Monday 18th May 2020

L.O. – To calculate angles about a straight line.

*Parents – Please note that the answers for most problems will be shown on the next slide. Please get your children to answer these prior to moving to next slide.

There is also a Parents Only answer sheet for the daily worksheets.

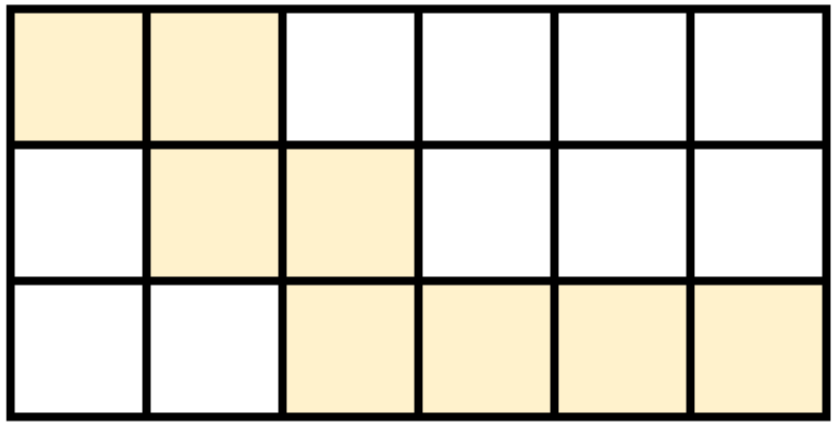
If you could also send in the one completed worksheet.

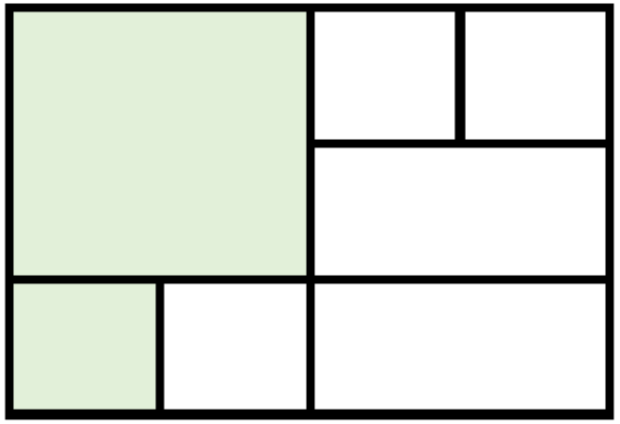
Your teacher would love to see some great work.

Problems of the day.

Hit space bar for answers but don't do it until you've tried!

1 What fraction of each rectangle is shaded?





2 Work out the following fraction calculations.

(a) $\frac{3}{6} + \frac{1}{2}$

(b) $\frac{2}{5} + \frac{7}{15} + \frac{3}{5} + \frac{8}{15}$

(c) $1 - \frac{1}{5} - \frac{3}{10}$

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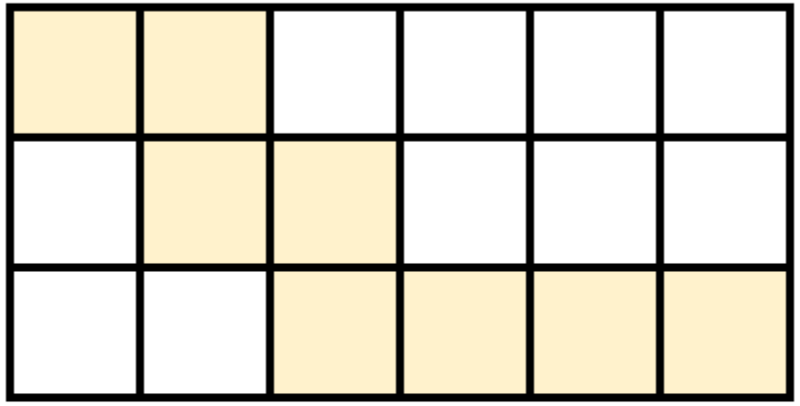
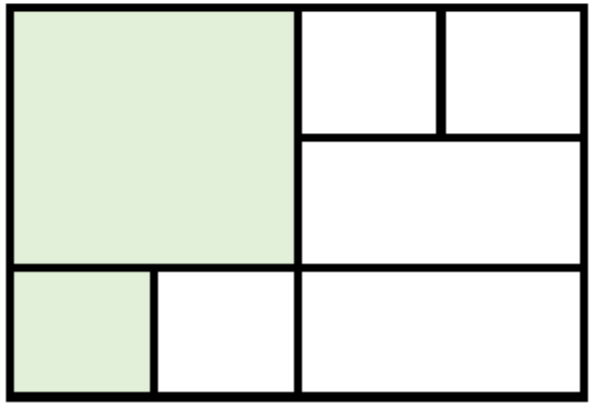


$\frac{8}{18}$ or $\frac{4}{9}$



$\frac{5}{12}$

2 Work out the following fraction calculations.

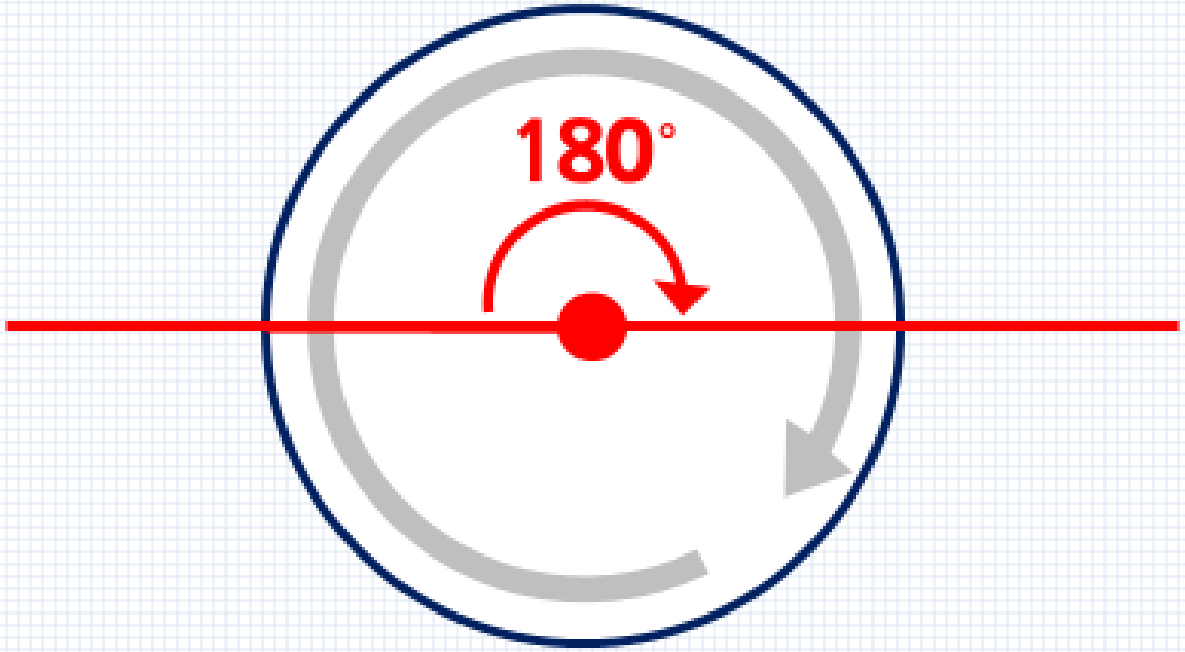
(a) $\frac{3}{6} + \frac{1}{2} = 1$

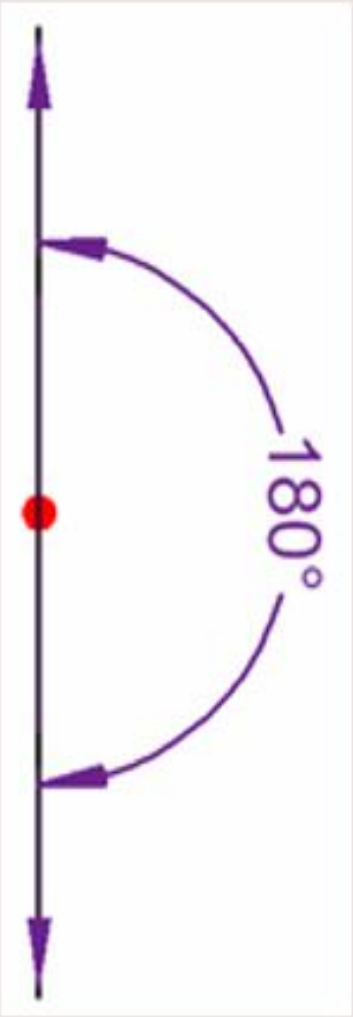
(b) $\frac{2}{5} + \frac{7}{15} + \frac{3}{5} + \frac{8}{15} = 2$

