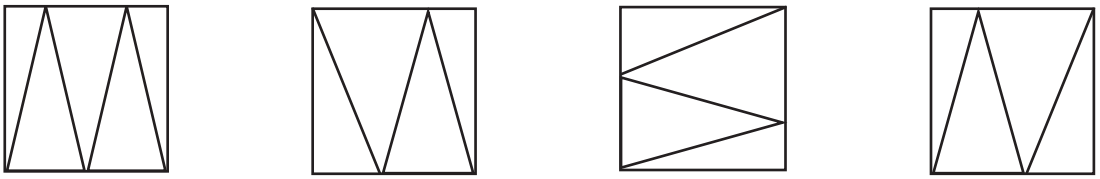
1 mark

4 Here is a design and a mirror line.



Which one of the designs below is a reflection of the design in the mirror line?

Circle the correct design.

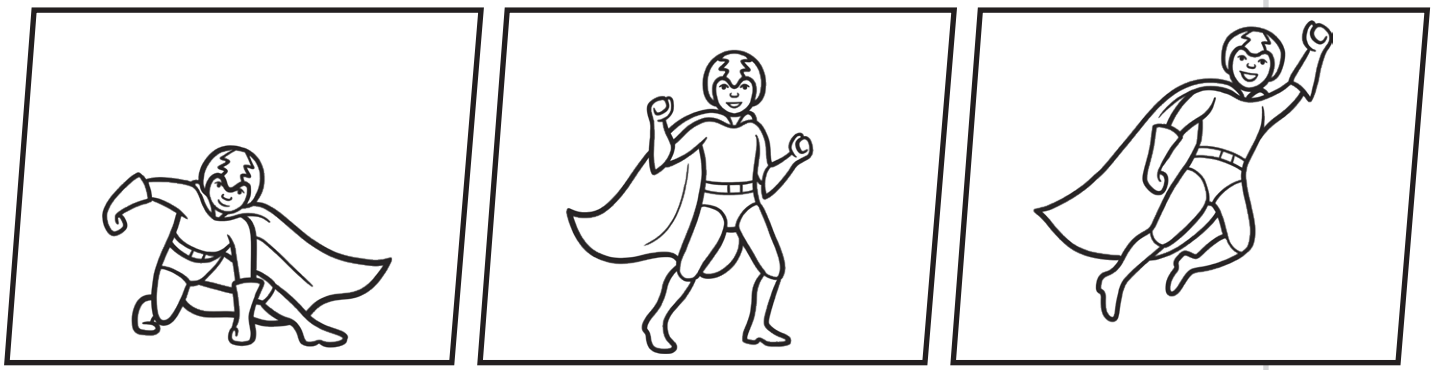


1 mark

/4

TOTAL

MISSION COMPLETE!



How confident do you feel?

PROGRESS TRACKER

Write your scores from each step in this unit to track your progress.

Coordinates	/4
Reflection and Translation	/4
Position and Direction Mixed Practice	/4
TOTAL	/12

SELF-REFLECTION

What went well:

_____

_____

My target to improve:

_____

_____

RECHARGE

It's time to recharge ready for the next unit with this mindfulness colouring page.

TABLES AND PICTOGRAMS

SUPERCHARGE!

SCORE: /2

Solve the word problems.

a) Zeke starts school at 8 a.m. He takes two buses. His first bus takes 30 minutes. His second bus takes twice the time that the first bus takes. He then has to walk for 7 minutes.

What time should Zeke set off to arrive on time? :

b) A train was due to arrive at the station at 16:45

It is running 37 minutes late.

What time is the train expected to arrive? :

Answers: a) 06:23 or 6:23 a.m. b) 17:22 or 5:22 p.m.

BOOST YOUR SUPERPOWERS

Tables are used to record information and collect results. Horizontal lines of data are called rows. Vertical lines of data are called columns.

Pictograms use symbols to represent data. The key tells you the value of each symbol.

= 2 students	
Maths	● ●
Art	● ◗

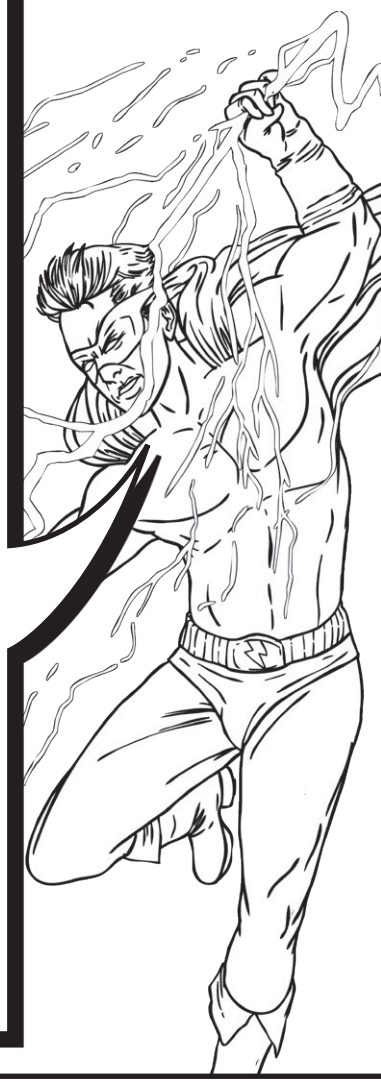
Two-way tables contain multiple pieces of information in one table. There is usually a total column and a total row.

	Year 5	Year 6	Total
Art	8	5	13
Dance	5	6	11
Football	19	21	40
Total	32	32	64

Timetables show a list of chronologically ordered events and can be used to compare the timings of different events. Most timetables include start and finish times so they can be used to calculate durations.

Sports Day Timings	
Event	Time
Discus	9.00
Sprint	9.40
Relay	10.15

REVISION VIDEO SCAN ME



MATHS MISSION

1 This pictogram shows how many problems the Maths Heroes have solved.

Doctor Digit	●●
The Quick Quadrant	●●●●●●
The Data Defender	●●●
Agent Algebra	●●●●●●●

The Quick Quadrant solved 42 problems.

How many problems did Agent Algebra solve?

problems

1 mark

2 Some children have voted for their favourite lesson.

Lesson	English	Maths	Science	Art	PE	Total
Number of Children	95		108	112	97	503

How many children voted for maths?

show your method

children

2 marks

3 This two-way table shows the types of snacks sold at a shop.

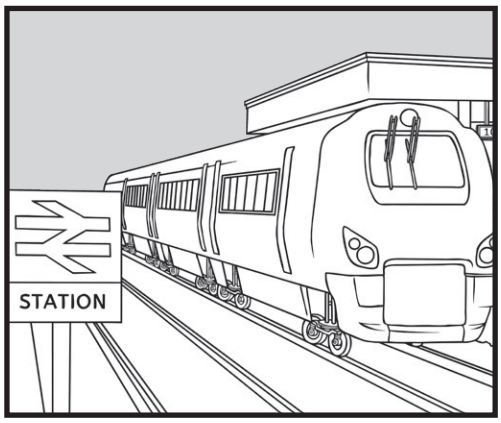
	Hot	Cold	Total
Sweet	4	11	15
Savoury	29	18	47
Total	33	29	62

How many more cold savoury snacks were sold than hot sweet snacks?

1 mark

4 This timetable shows the arrivals and departures of a train from Manchester to London.

Elena needs to **arrive in London** by **6:30 p.m.**



Circle the **latest time** that Elena can depart Manchester.

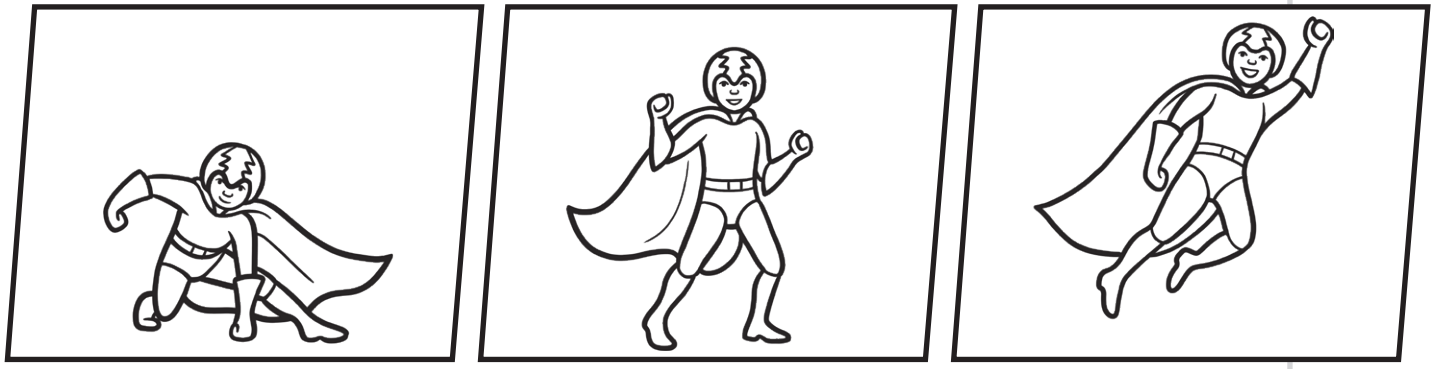
Departs Manchester	Arrives in London
14:37	16:43
15:01	17:07
18.25	20:31

1 mark

/5

TOTAL

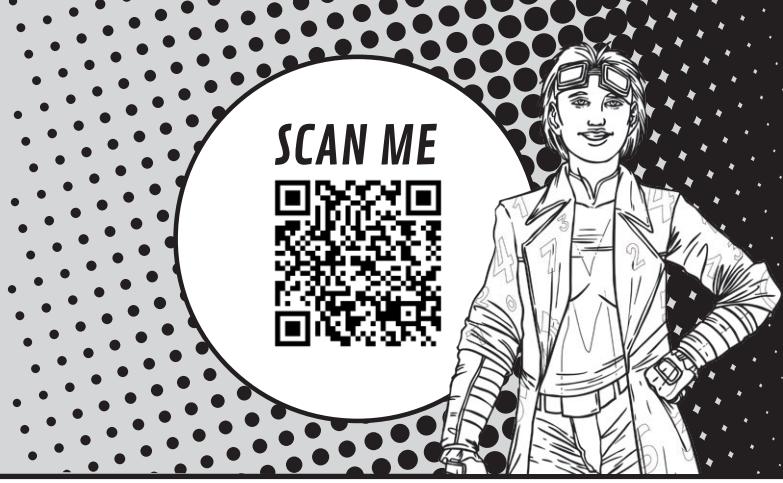
MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.



NOTES

WORKING OUT

BAR CHARTS

SUPERCHARGE!