(c) $1 - \frac{1}{5} - \frac{3}{10} = \frac{1}{2}$

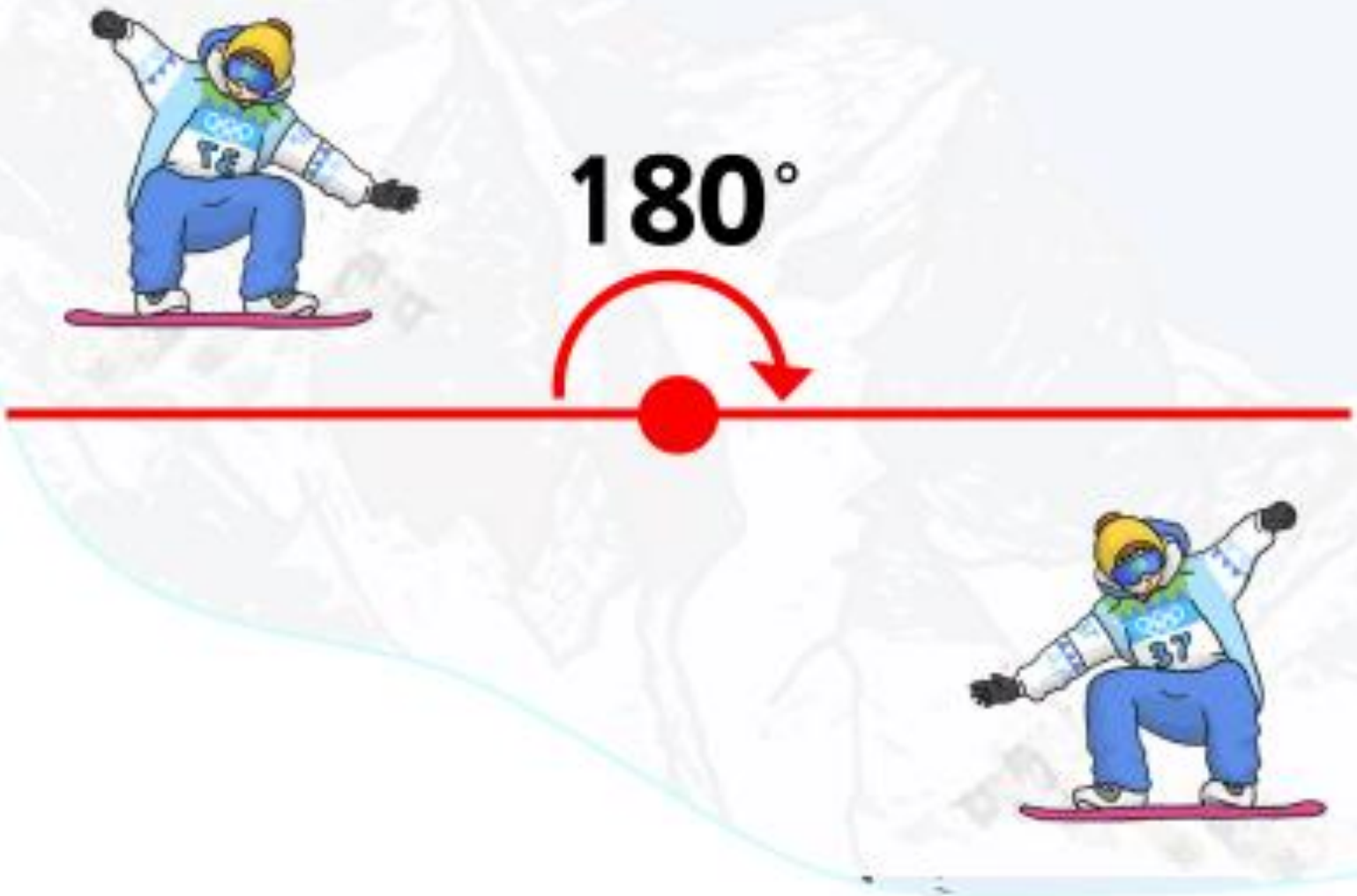
Straight Angles

A half of a full turn is called a **straight angle**. It measures 180°



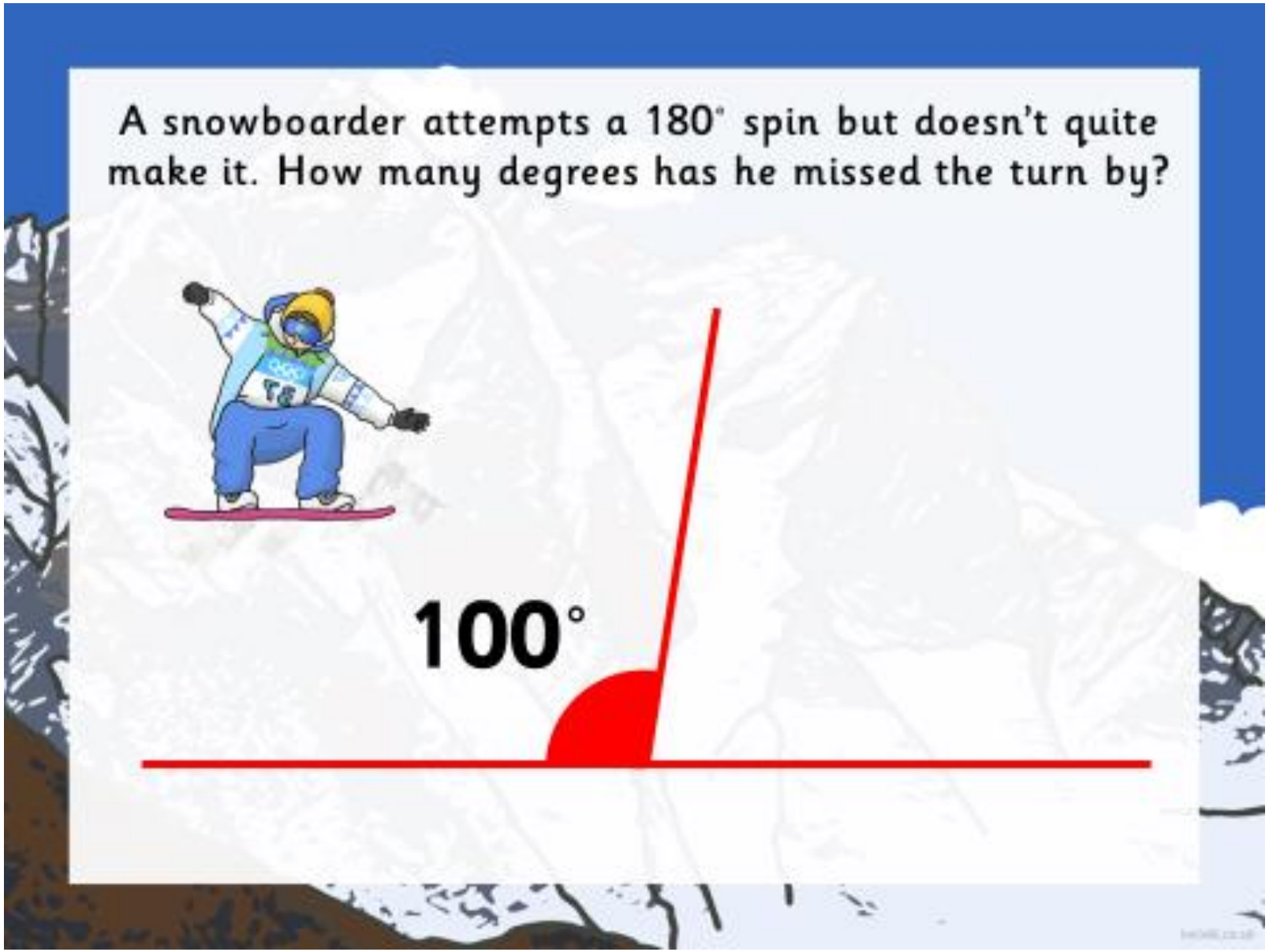


Snowboarders Doing 180 ° Spins



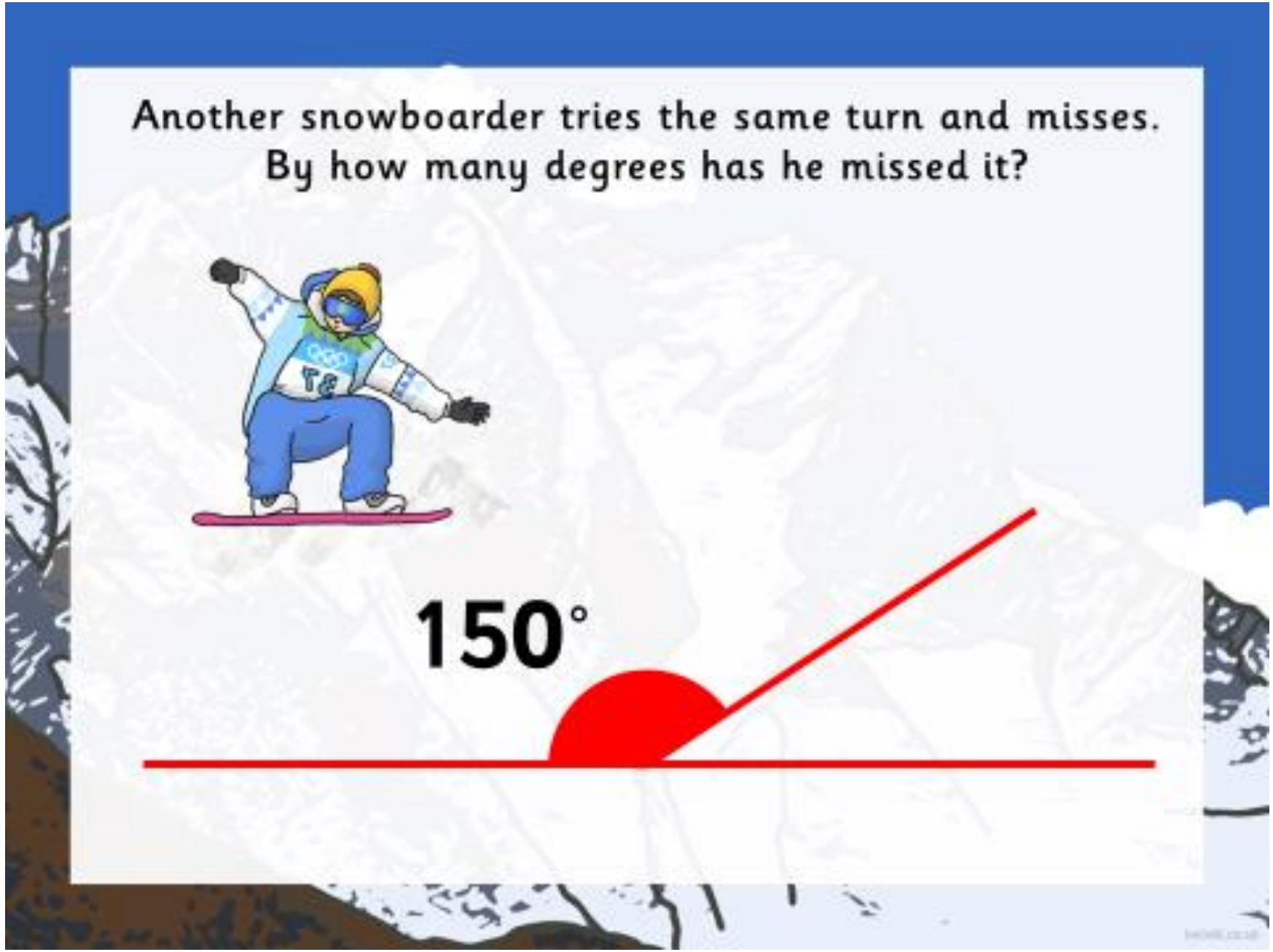
A snowboarder attempts a 180° spin but doesn't quite make it. How many degrees has he missed the turn by?

Try this out first before checking the answer on the next slide.



$180^0 - 100^0 = 80^0$

He has missed the turn by 80^0.



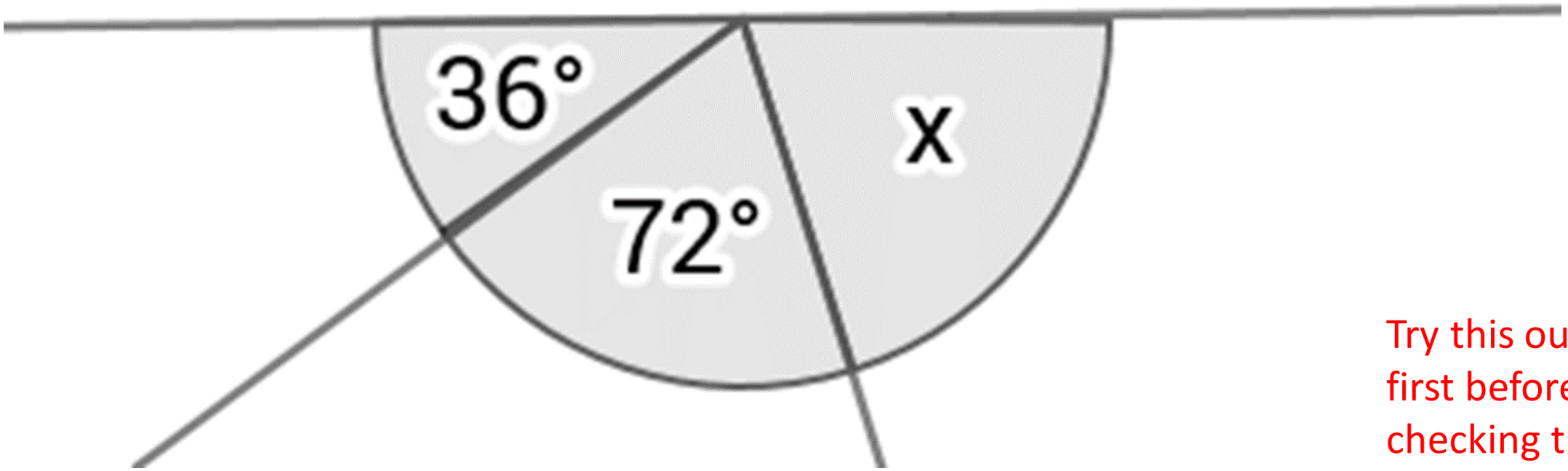
Try this out first before checking the answer on the next slide.

Another snowboarder tries the same turn and misses.
By how many degrees has he missed it?

$180^0 - 150^0 = 30^0$

He has missed the turn by 30^0.

How would you calculate the missing angle x?



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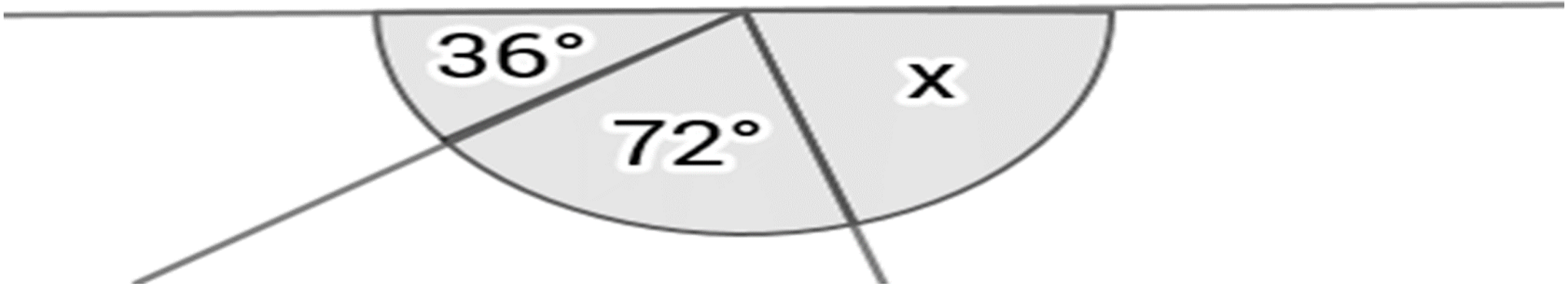


METHOD 1

STEP A: Subtract the first given angle.

$180^0 – 36^0 = 144^0$

STEP B: Subtract the second angle from the answer to Step A.

$144^0 - 72^0 = 72^0$

$X = 72^0$

METHOD 2

STEP A: Add the angles together.

$36^0 + 72^0 = 108^0$

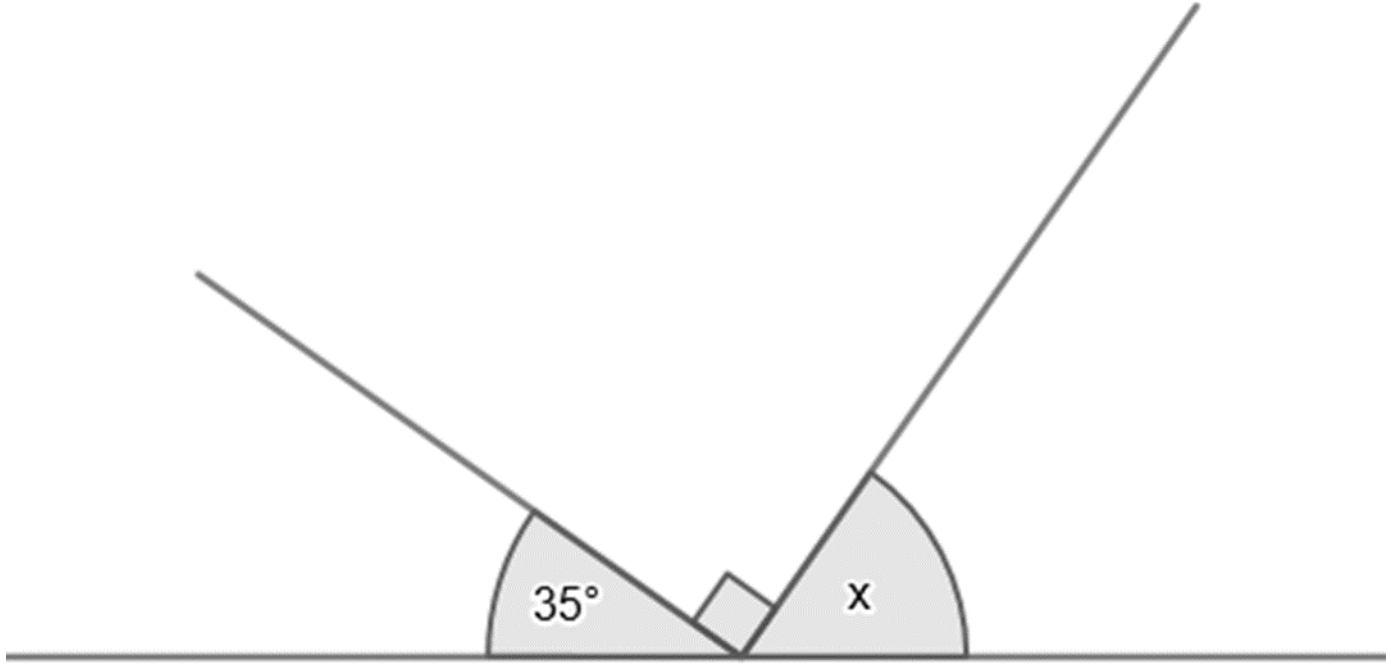
STEP B: Subtract the total given angles from 180^0.

$180^0 - 108^0 = 72^0$

$X = 72^0$

Both methods give the same answer. Which method do you prefer and why?

Find the missing angle.



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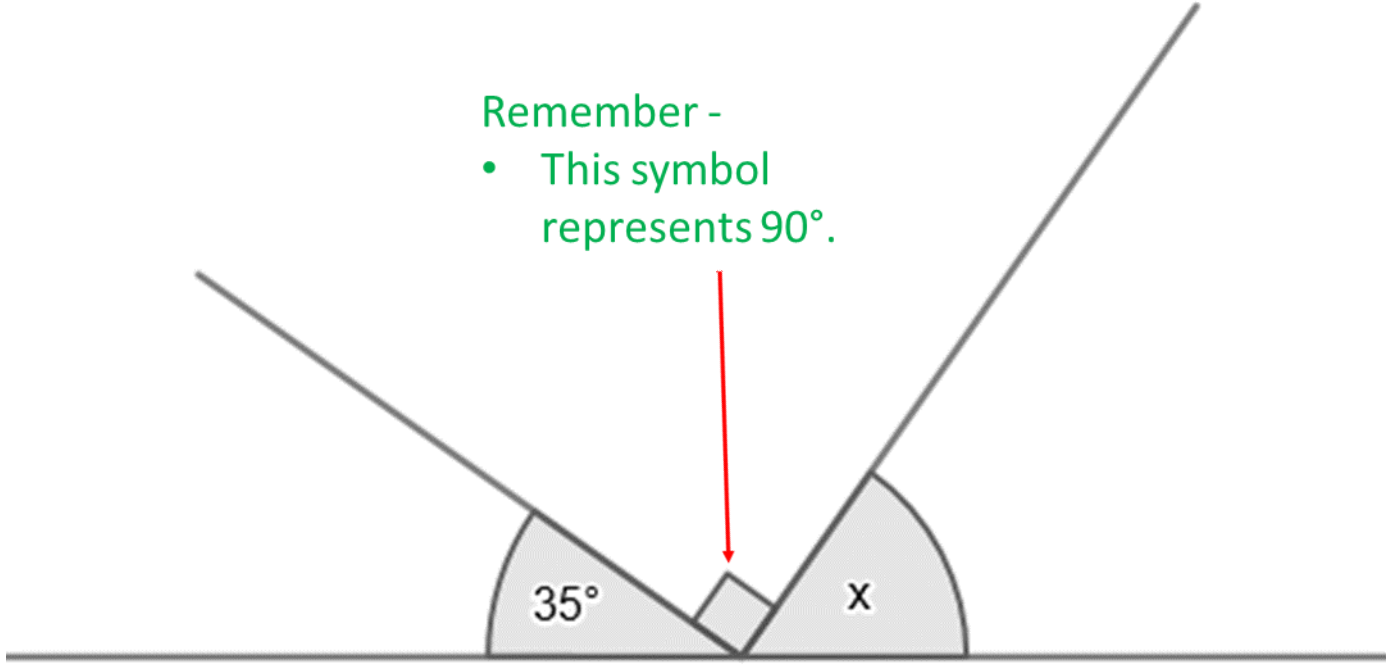


$X = 55^0$

Tasks

Complete –

- Worksheet.

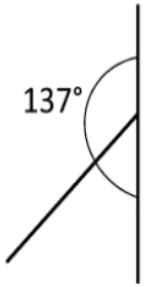
If you have any misunderstandings then please head to Education City or email the school on –

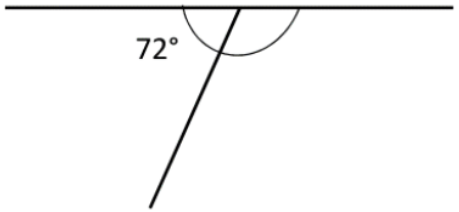
learning@wembleyprimary.brent.sch.uk

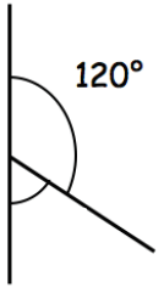
Worksheet

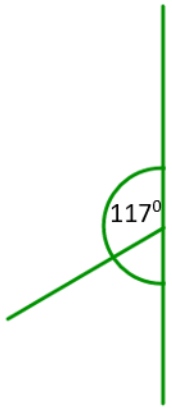
Calculate the size of the missing angles.

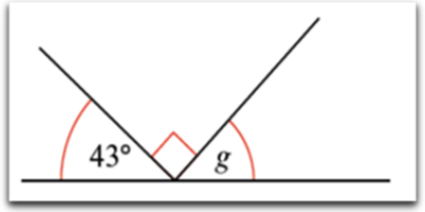
- Remember:
  - Angles on a straight line add up to 180°
  - To calculate a missing angle on a straight line, take away the known angle from 180°

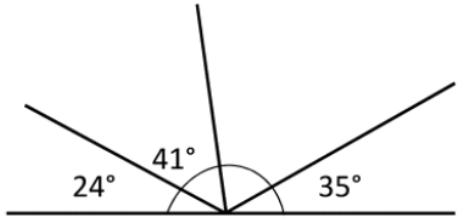


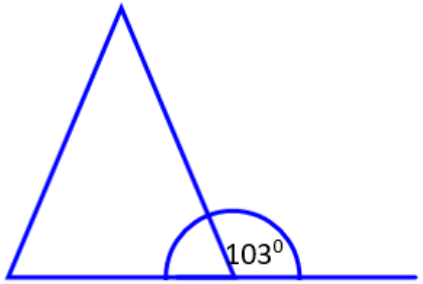












Four angles meet at the same point on a straight line.

One angle is 81°

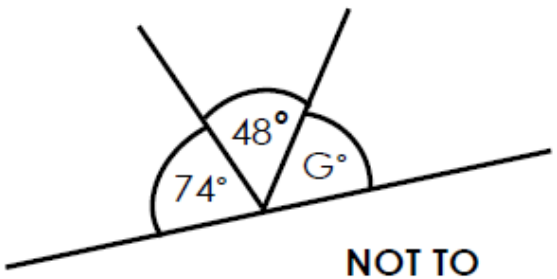
The other three angles are equal.

What size are the other three angles?

Draw a diagram to prove your answer.

Extra Challenge

Explain the mistakes



NOT TO SCALE

Calculate the size of angle G

Mistake 1

360° - (74° + 48°)
= 238°

Mistake 2

74° + 48° = 122°

Mistake 3

74° + 48° = 122°
180° - 122° = 68°

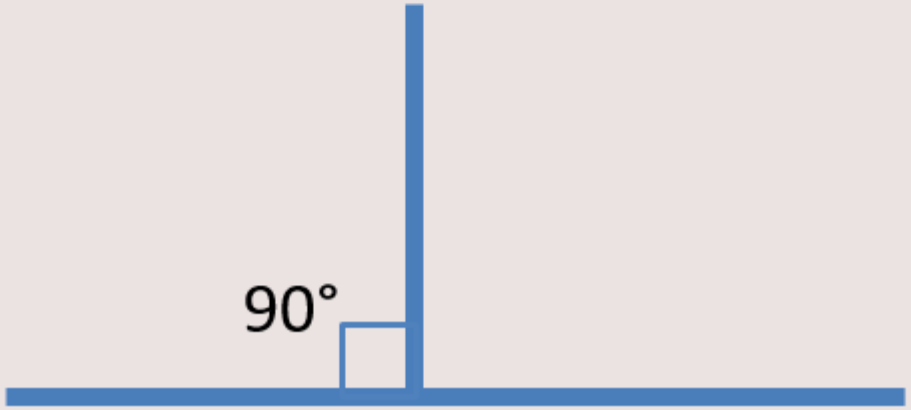
19.05.2020

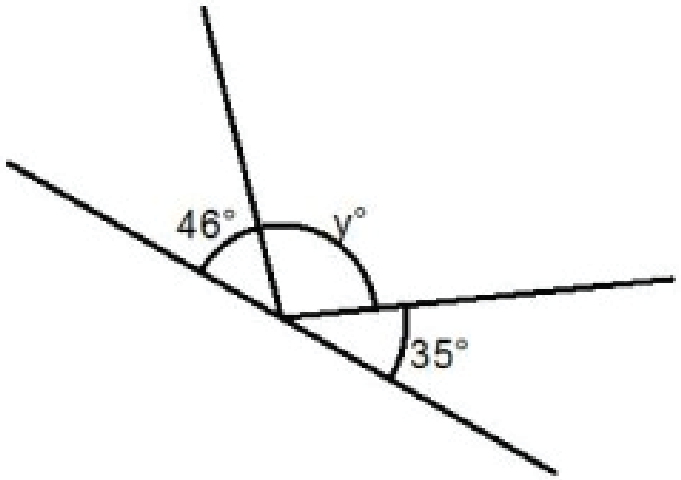
- **<u>LO: To calculate angles about a point</u>**

REVIEW - Straight Line

WHAT ARE THE MISSING ANGLES?

A snowboarder tries to do a 180°,
he isn't very good so he only gets half way.
How many degrees short is he?





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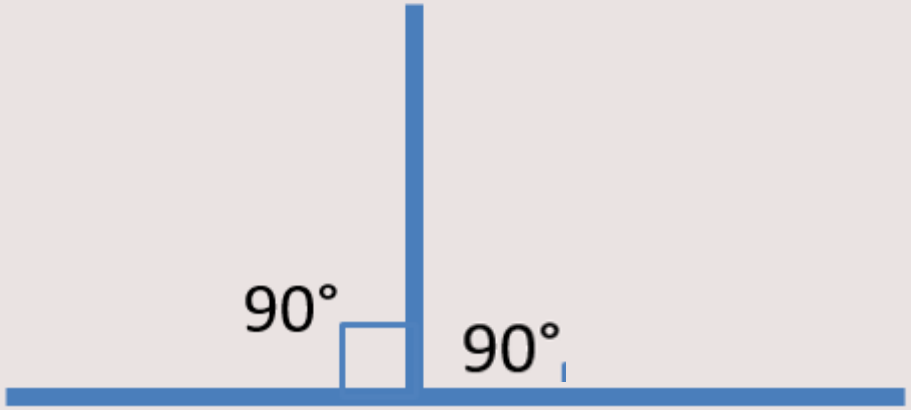
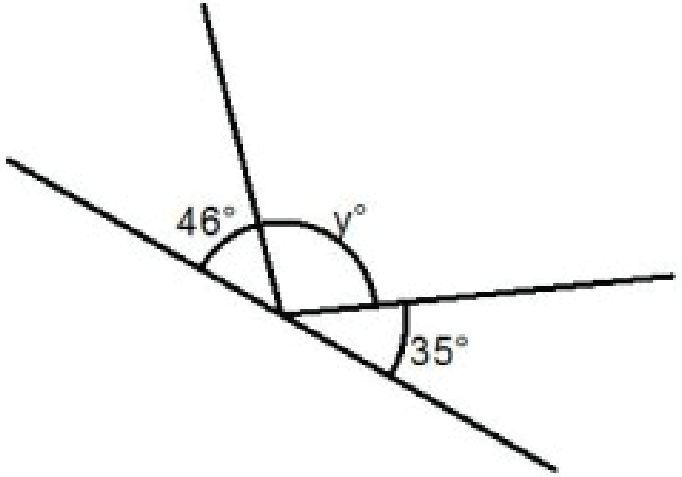