SCORE: /6

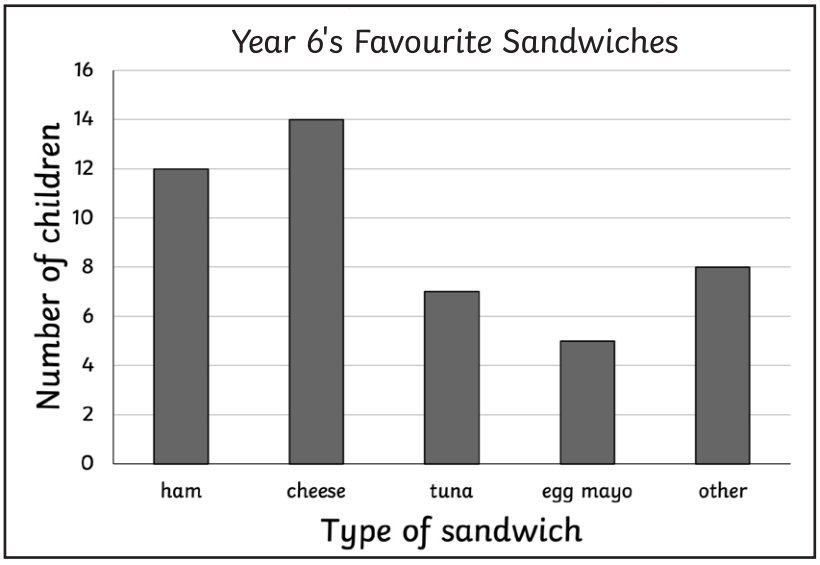
This table shows the species and gender of pets at the vet. Complete the table using the given values to find the missing numbers.

	Male	Female	Total
Cat	a)	42	98
Dog	40	b)	87
Rabbit	c)	26	39
Total	d)	e)	f)

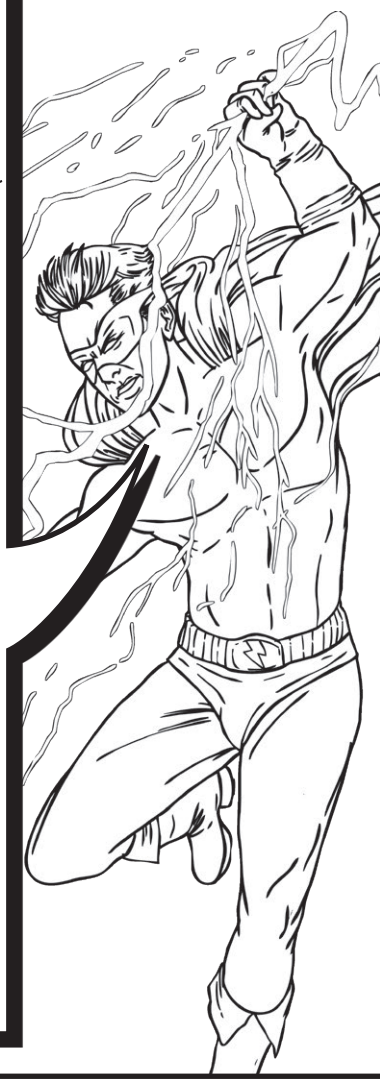
Answers: a) 56 b) 47 c) 13 d) 109 e) 115 f) 224

BOOST YOUR SUPERPOWERS

The **x-axis** (the horizontal line) tells us the different **categories** of **sandwiches**. The **y-axis** (the vertical line) tells us the number of children (frequency). The **scale** is labelled in **intervals** of 2.



Some questions will ask us to interpret how many of each data set there are. For example, how many children prefer egg mayo sandwiches?

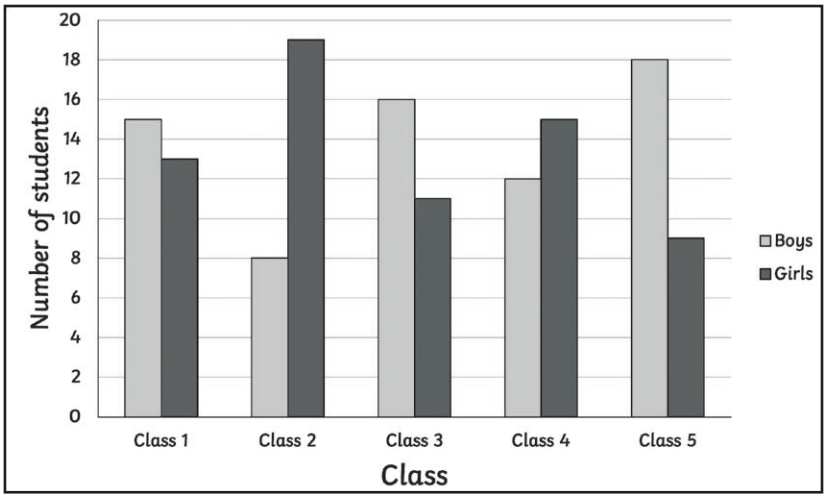


REVISION VIDEO SCAN ME

First, we find 'egg mayo' along the x-axis and follow the bar up along the y-axis to find the frequency. The bar lies between 4 and 6; therefore, there are 5 votes for egg mayo sandwiches.

MATHS MISSION

1 This bar chart shows the number of students who attend Maths Hero training.



a) How many more boys are there in Class 5 than in Class 1?

boys

1 mark

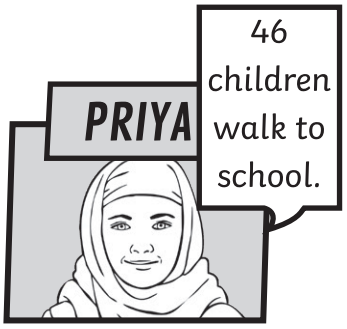
b) How many classes have more girls than boys?

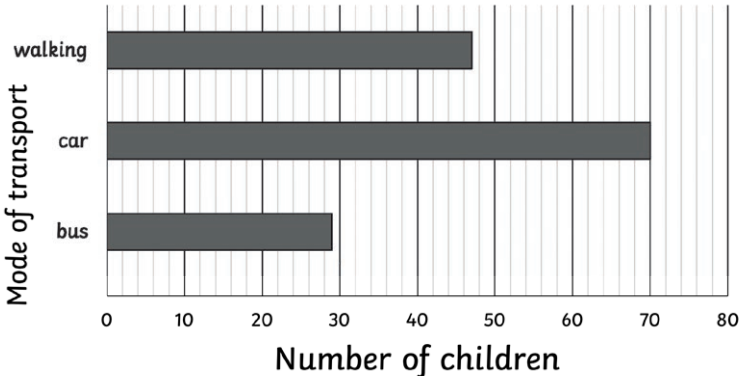
classes

1 mark

2 This bar chart shows the ways in which children travel to school.

a) Priya says,

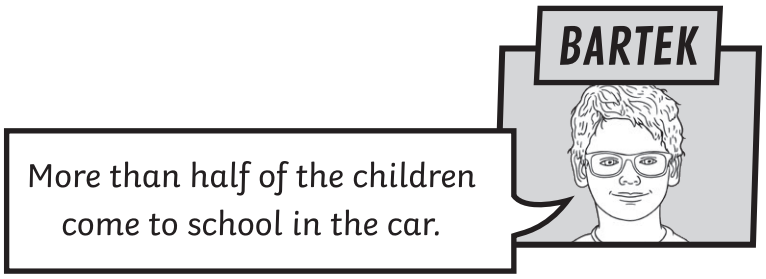




Explain why Priya is not correct.

1 mark

b) Bartek says,



Is he correct?

Circle **Yes** or **No**. Yes / No

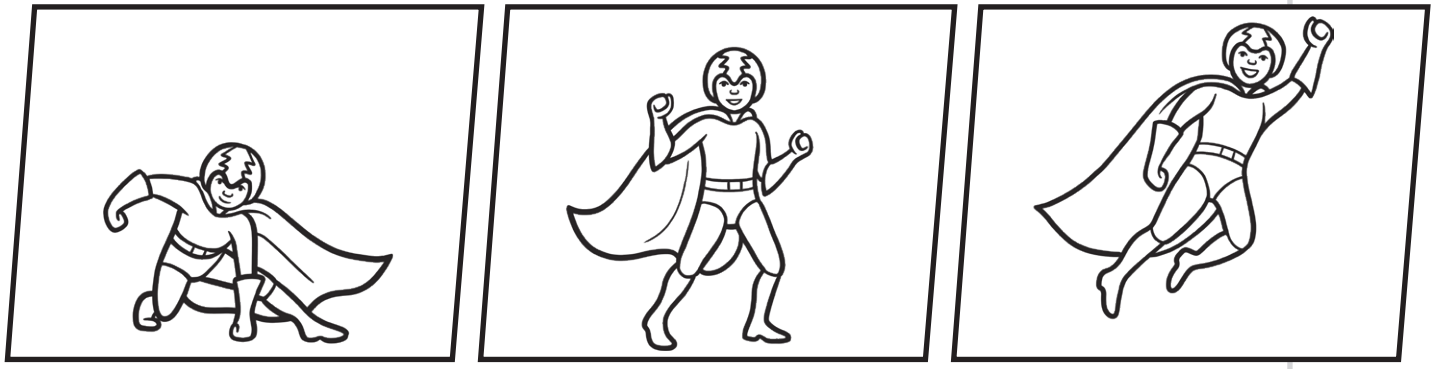
Explain how you know.

1 mark

/4

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

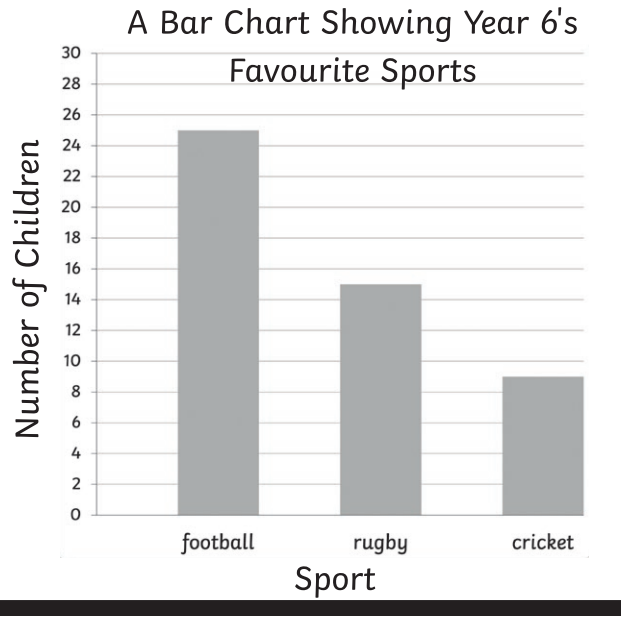
WORKING OUT

LINE GRAPHS

SUPERCHARGE!