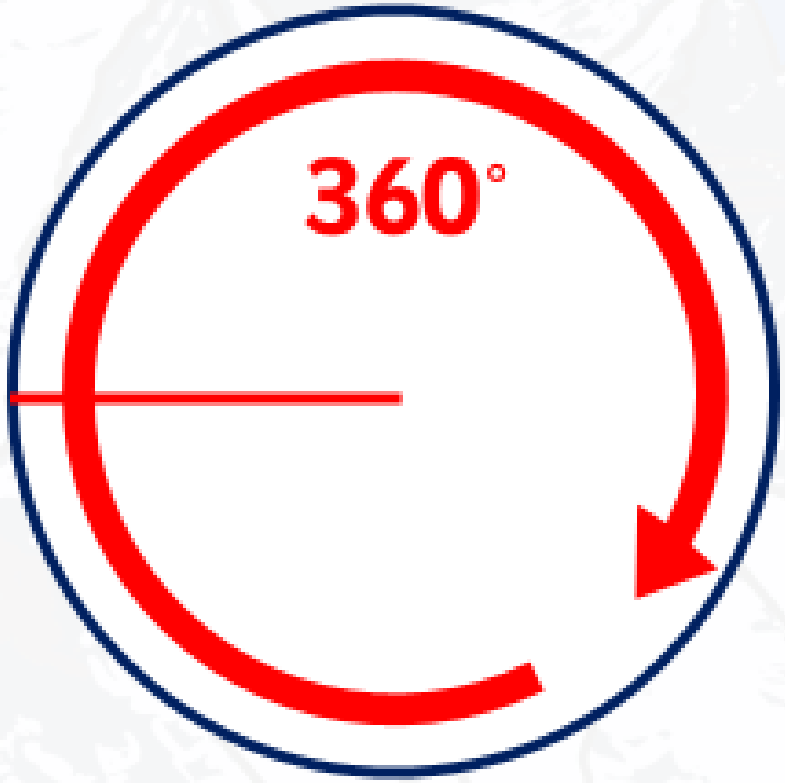


y IS 99^0

LO: To calculate angles about a point

A Full Turn

A full turn is when a line turns around in a complete circle.
It measures 360°



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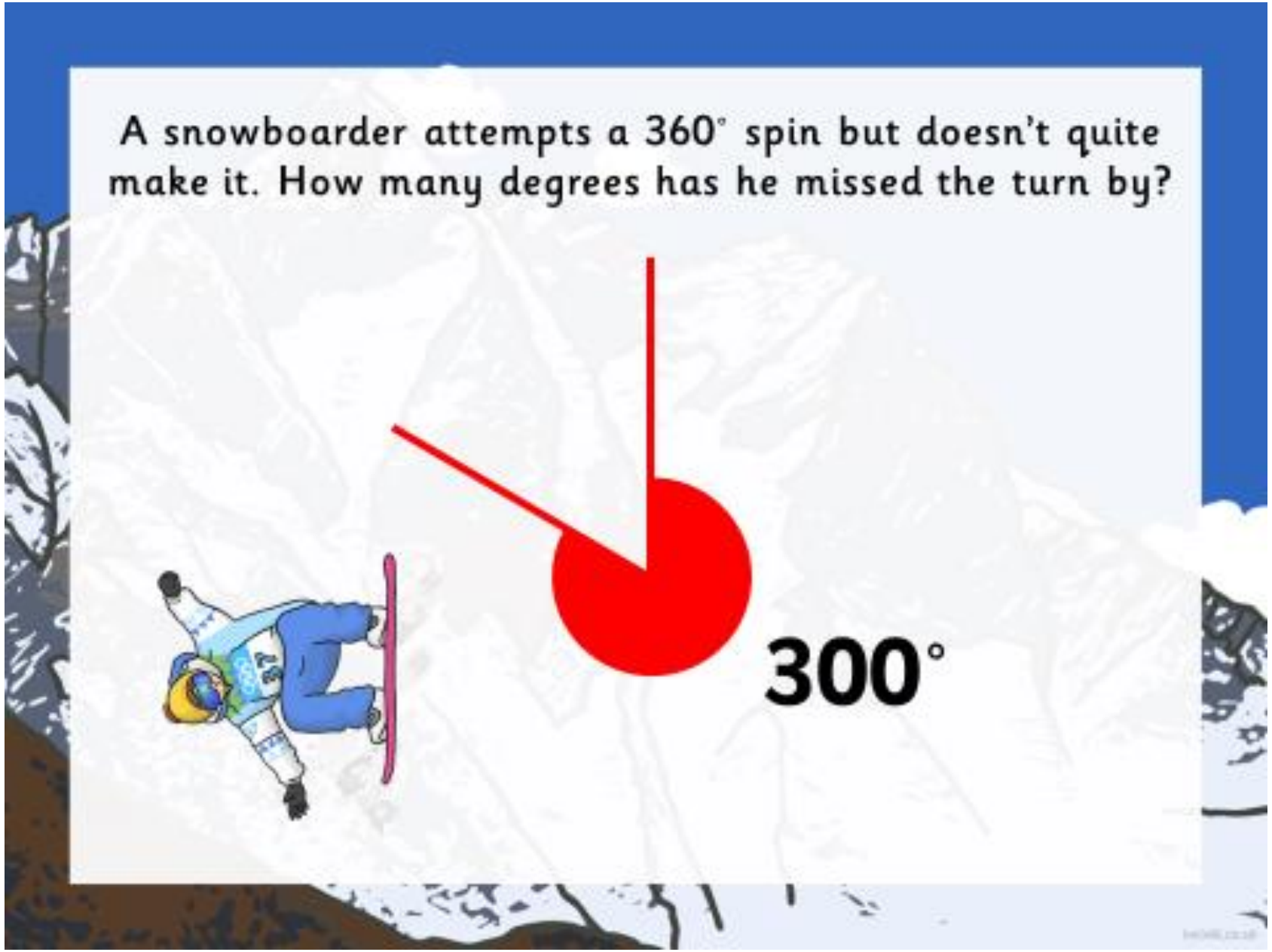

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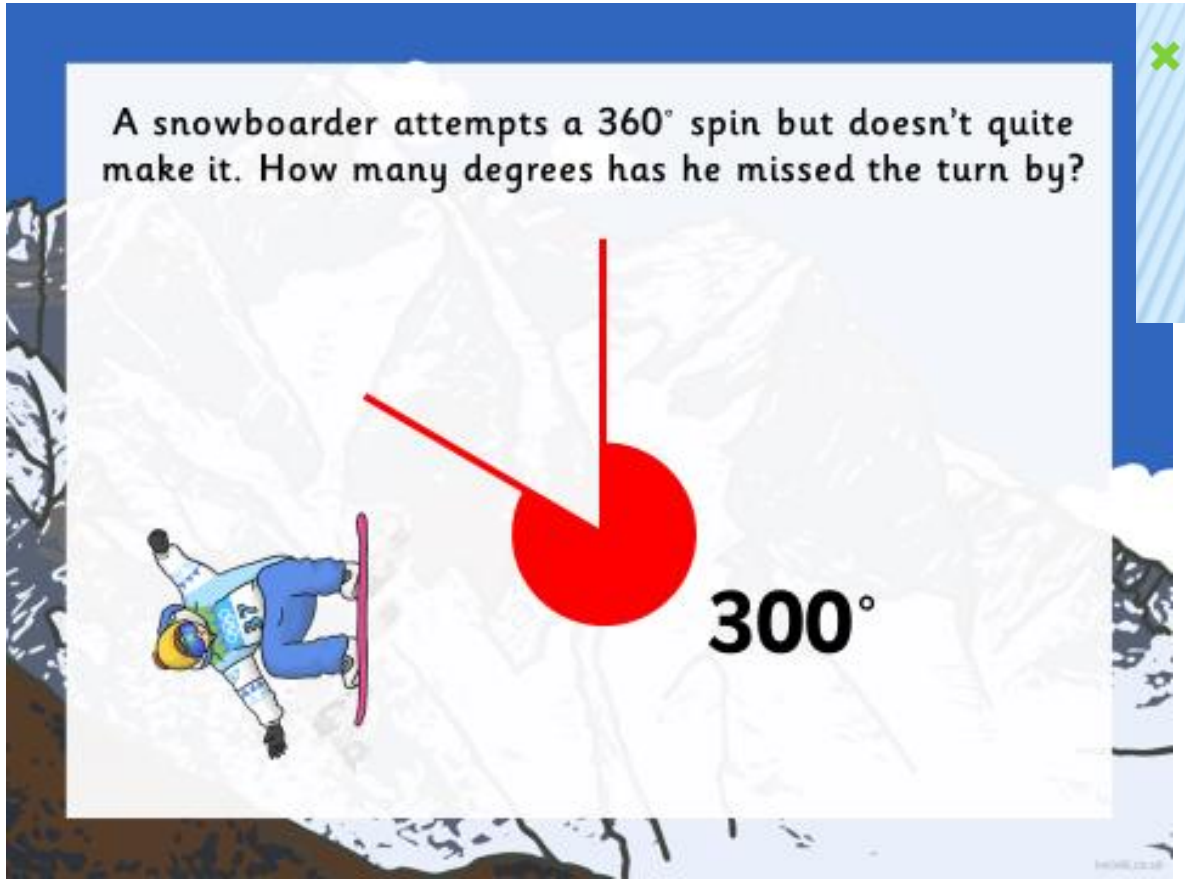


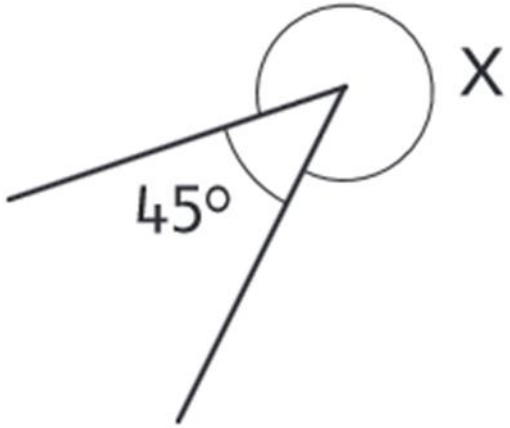
- Remember:
  - Angles in a full turn add up to 360°
  - To calculate a missing angle in a full turn, take away the known angle from 360°

360° - 300° = 60°

He has missed a turn by 60°.

LO: To calculate angles about a point

What is missing angle x?



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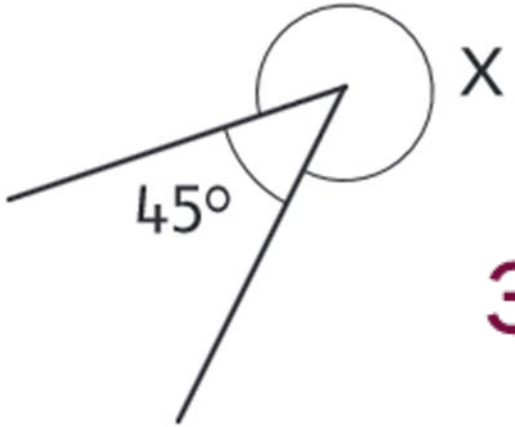

360° - 45° =

315°

LO: To calculate angles about a point

What is missing angle d?

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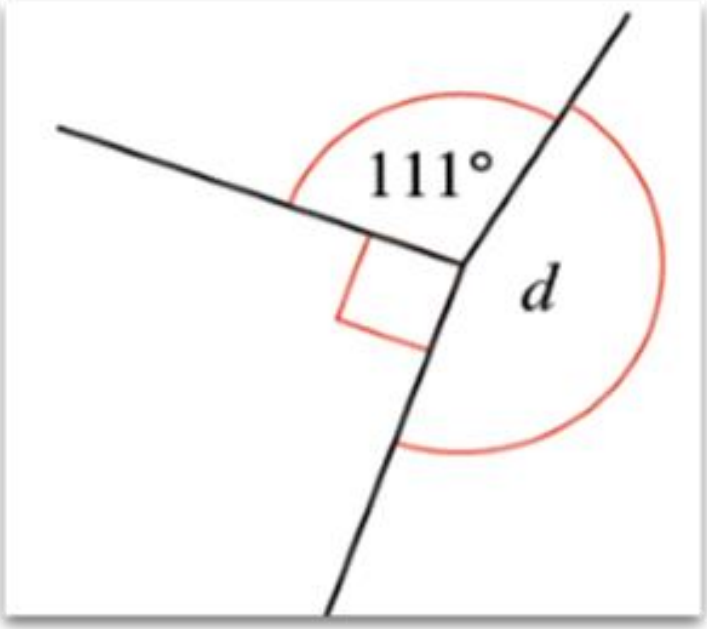
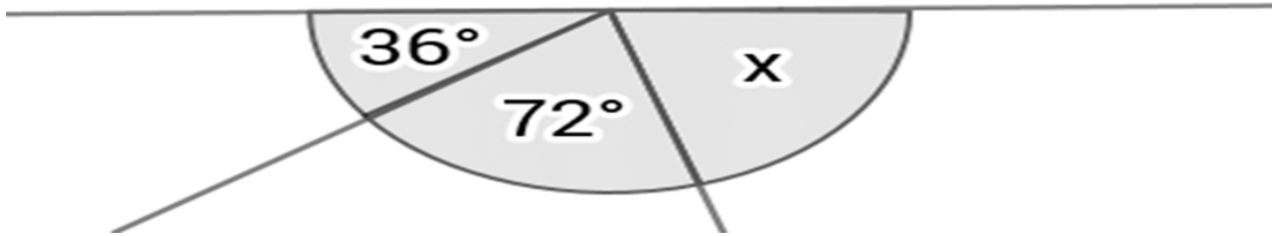


The square symbol stands for _____

Remember the methods below for calculating missing angles on a straight line? Can you use this to help you work out the missing angle 'd'?



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METHOD 2

STEP A: Add the angles together.

$36^0 + 72^0 = 108^0$

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LO: To calculate angles about a point

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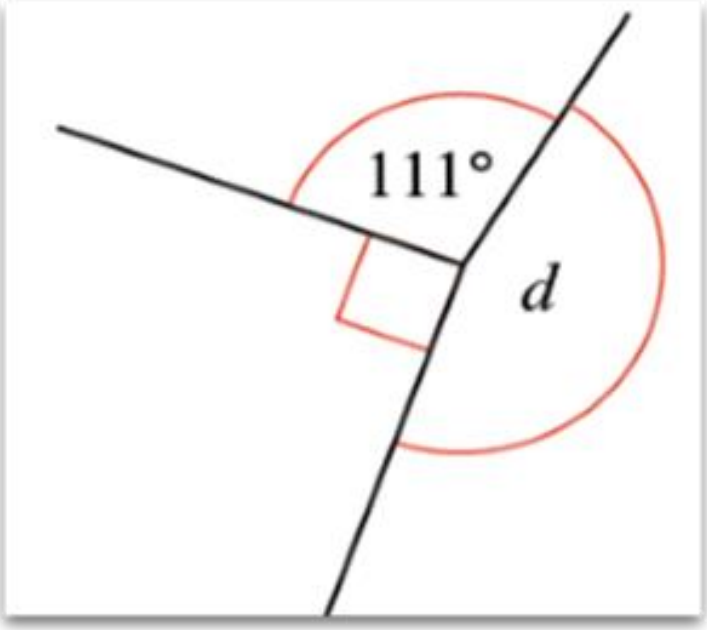


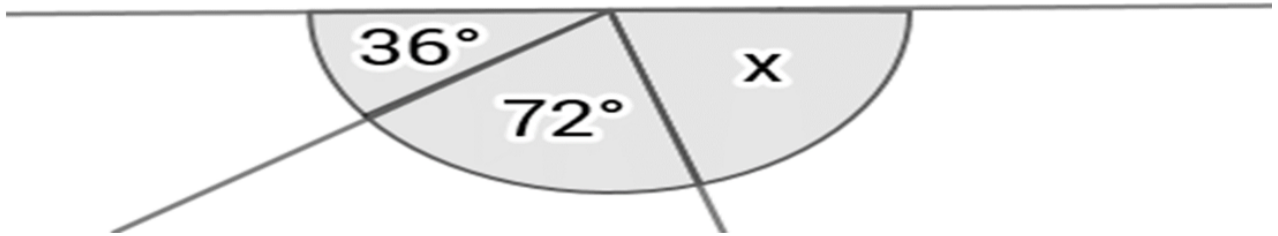
The square symbol stands for **90^0**

Using method 2,

$111^0 + 90^0 = 201^0$

$360^0 – 201^0 = 159^0$

$d = 159^0$



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LO: To calculate angles about a point

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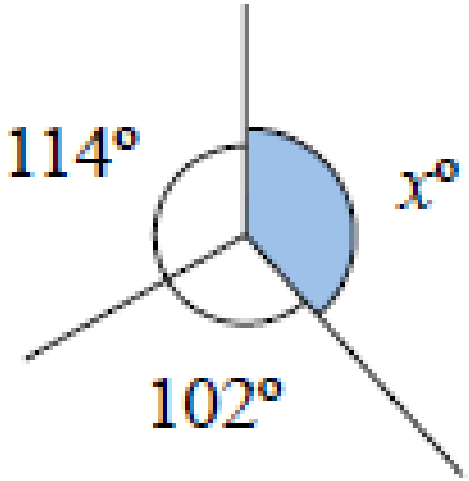

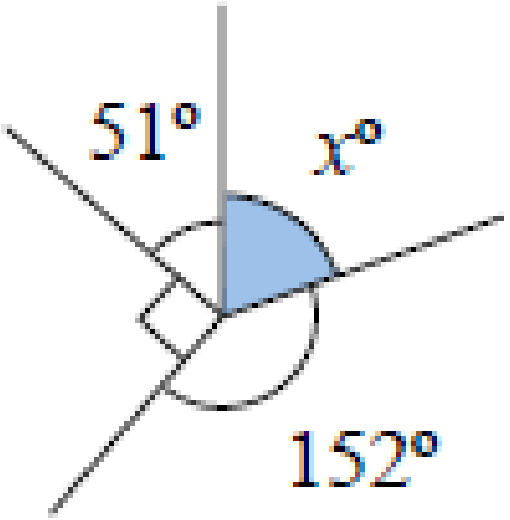

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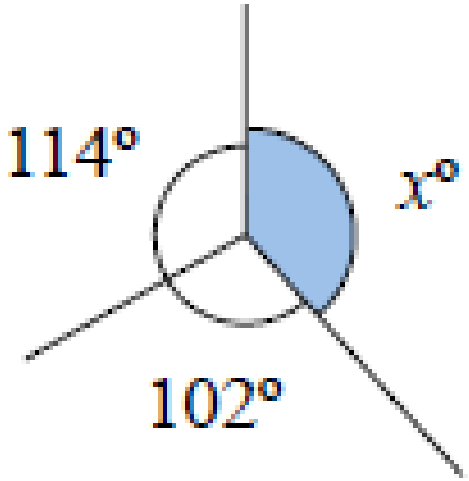
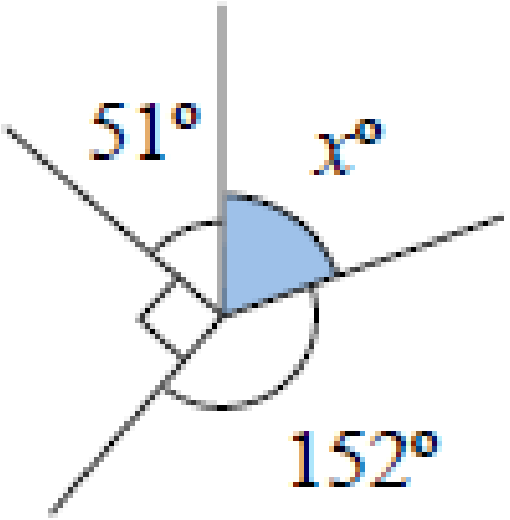


$X = 144^0$



$X = 67^0$

Tasks

Complete –

- Worksheet.

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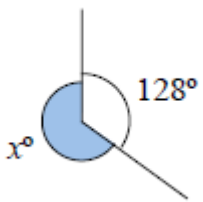
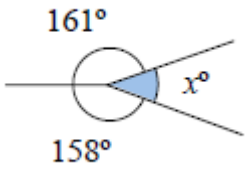
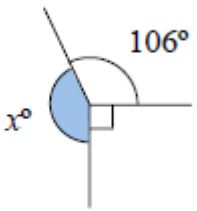
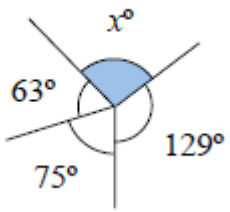
Worksheet

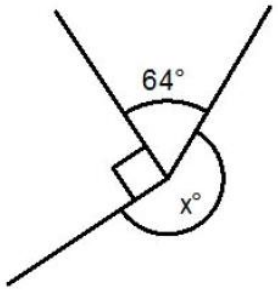
Find the value x

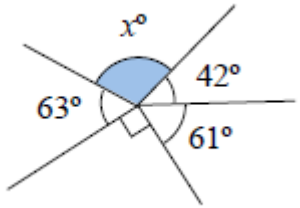


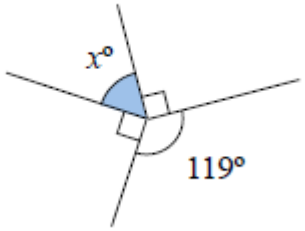


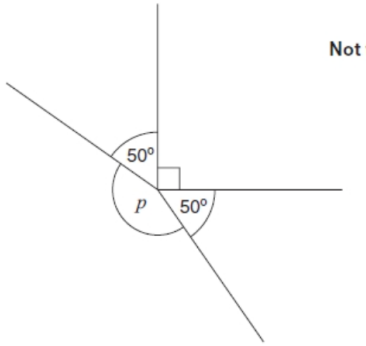












Calculate the size of angle p in the diagram.

Do **not** use a protractor (angle measurer).

There are five equal angles around a point.

What is the size of each angle?

Explain how you know.

20.05.20

LO: To find missing vertically opposite angles

Review

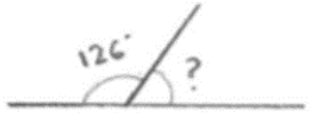
Angles Code-breaker

Calculate the value of each missing angle. Find the answer in the code given and unscramble the letters to reveal a mathematical word.

CODE

A	B	C	D	E	F	G	H	I	J	K	L	M
46°	39°	61°	103°	85°	96°	67°	29°	28°	128°	154°	76°	80°

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
70°	93°	16°	139°	54°	95°	161°	99°	7°	126°	22°	88°	178°

1) 

Answer = _____ Letter = _____

2)

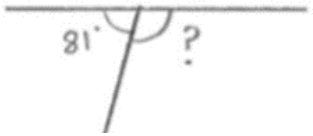
Answer = _____ Letter = _____

3)

Answer = _____ Letter = _____

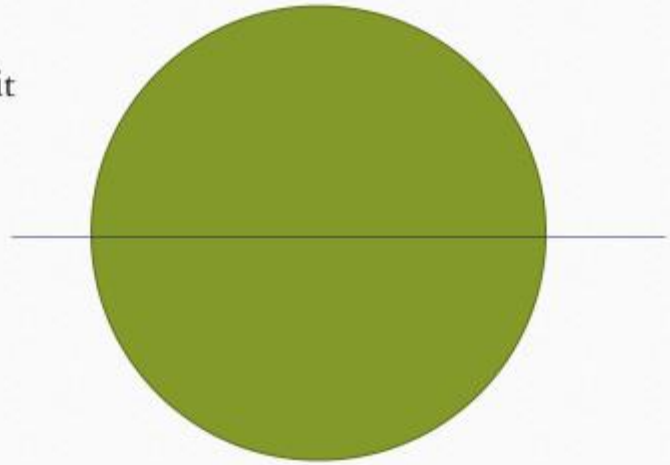
4)

Answer = _____ Letter = _____

5) 

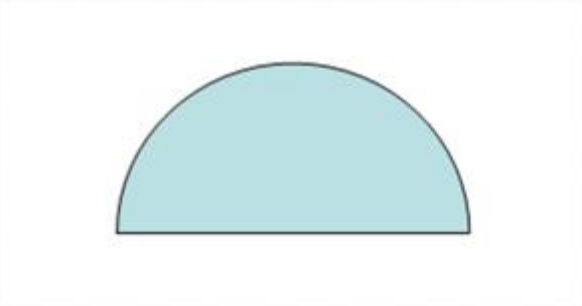
Answer = _____ Letter = _____

Let's halve it

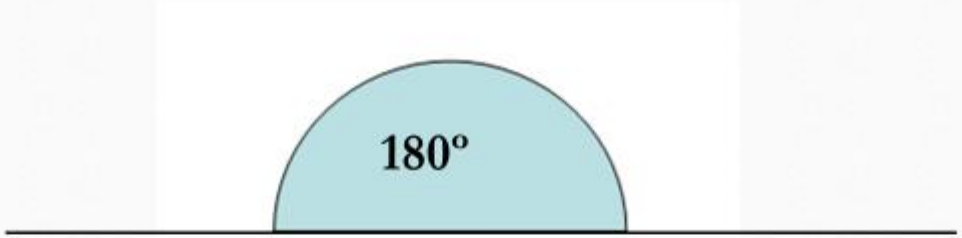


How many degrees are there here?

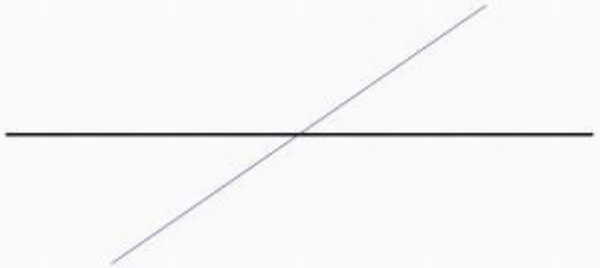
360 ÷ 2 = 180

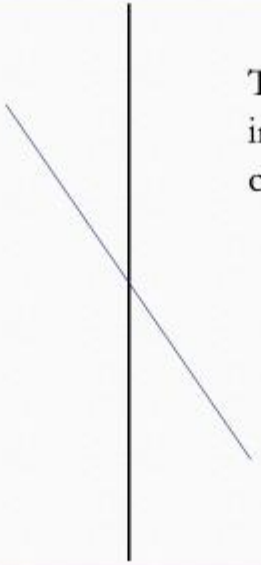


So, what can we say about the angles on a straight line?