SCORE: /3

Complete the table using the data from the bar chart.



Sport	Number of Children
Football	a)
Rugby	b)
Cricket	c)

Answers: a) 25 b) 15 c) 9

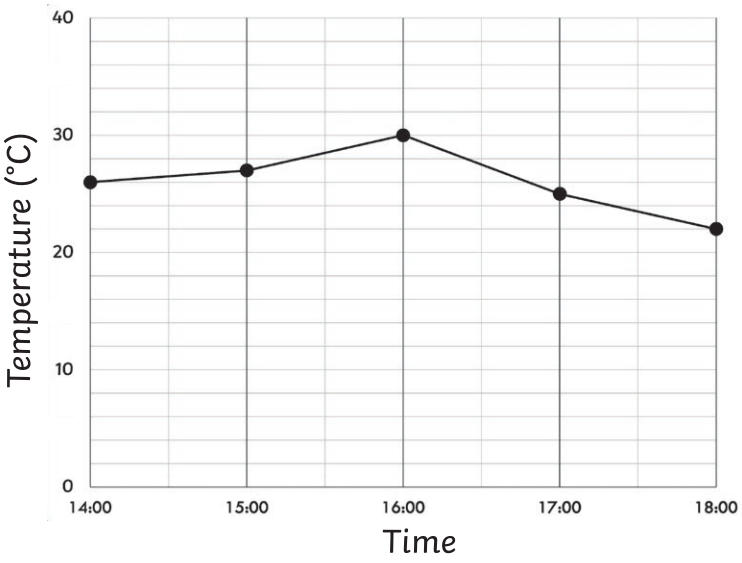
BOOST YOUR SUPERPOWERS

Line graphs are used to show changes to a measurement over time. They present **continuous data**.

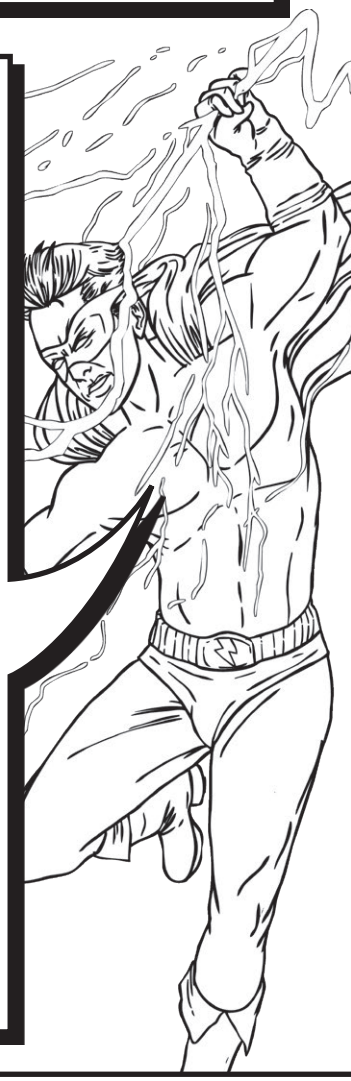
In this line graph, the horizontal axis (the **x-axis**) shows us the time the data is being measured over.

The vertical axis (the **y-axis**) shows the temperature in degrees celsius (°C).

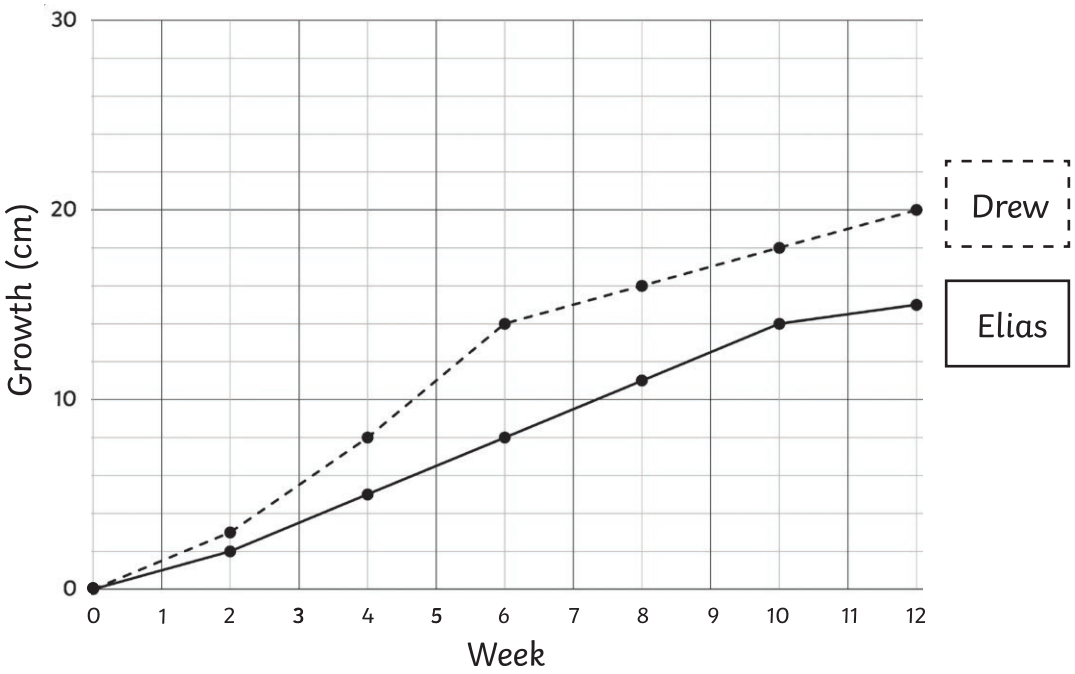
Data is **plotted** on a line graph with **data plots**. These data plots are then **joined** one by one using straight lines. We can use the line of the graph to describe **trends** or to find precise measurements.



REVISION VIDEO SCAN ME



1 This line graph shows the growth of Drew and Elias' sunflowers over 12 weeks.



a) What is the difference in size between Drew and Elias' sunflowers at 8 weeks?

cm

1 mark

b) Estimate the size of Drew's sunflower at 5 weeks.

cm

1 mark

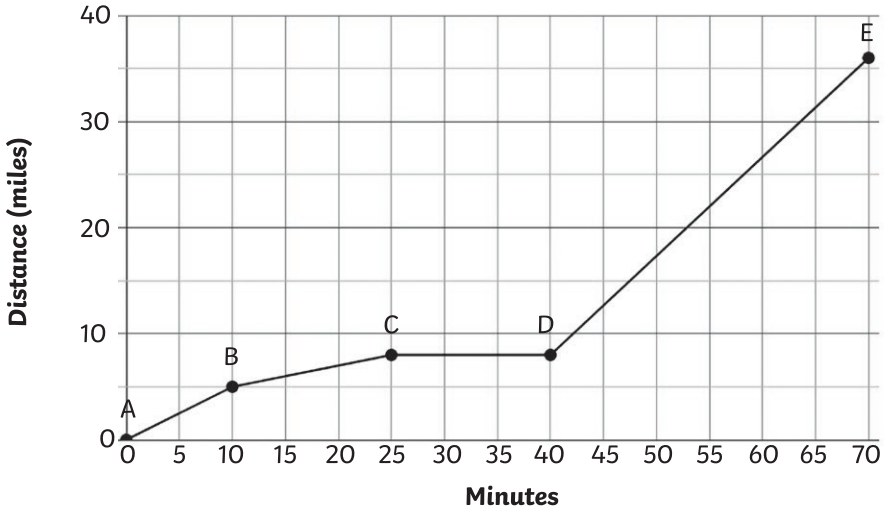
c) Elias says,

The greatest growth of my sunflower, over **two weeks**, was between weeks 10 and 12.

Explain why he is **not correct**.

1 mark

2 This line graph shows a car's journey.



Match each part of the journey to the correct sentence.

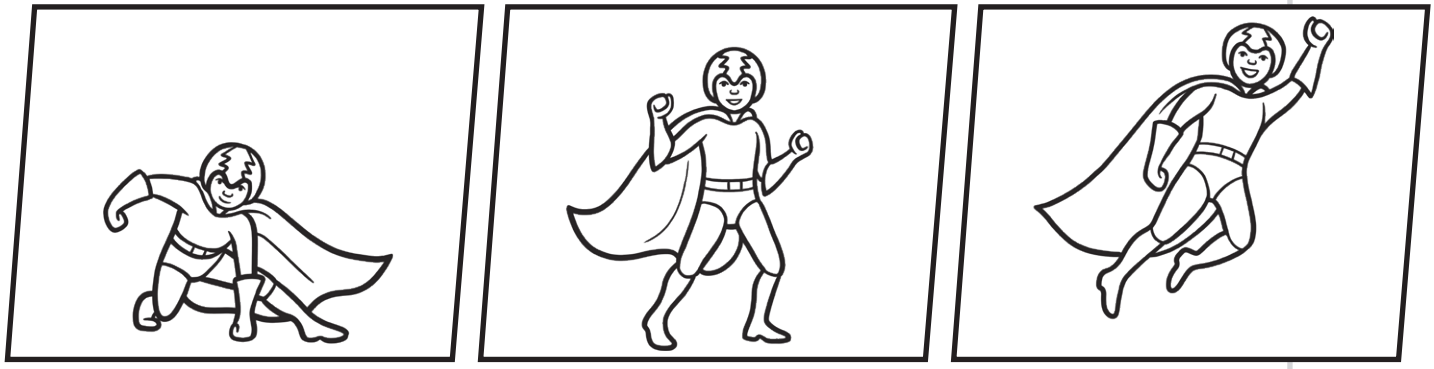
A to B	The car travels a large distance in a short amount of time on the motorway.
B to C	The car travels 5 miles in 10 minutes.
C to D	The car travels 3 miles in 15 minutes because of traffic.
D to E	The driver of the car stops for a break.

2 marks

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

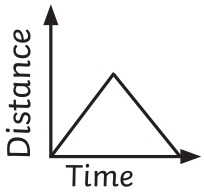
PIE CHARTS

SUPERCHARGE!

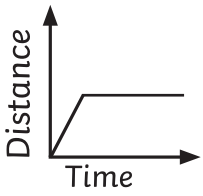
SCORE: /3

Match the graph to the event.

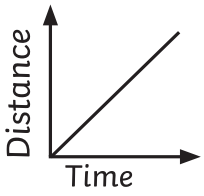
a)



b)



c)



1) A cyclist cycles at a constant speed before taking a break.

2) A cyclist cycles to the shop and back.