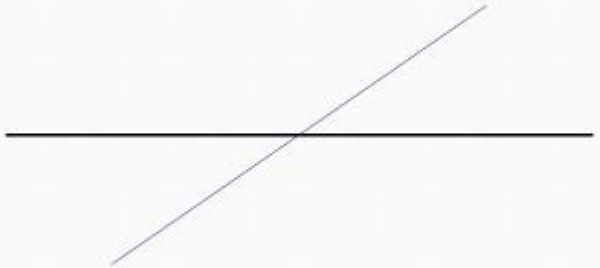
Here is a straight line intersected by another straight line:



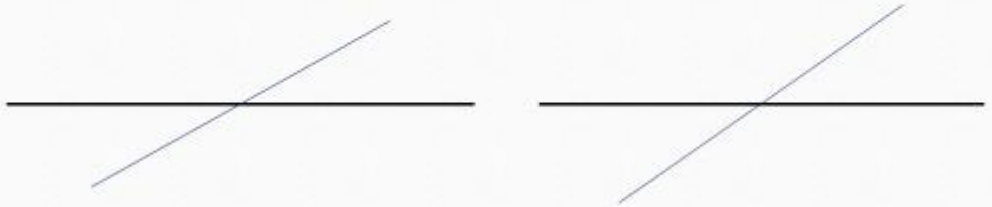


This is the same line intersection rotated 90º clockwise

And again:

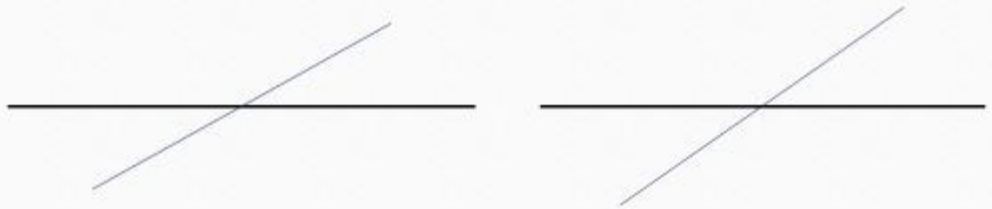


Now they're side by side.

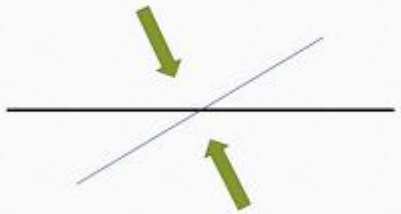


What do you notice?. They're exactly the same!

So, what can you say about the angles?

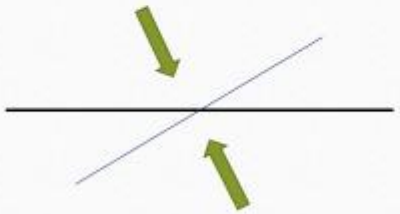


- These angles are the same:



And these angles are the same.

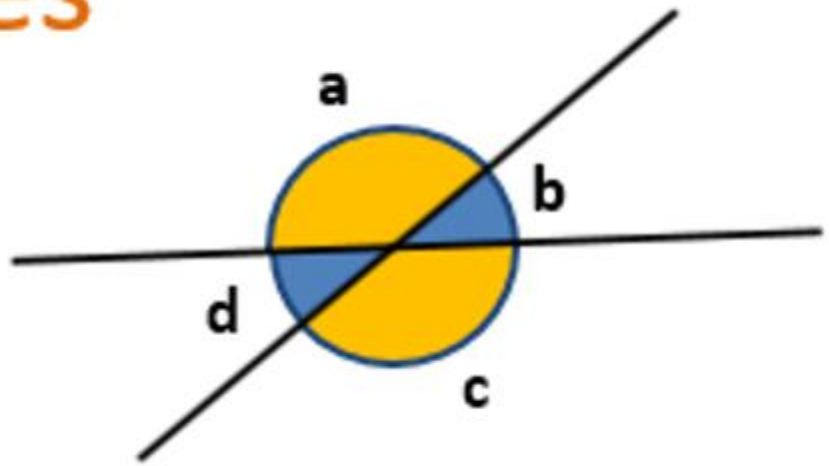
We call these 'Vertically Opposite Angles'



LO: To calculate missing angles

Vertically opposite angles

Opposite angles
Are equal

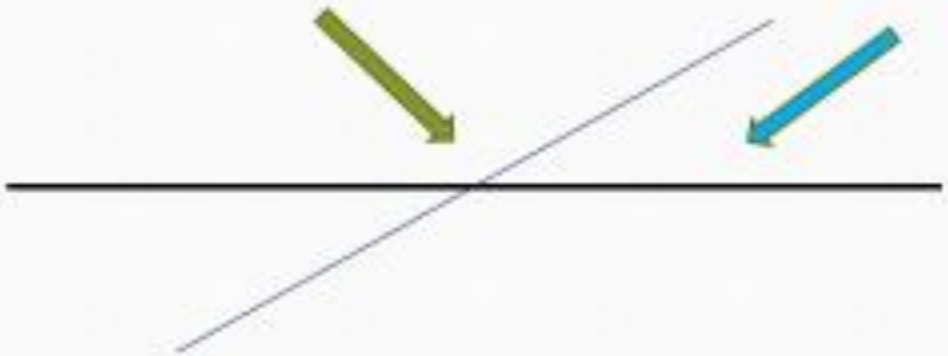


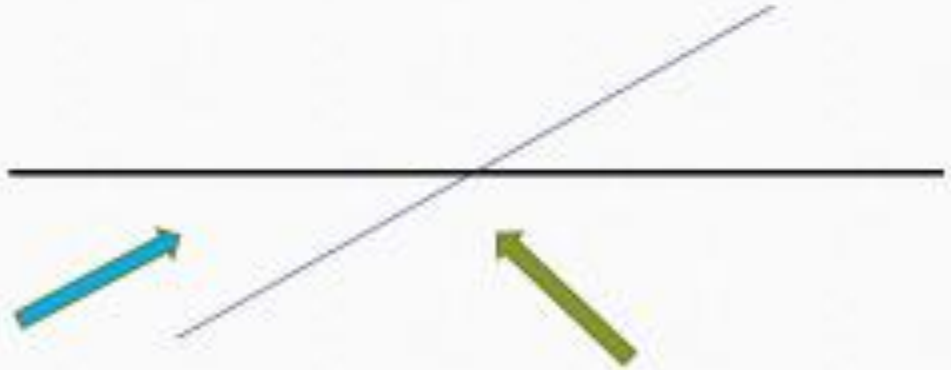
a = c

d = b

What about these angles?

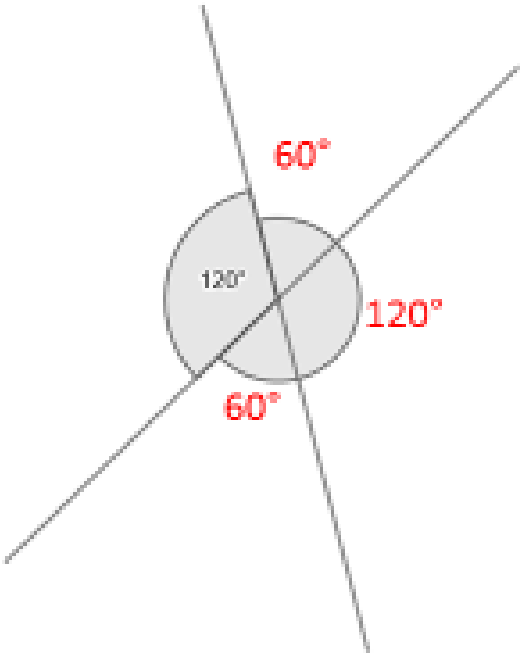
- The green ones are obtuse.
- The blue ones are acute.

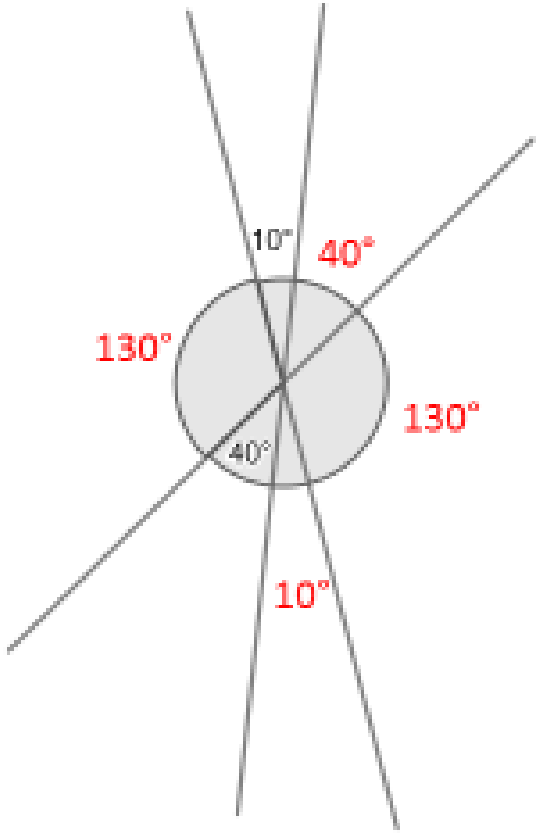




- A green angle + a blue angle = 180°

Look back at these angles. Do you notice a pattern?

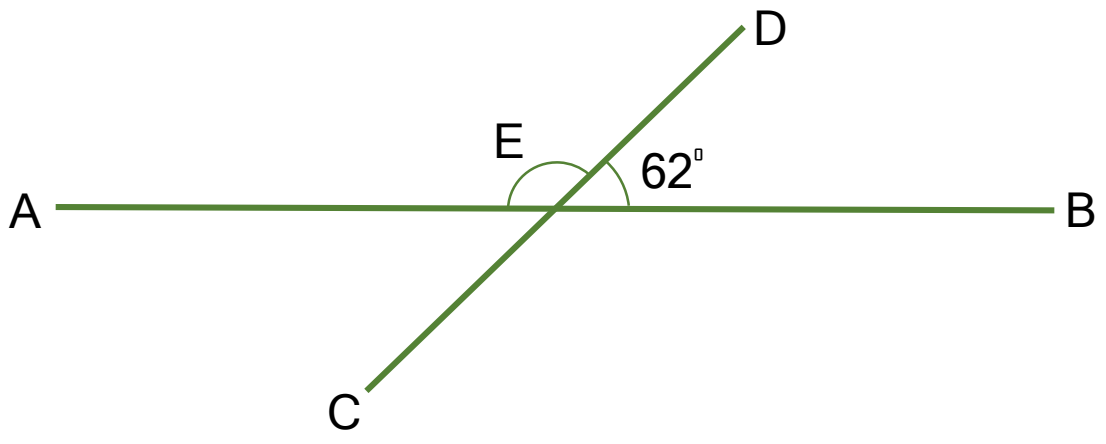




Talking with an adult or a sibling for a few minutes.

Intersecting Lines

- Halim says that the angles E and 62˚ add up to 180˚.
  - Explain what you think about this statement.



Intersecting Lines

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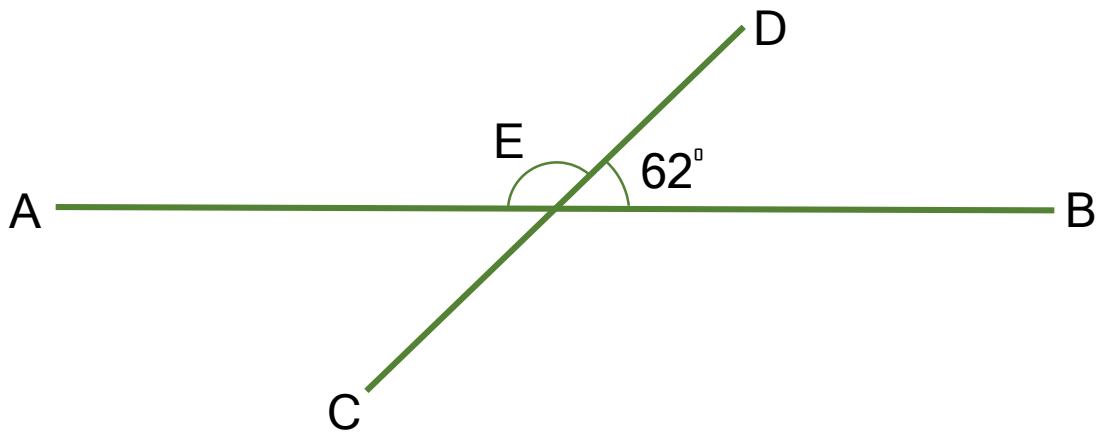
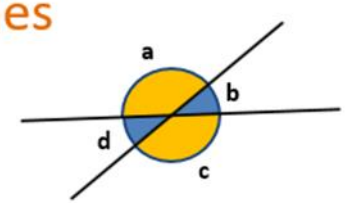


Line AB is a horizontal straight line,
so angle E = 180° – 62°.
Therefore, angle E = 118°

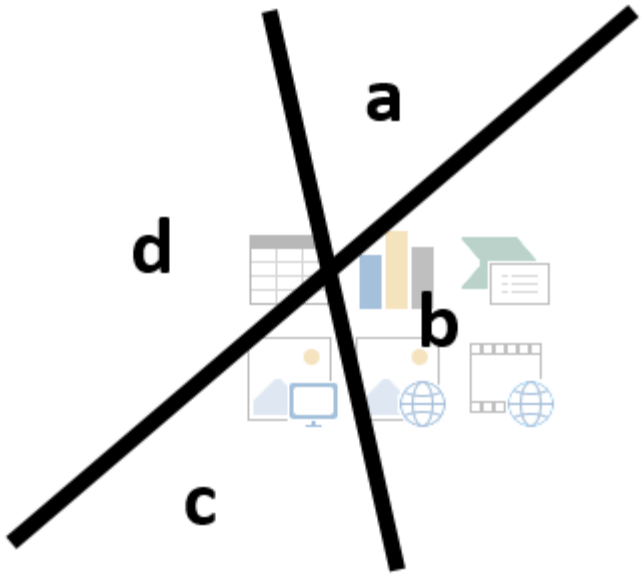
Which pairs of angles are equal?