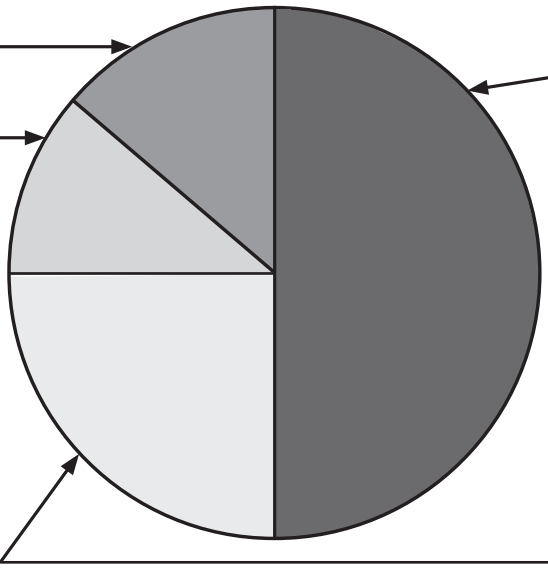
3) A cyclist cycles at a constant speed along a cycle path.

Answers: a) 2 b) 1 c) 3

BOOST YOUR SUPERPOWERS

Pie charts show discrete data as proportional sectors of a circle. Every sector is a proportion of the whole. You can interpret the amount that each sector represents using an angle, fraction or percentage.

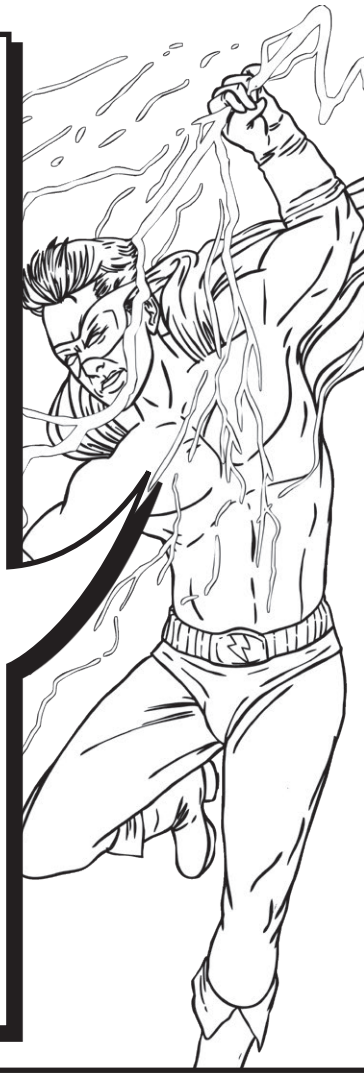
The data in each of these sectors is $\frac{1}{8}$ of the whole amount. This is also 12.5% and 45°.



The data in this sector is $\frac{1}{2}$ of the whole amount. This is also 50% and 180°.

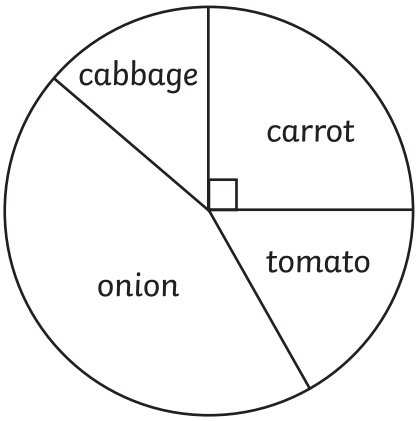
REVISION VIDEO SCAN ME

The data in this sector is $\frac{1}{4}$ of the whole amount. This is also 25% and 90°.



1 This chart shows the number of different crops grown in an allotment. There are 80 crops in the allotment altogether.

Here are some statements about the chart. Tick (✓) the statements that are **true**.



There are more cabbages than tomatoes. ☐

Half of the crops are onions. ☐

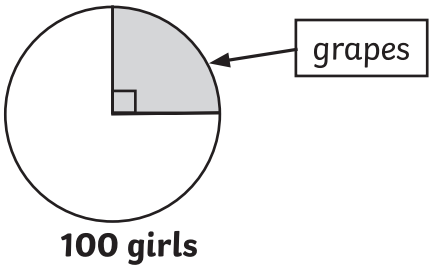
One-quarter of the crops are carrots. ☐

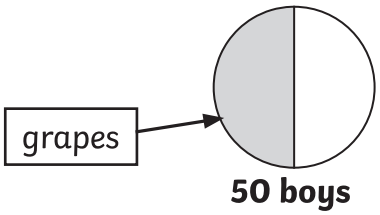
There are more than 10 tomatoes. ☐

2 marks

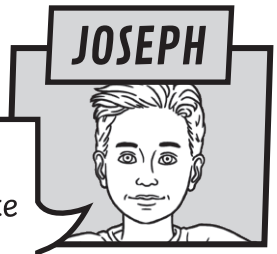
2 100 girls and 50 boys were asked what their favourite fruit was.

These two pie charts show the results.





Joseph says,



The same number of boys and girls said their favourite fruit was grapes.

Is Joseph correct?

Circle **Yes** or **No**

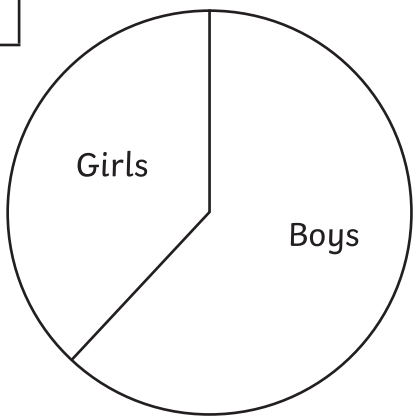
Yes / No

Explain how you know.

1 mark

3 This pie chart shows the proportion of boys and girls in Hari's class.

	Number in the class	Size of the angle on the pie chart
Boys	18	223°
Girls	11	137°



A new girl joins the class.

Hari makes a new pie chart.

Calculate the angle for **girls** on the new pie chart.

show your method

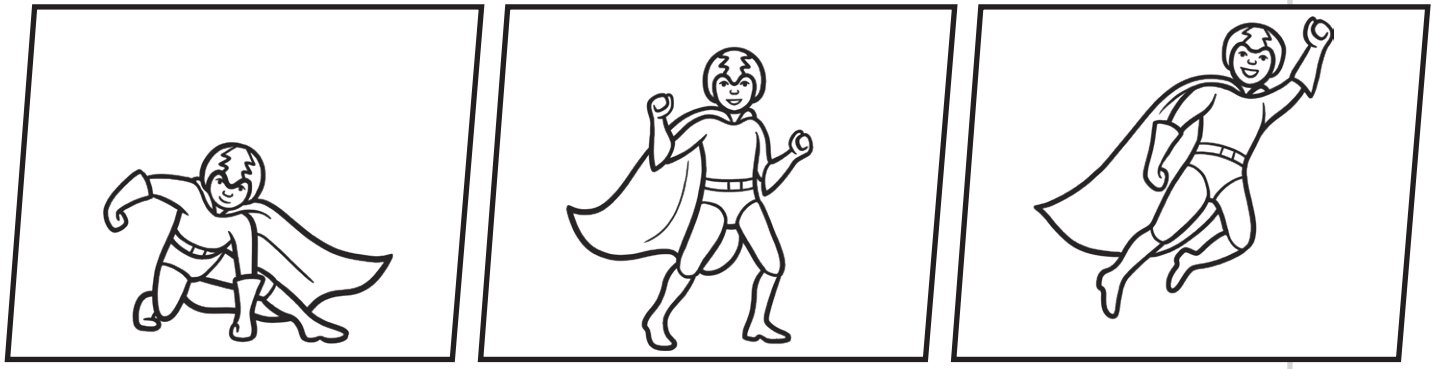
°

2 marks

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

FINDING THE MEAN

SUPERCHARGE!

SCORE: /5

Find the **mean** of each set of numbers.

a) 9, 7, 8, 8 ☐

b) 4, 9, 4, 7, 6 ☐

c) 1, 2, 7, 6 ☐

d) 3, 1, 8, 8, 5 ☐

e) 7, 10, 6, 5, 7, 7 ☐

Answers: a) 8 b) 6 c) 4 d) 5 e) 7

BOOST YOUR SUPERPOWERS

Finding the mean involves calculating the **average** value of a set of data. First, we **add** together all of the values and then **divide** this by the **number of values** there are in the data set. The mean will not always be a whole number.

Day	Mon	Tue	Wed	Thu	Fri
Bird	12	7	14	11	9

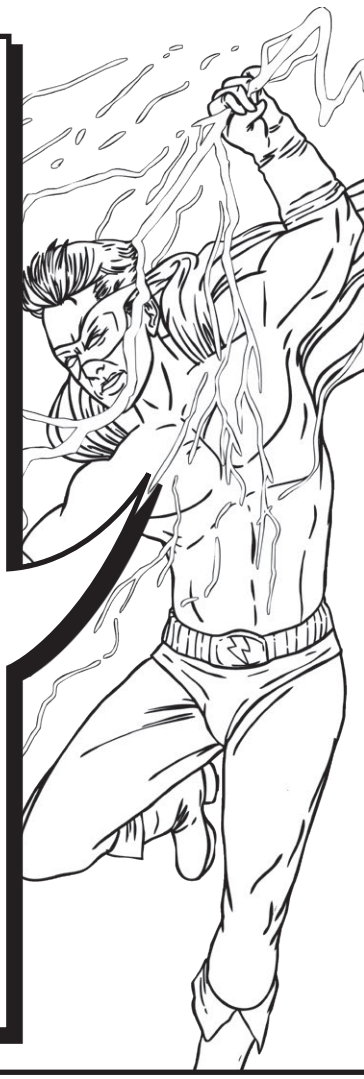
Finding the mean:

1) 12 + 7 + 14 + 11 + 9 = 53

2) 53 ÷ 5 = 10.6

In this example about bird watching, we can round the answer to the **nearest whole number** (11) as you cannot have part of a bird.

REVISION VIDEO SCAN ME



MATHS MISSION

1 A shop sells five different types of pizza.

This chart shows the number of each type of pizza sold in a week.

Pizza	Pepperoni	Ham	Cheese	Veggie	BBQ
Number of pizzas sold	207	100	105	87	15

What was the **mean** number of pizzas sold, rounded to the **nearest whole number**?

show your method

pizzas

2 marks

2 Four of the Study Squad children measured their heights.

What is the **mean** height of the children?

Child	Height (cm)
Bartek	144
Abi	140
Elias	141
Amrit	143

show your method

cm

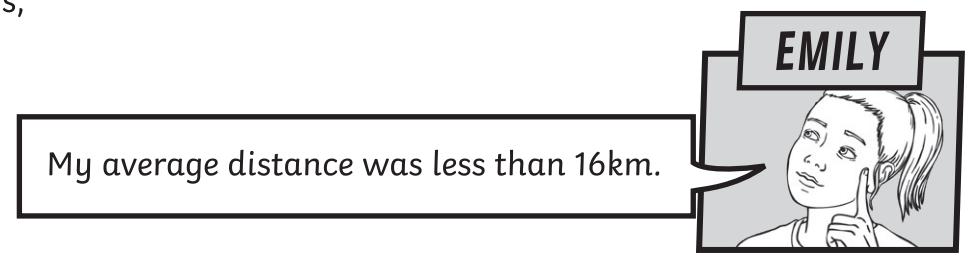
2 marks

3 Emily rides her bike for charity over five days.

The table shows how far she cycled each day.

Monday	Tuesday	Wednesday	Thursday	Friday
13km	15km	16km	14km	12km

Emily says,



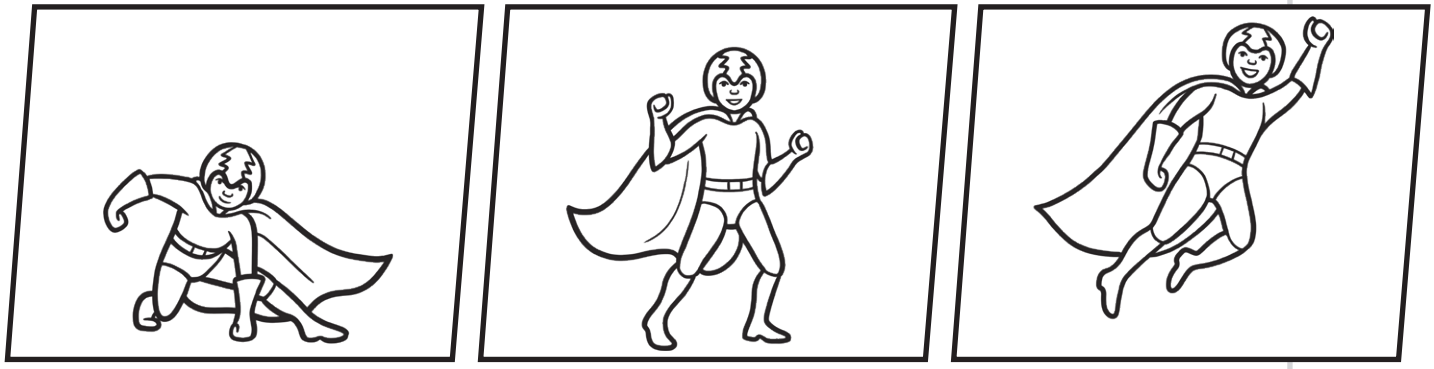
Explain why she is correct.

1 mark

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

INTERACTIVE GAME

Scan this QR code to access a Twinkl Go! Game to further practise your maths skills.

NOTES

WORKING OUT

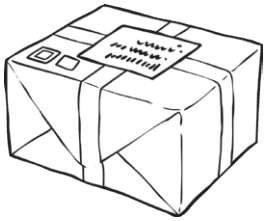
STATISTICS MIXED PRACTICE

1 Here are the masses of six parcels.

296g

227g

360g



376g

201g

384g

a) What is the difference between the mass of the heaviest parcel and the lightest parcel?

g

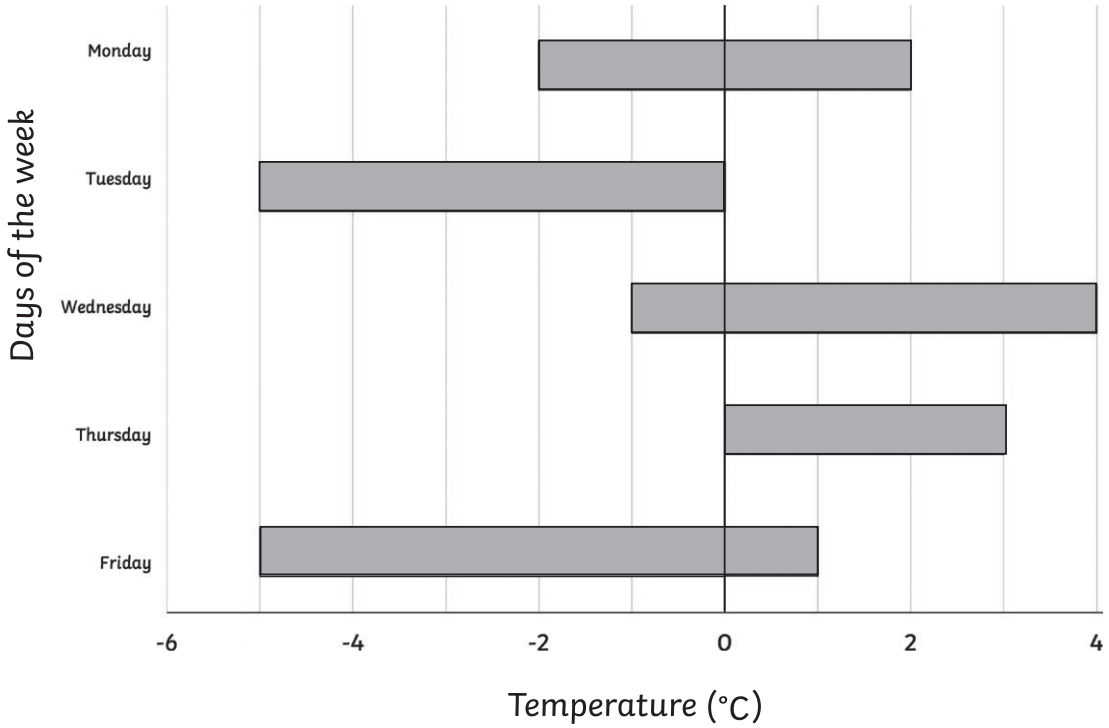
1 mark

b) Complete the table about the parcels.

Mass (g)	Number of parcels
200 - 249	
250 - 299	
300 - 349	
350 - 400	

1 mark

2 This chart shows the range in temperatures for the Plasma Palace over five days.



a) What was the **highest** temperature? ____ °C

b) What was the difference between the highest and lowest temperatures on **Friday**? ____ °C

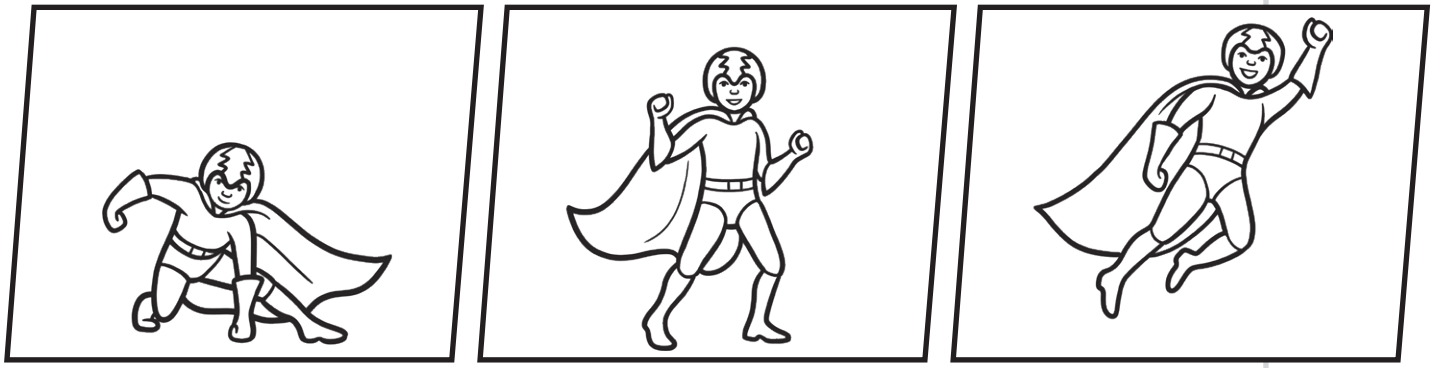
c) What was the **mean highest** temperature of the five days? ____ °C

3 marks

/5

TOTAL

MISSION COMPLETE!



How confident do you feel?

PROGRESS TRACKER

Write your scores from each concept in this unit to track your progress.

Tables and Pictograms	/5
Bar Charts	/4
Line Graphs	/5
Pie Charts	/5
Finding the Mean	/5
Statistics Mixed Practice	/5
TOTAL	/29

SELF-REFLECTION

What went well:

_____

_____

My target to improve:

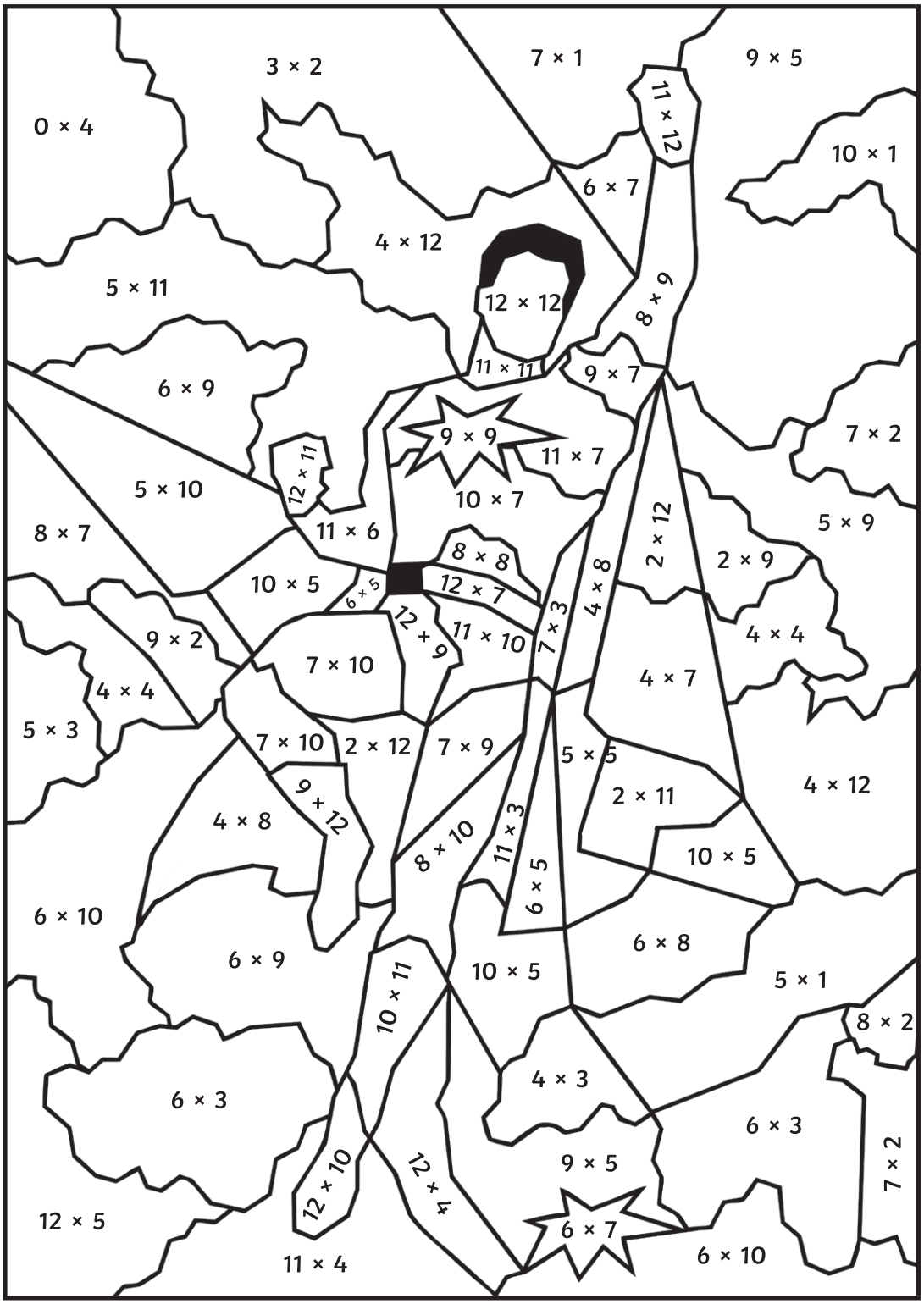
_____

_____

RECHARGE

Complete the multiplication calculations and shade each section with the matching colour.