Opposite angles
Are equal



a = c

d = b



Which pairs of angles are equal?

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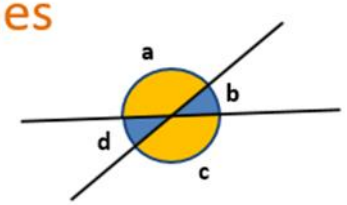
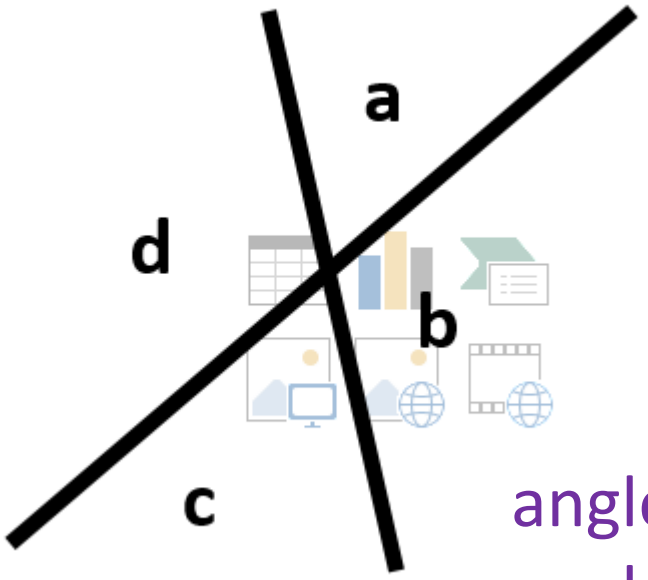


a = c

d = b

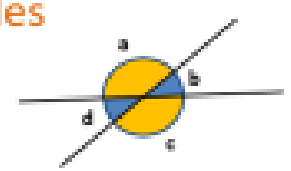


angle d = angle b
angle c = angle a

Because the lines intersect so the angles are vertically opposite.

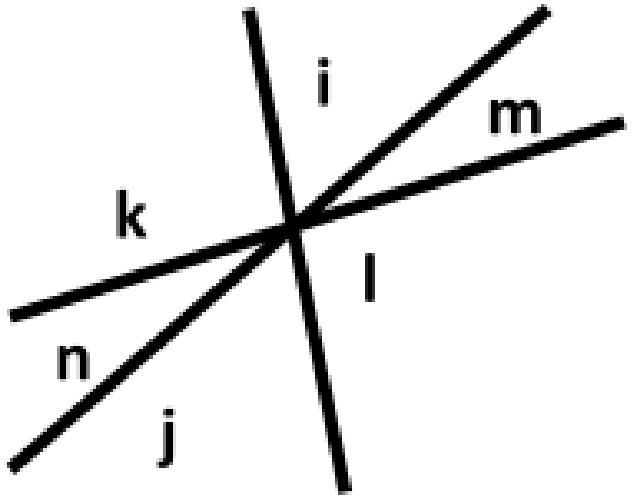
Which pairs of angles are equal?

Opposite angles
Are equal



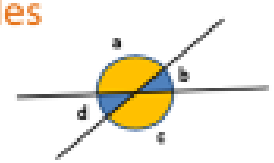
a = c

d = b



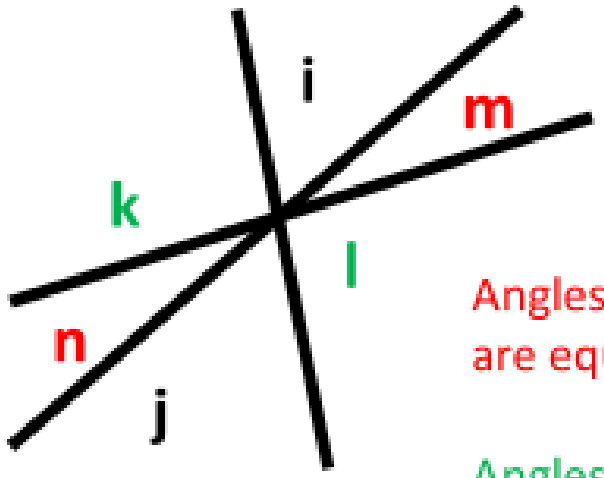
Which pairs of angles are equal?

Opposite angles
Are equal



a = c

d = b

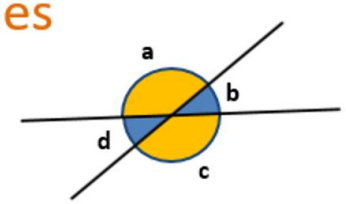


Angles m and n are vertically opposite so are equal so m = n.

Angles l and k are equal because they are vertically opposite each other. So l = k.

Angles j and i are equal so j = i.

Opposite angles
Are equal

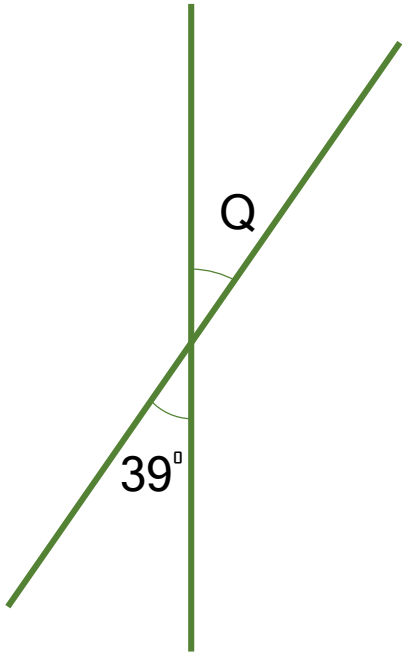


a = c

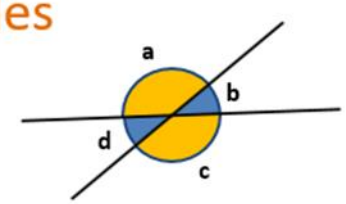
d = b

Calculate

- Calculate the missing angle.



Opposite angles
Are equal



a = c

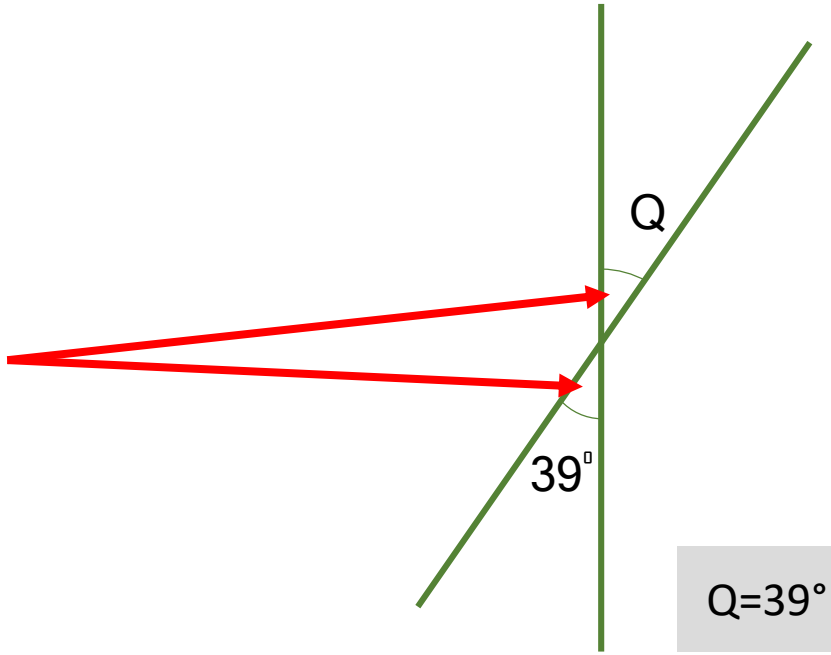
d = b

Calculate

- Calculate the missing angle.

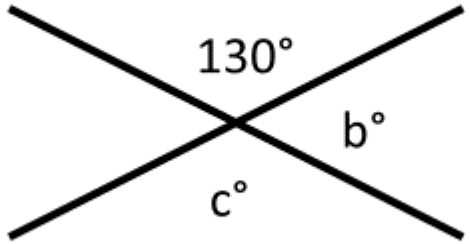
Remember -

- The angles that are opposite each other where two straight lines cross match each other.

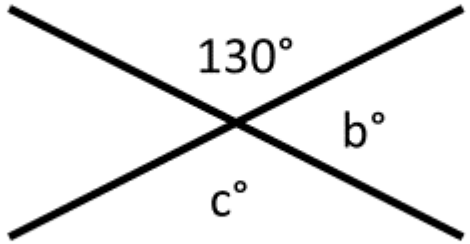


Q=39°

Find b and c



Find b and c



METHOD 1

C is 130^0 because it is vertically opposite.

Angle b is vertically opposite to the blank space so they will be equal.

To work out b^0,

Step 1: add all the known angles together

$130^0 + 130^0 = 260^0$

Step 2: subtract the total in step 1 from 360^0 (sum of angles about a point)

$360^0 - 260^0 = 100^0$

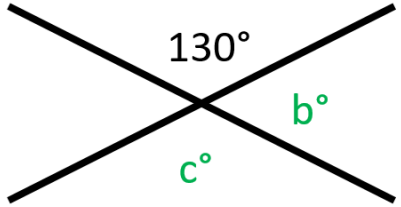
100^0 is the total of the 2 missing angles. Since they are equal because they are vertically opposite, halve the 100^0.

So b = 100^0 divided by 2

Angle b is 50^0.

METHOD 2

Find b and c



C is 130^0 because it is vertically opposite to angle 130^0.

Angles b and c are angles on a straight line.

Since angles on a straight line add up to 180^0 and angle c = 130^0

Therefore

$180^0 - 130^0 = 50^0$

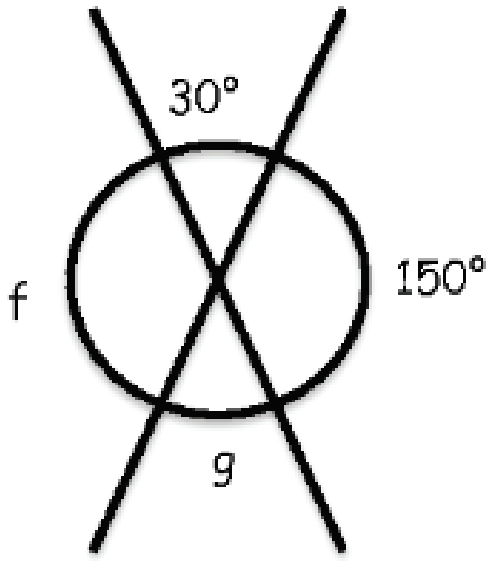
So angle b is 50^0.

What rules did we use to find b?

1) Angles on a straight line
2) Angles about a point
3) Vertically opposite angles

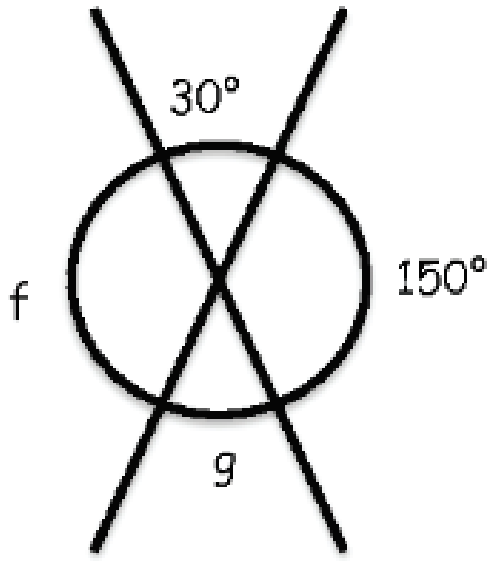
Find the missing angles.

Which of the rules you have learnt so far can you apply?



Find the missing angles.

Which of the rules you have learnt so far can you apply?



Rule – vertically opposite angles are equal when 2 straight lines intersect.