White	Bright blue	Light blue	Red	Yellow	Purple	Skin colour (of your choice)
0 - 20	21 - 40	41- 60	61- 80	81- 100	101 - 120	121 - 150

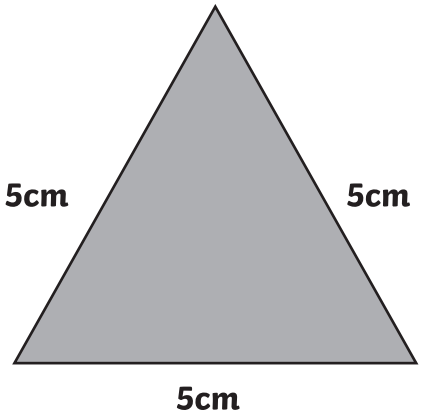


PERIMETER

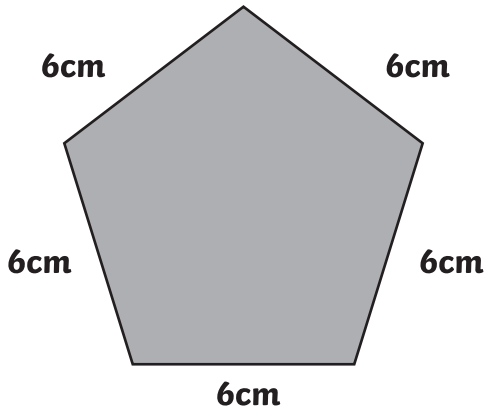
Perimeter is the **distance** around the edge of a shape.

To calculate the perimeter of a shape, **add** the **lengths** of all the sides.

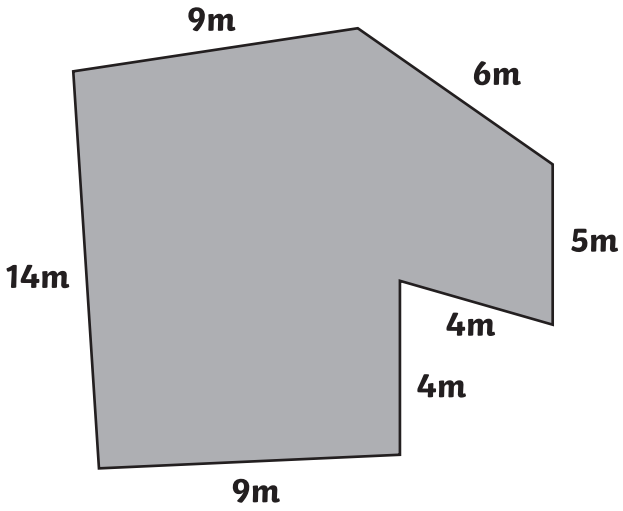
Shapes Not drawn to scale



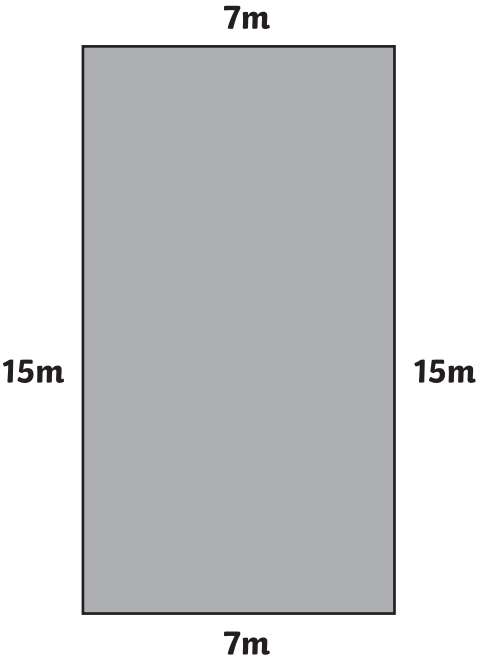
5 + 5 + 5 = 15cm



6 + 6 + 6 + 6 + 6 = 30cm



14 + 9 + 6 + 5 + 4 + 4 + 9 = 51m



15 + 7 + 15 + 7 = 44m

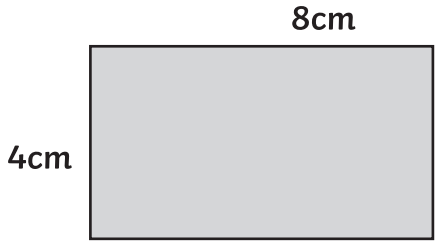
AREA

Area is the amount of square units inside a shape.

To calculate the area, we need to use different methods depending on the shape.

length × width = area of a rectilinear shape

Shapes Not drawn to scale

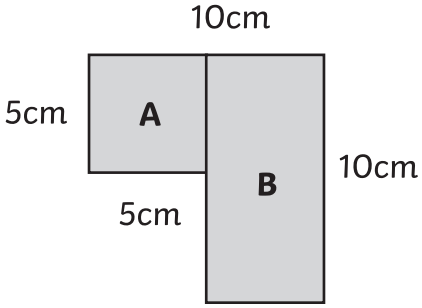


8cm × 4cm = 32cm²

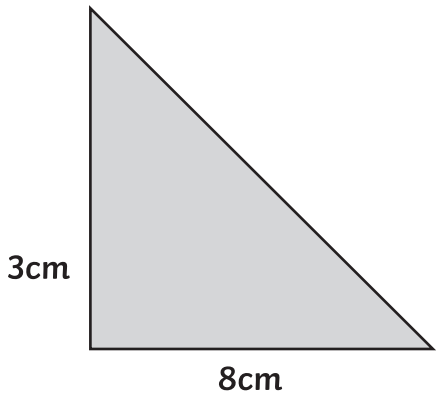
A) 5cm × 5cm = 25cm²

B) 5cm × 10cm = 50cm²

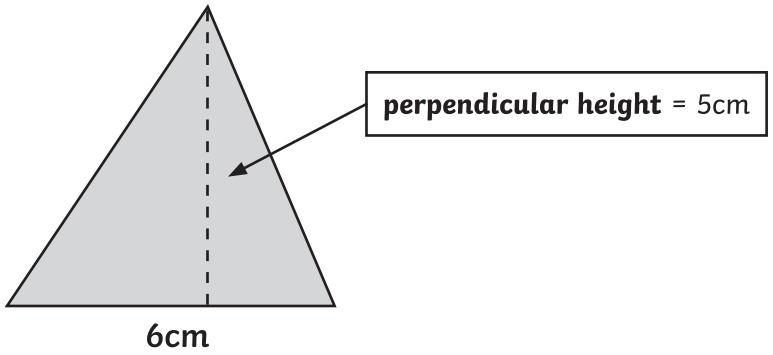
25cm² + 50cm² = 75cm²



base × perpendicular height ÷ 2 = area of a triangle

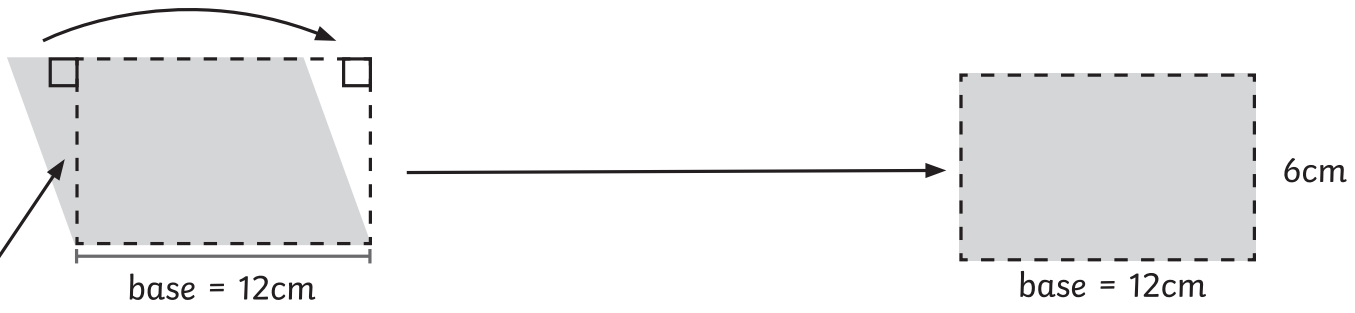


8cm × 3cm ÷ 2 = 12cm²



6cm × 5cm ÷ 2 = 15cm²

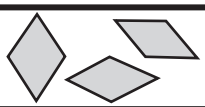
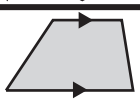
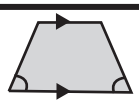
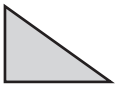
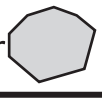
base × perpendicular height = area of a parallelogram



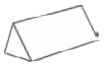
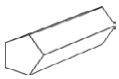
perpendicular height = 6cm

12cm × 6cm =72cm²

PROPERTIES OF 2D SHAPES

	Shape		Sides	Vertices
Quadrilaterals	square		4	4
	rectangle		4	4
	kite		4	4
	parallelogram		4	4
	rhombus		4	4
	trapezium		4	4
	isosceles trapezium		4	4
Triangles	equilateral		3	3
	isosceles		3	3
	right-angled		3	3
	scalene		3	3
Other	pentagon	regular irregular	5	5
	hexagon	regular irregular	6	6
	heptagon		7	7
	octagon	regular irregular 	8	8
	nonagon		9	9
	regular decagon		10	10

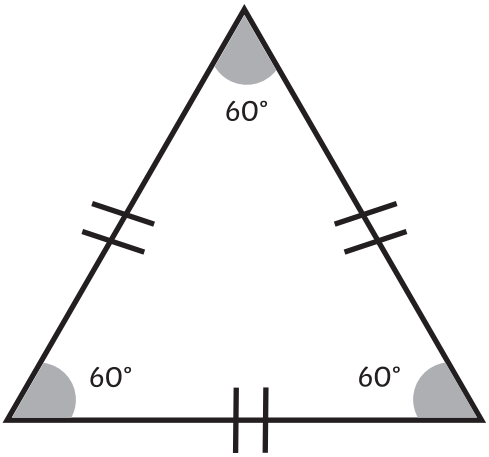
PROPERTIES OF 3D SHAPES

Name	Surfaces		Edges		Vertices	Picture
	Flat	Curved	Flat	Curved		
sphere	0	1	0	0	0	
cube	6	0	12	0	8	
cuboid	6	0	12	0	8	
cylinder	2	1	0	2	0	
square-based pyramid	5	0	8	0	5	
tetrahedron	4	0	6	0	4	
triangular prism	5	0	9	0	6	
pentagonal prism	7	0	15	0	10	
hexagonal prism	8	0	18	0	12	
octagonal prism	10	0	24	0	16	
octahedron	8	0	12	0	6	

TYPES OF TRIANGLES

The **interior angles** of a triangle equal 180°

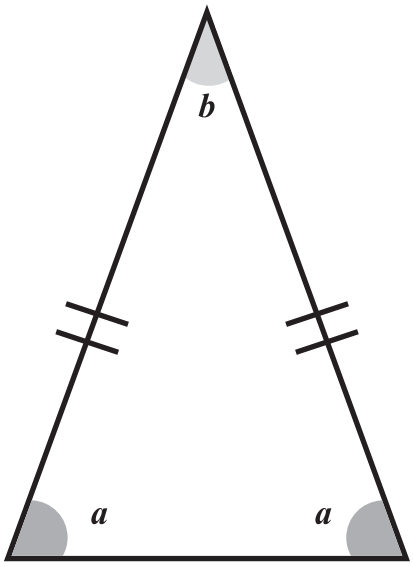
equilateral



3 equal sides
3 equal angles (60°)

60° + 60° + 60° = 180°

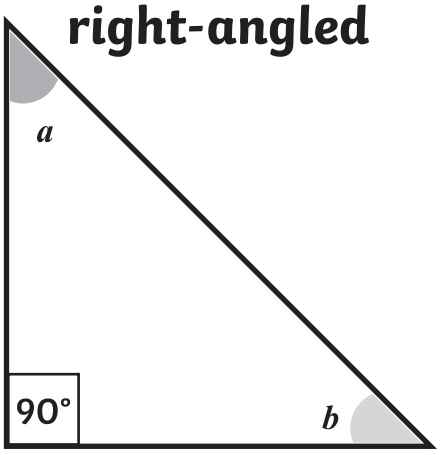
isosceles



2 equal sides
2 equal angles

$a + a + b = 180°$

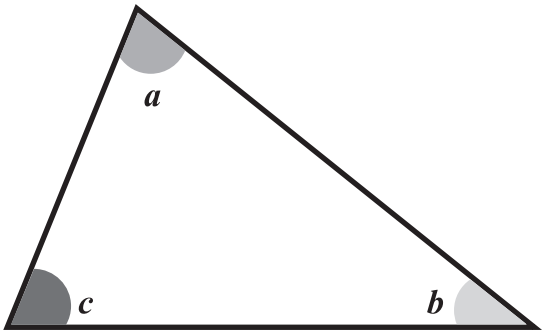
right-angled



1 right-angle (90°)
2 angles that equal 90°

$90° + a + b = 180°$

scalene



All sides are different
All angles are different

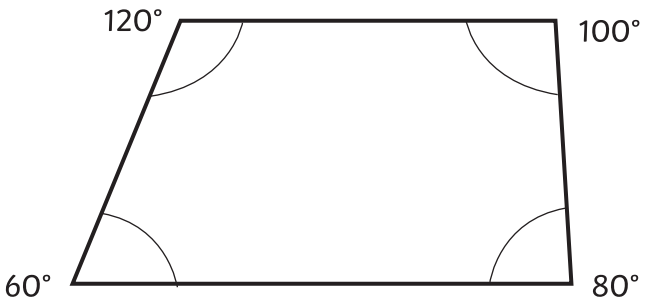
$a + b + c = 180°$

FINDING ANGLES AND LENGTHS IN QUADRILATERALS

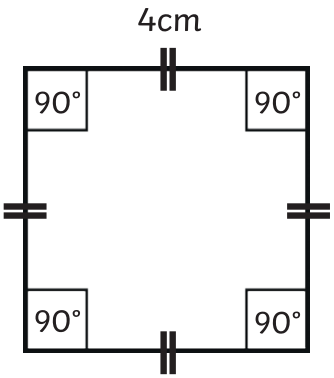
The **interior angles** of quadrilaterals equal 360°

Shapes not drawn to scale

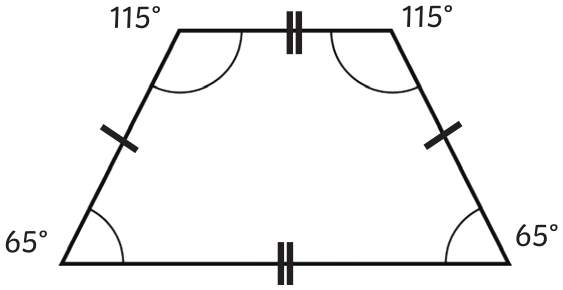
Irregular Trapezium



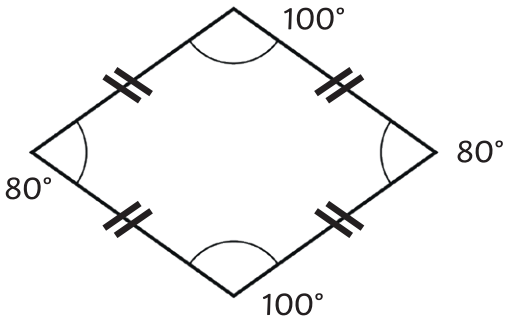
Square



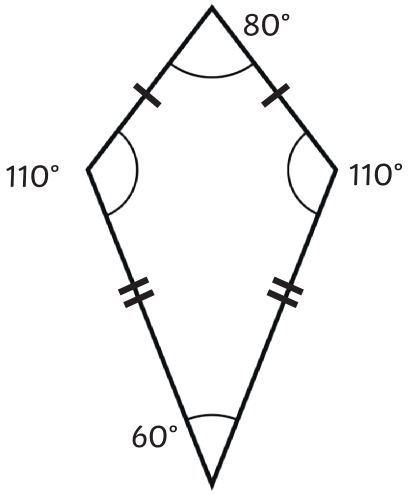
Isosceles Trapezium



Rhombus



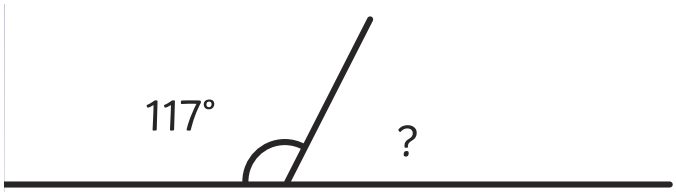
Kite



FINDING MISSING ANGLES

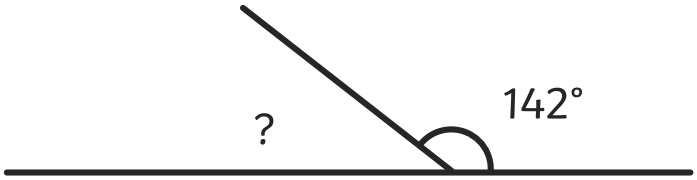
Shapes not drawn to scale

Angles on a straight line always add up to 180°



180° − 117° = 63°

The missing angle is 63°

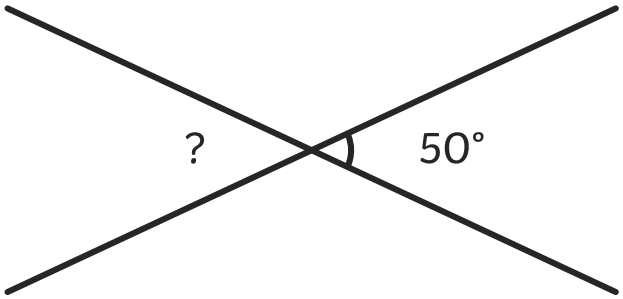


180° − 142° = 38°

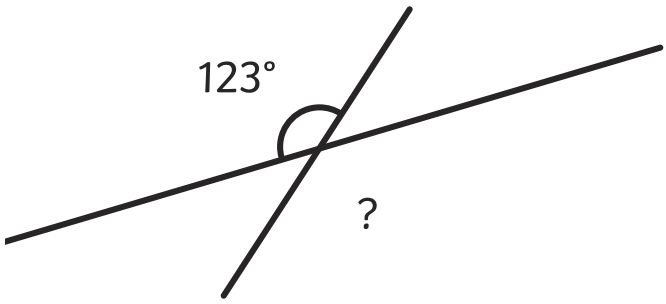
The missing angle is 38°

Missing vertically opposite angles

Opposite angles are equal

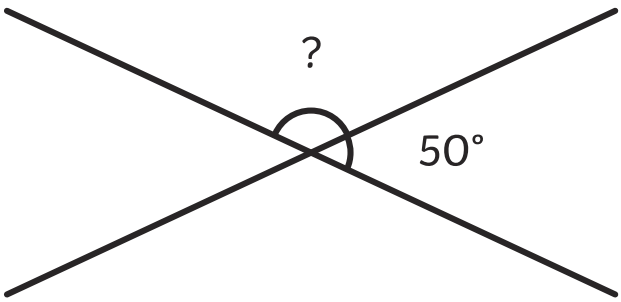


The missing angle is 50°



The missing angle is 123°

Angles around a point total 360°

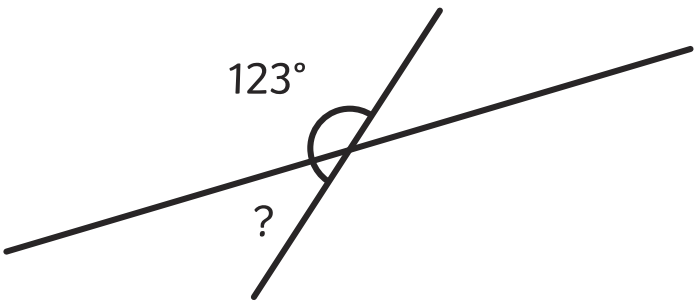


The two known opposite angles total 100°

360° − 100° = 260°

260° ÷ 2 = 130°

The missing angle is 130°



The two known opposite angles total 246°

360° − 246° = 114°

114° ÷ 2 = 57°

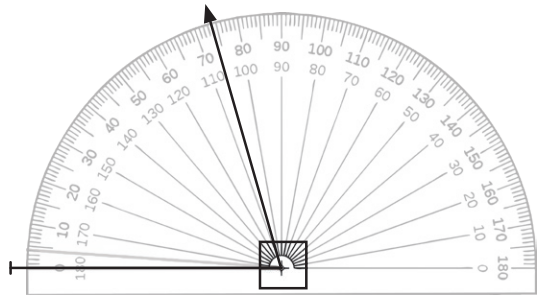
The missing angle is 57°.

HOW TO USE A PROTRACTOR

Follow these steps to make sure you are using your protractor to measure angles accurately.

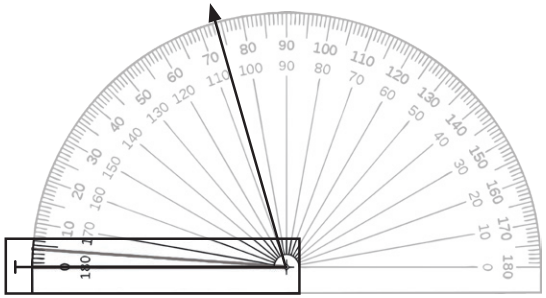
Step 1

Put the cross or circle at the point (vertex) of the angle that you are measuring.



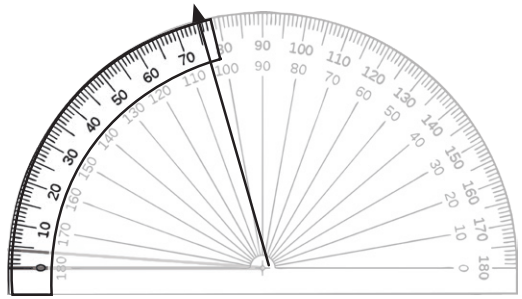
Step 2

Line up one of the sides that forms the angle with the zero on the outer edge of the protractor.



Step 3

Read around the outer scale of the protractor from the zero to where the other side meets the edge of the protractor.



Step 4

Count the degrees lines carefully to get an accurate measurement.

Helpful hint:

Use what you already know about angles to estimate the size of the angle you are measuring. Ask yourself: is it bigger than a right angle or smaller than a right angle? Then, check your measurement - is it a logical answer?

TYPES OF LINES

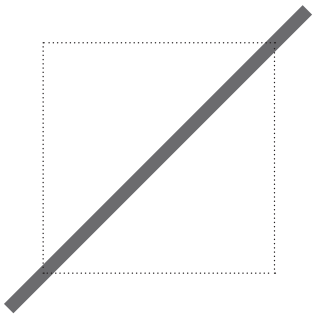
Vertical

Straight line up and down

Horizontal

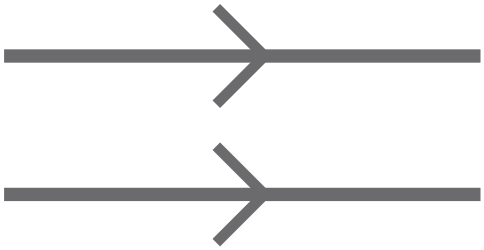
Straight line left and right

Diagonal



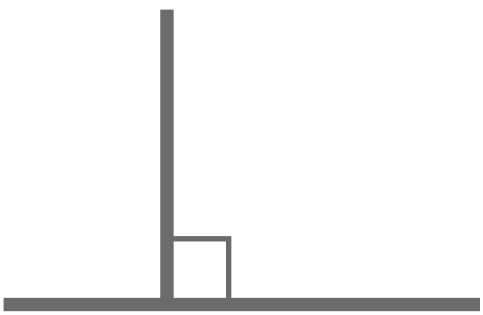
Straight line corner to corner

Parallel



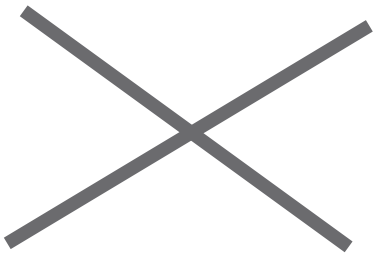
Lines that will never meet and are always the same distance apart

Perpendicular



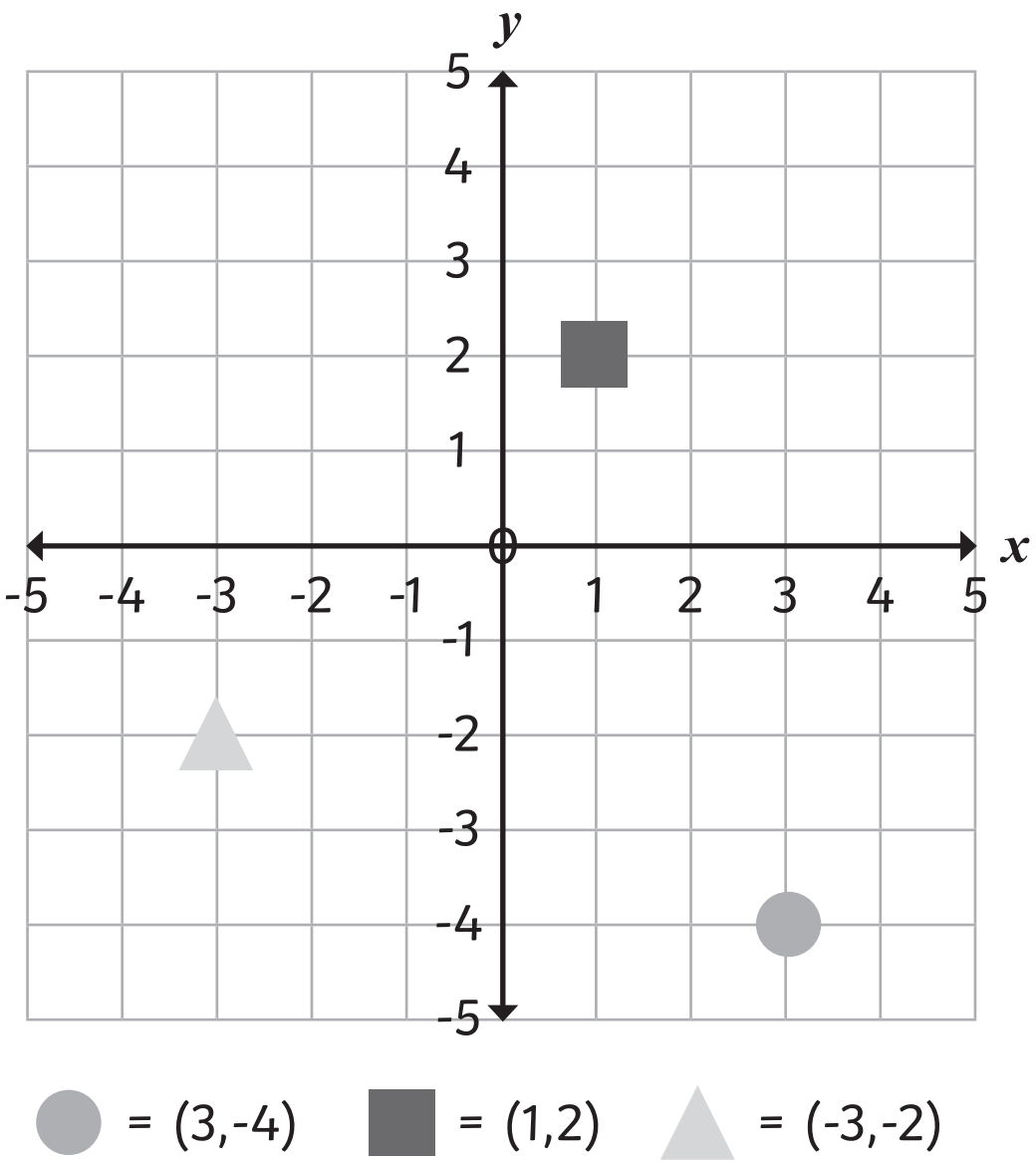
Lines that meet at a right angle (90˚)

Intersecting Lines



Lines that cross but do not make a right angle

COORDINATES



Coordinates can use **positive** and **negative** numbers. Whether positive or negative, always write the **x-axis** coordinate **followed by** the **y-axis** coordinate.

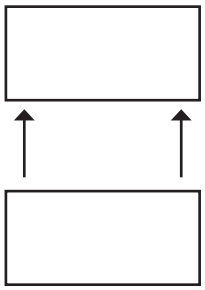
Look at the circle point. It is 3 squares along and 4 down.
We write this coordinate as (3, -4).

REFLECTION AND TRANSLATION

Translate / Translation

A shape is translated when it is moved without rotating or resizing.

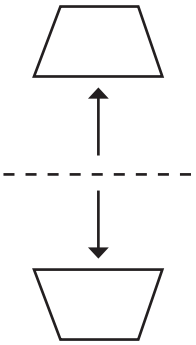
Each point of the shape moves the same distance in the same direction.



Reflect / Reflection

A shape is reflected when it is flipped over a mirror line.

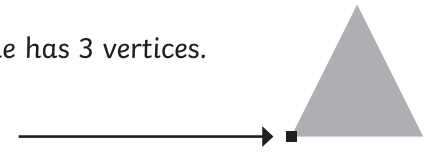
Every point of the shape is the same distance from the mirror line as the same point on the reflected shape.



Vertex / Vertices

The corner of a shape is called a vertex. The plural is vertices.

A triangle has 3 vertices.



Coordinates

Coordinates mark the location of a point on a coordinate grid.

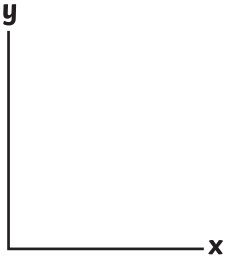
The coordinates are written in brackets (x, y).

Axis / Axes

A coordinate grid has axes.

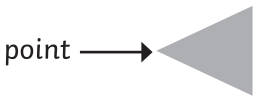
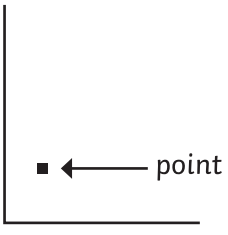
The x-axis is horizontal.

The y-axis is vertical.



Point

A point is an exact location.



It has no size, only position. They are shown by dots or parts of a line.