Therefore,

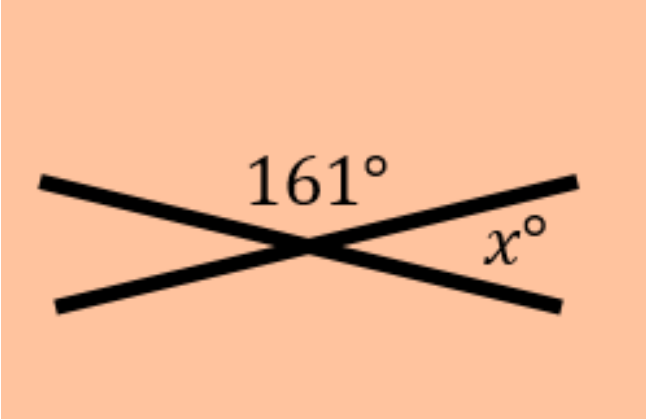
g = 30

f = 150

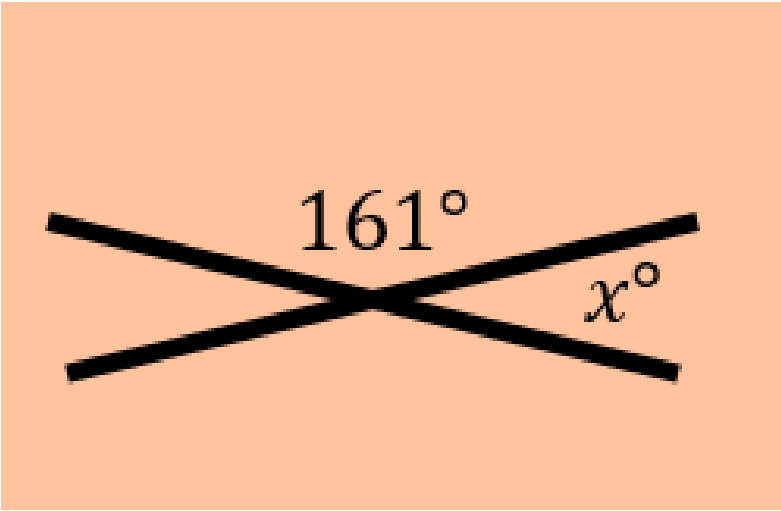
Because they are vertically opposite angles.

What other rule could we have used?

Find angle x. what angle rule is best to apply?



Find angle x. What angle rule is best to apply?



Angles on a straight line add up to 180 degrees.

$161^0 + x^0 = 180^0$

$180^0 - 161^0 = 19^0$

$X = 19^0$

Can you think of any other rule you could have used?

Tasks

Complete –

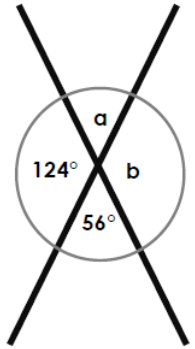
- Worksheet.

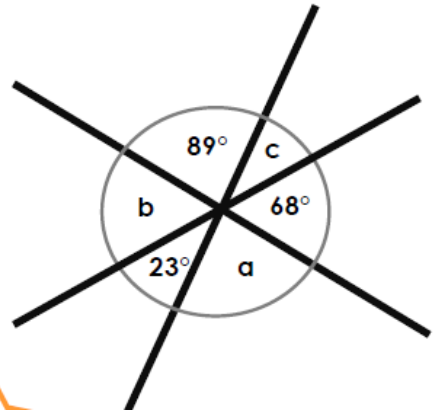
If you have any misunderstandings then please head to Education City or email the school on –

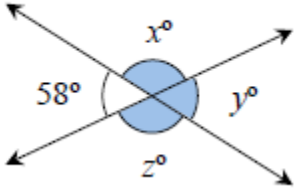
learning@wembleyprimary.brent.sch.uk

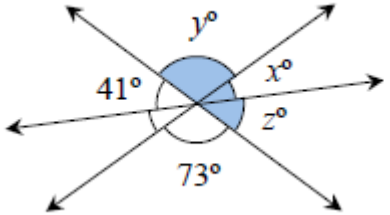
Worksheets

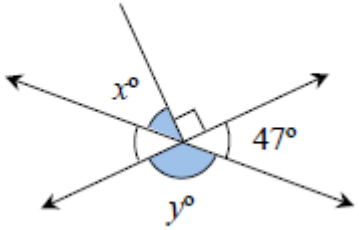
Calculate the missing angles.



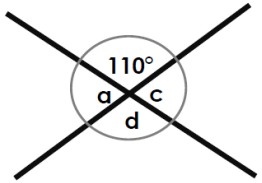






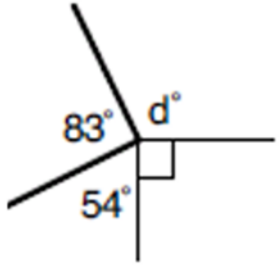
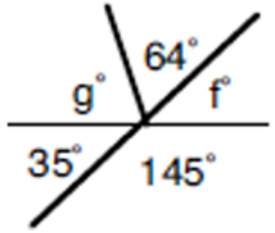
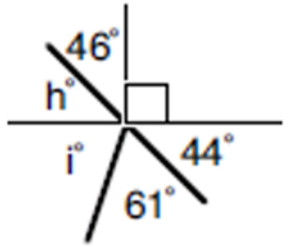


I think that angle c measures 140°.



Is Anna correct? Explain why.

Find the angle (showing your working) and state the angle fact you used to find it.

1		D= Reason=	
2		G= Reason=	F= Reason=
3			

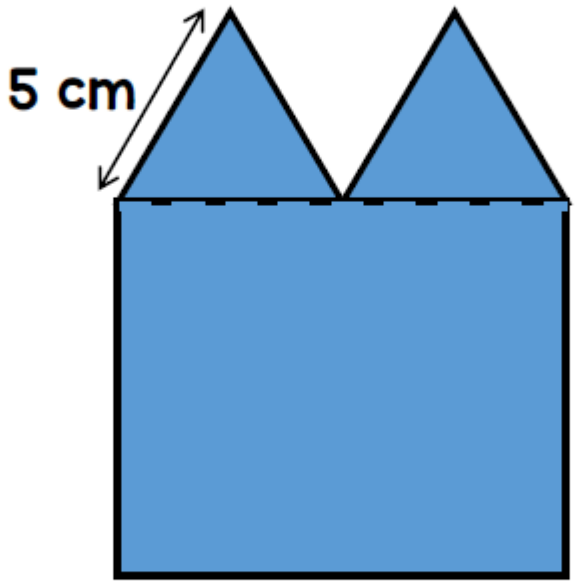
21.05.2020

L.O. – To calculate missing angles within a triangle.

Problems of the day.

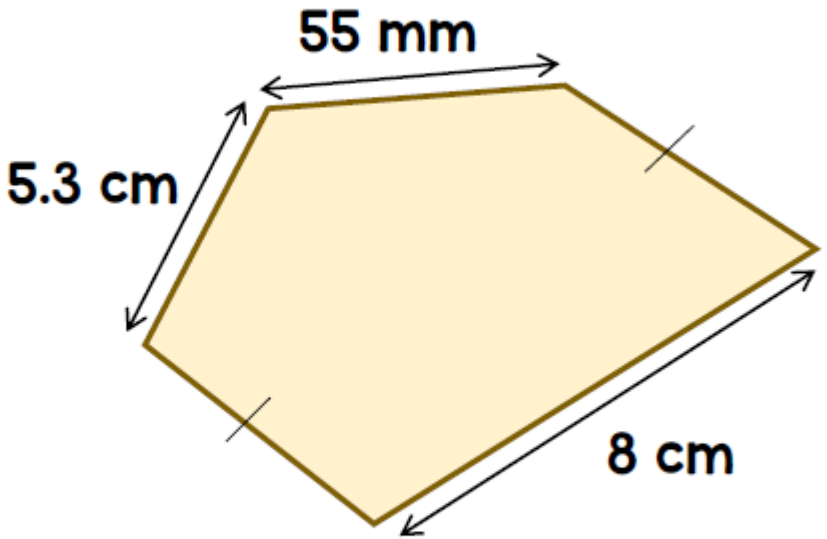
Hit space bar for answers but don't do it until you've tried!

1 A shape is made up of two equilateral triangles and a square.



What is the perimeter of the shape?

2 The perimeter of the pentagon is 25 cm.

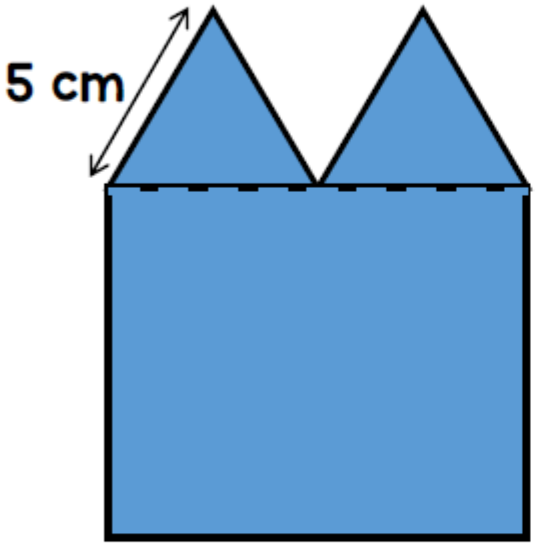


Find the missing lengths.

Problems of the day.

Hit space bar for answers but don't do it until you've tried!

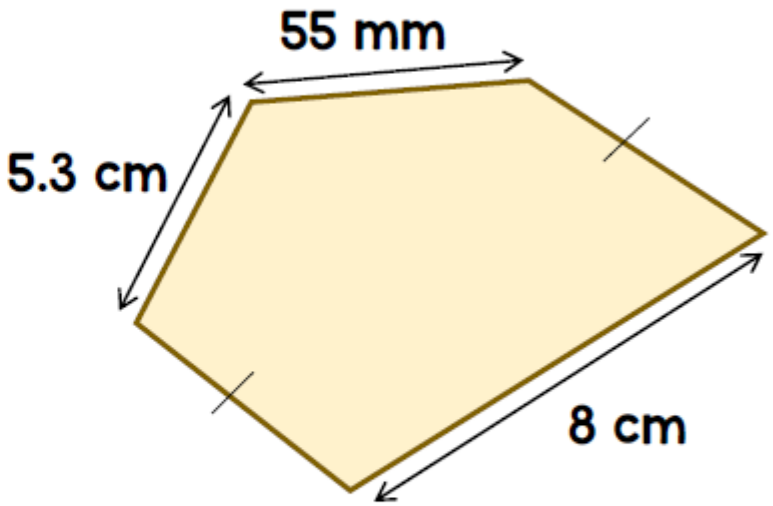
1 A shape is made up of two equilateral triangles and a square.



What is the perimeter of the shape?

The perimeter of the shape is 50 cm.

2 The perimeter of the pentagon is 25 cm.

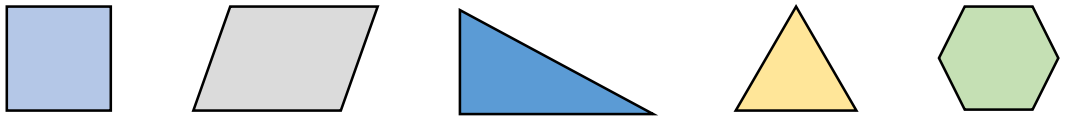


Find the missing lengths.

Each of the missing lengths are 31 mm or 3.1 cm.

Carroll Diagram

- Complete this Carroll diagram for these shapes:

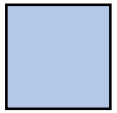
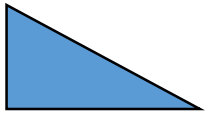
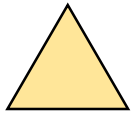


	Has at least one right angle	Has no right angles
Has more than 3 sides		
Has less than 4 sides		

Carroll Diagram

- Complete this Carroll diagram for these shapes:

Answers :

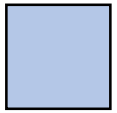
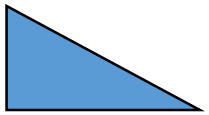
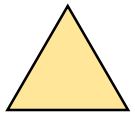
	Has at least one right angle	Has no right angles
Has more than 3 sides		
Has less than 4 sides		

Where could an isosceles triangle go?

Carroll Diagram

- Complete this Carroll diagram for these shapes:

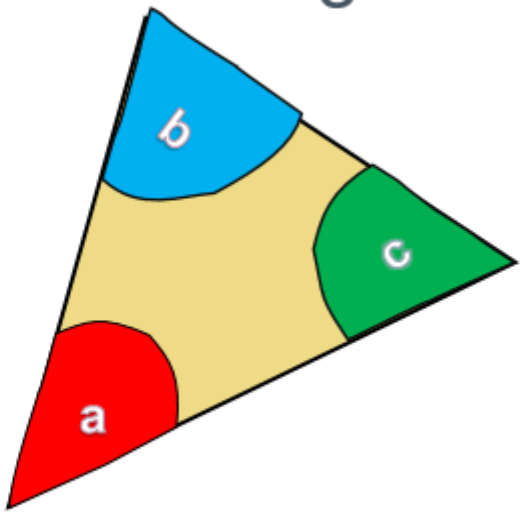
Answers :

	Has at least one right angle	Has no right angles
Has more than 3 sides		
Has less than 4 sides		

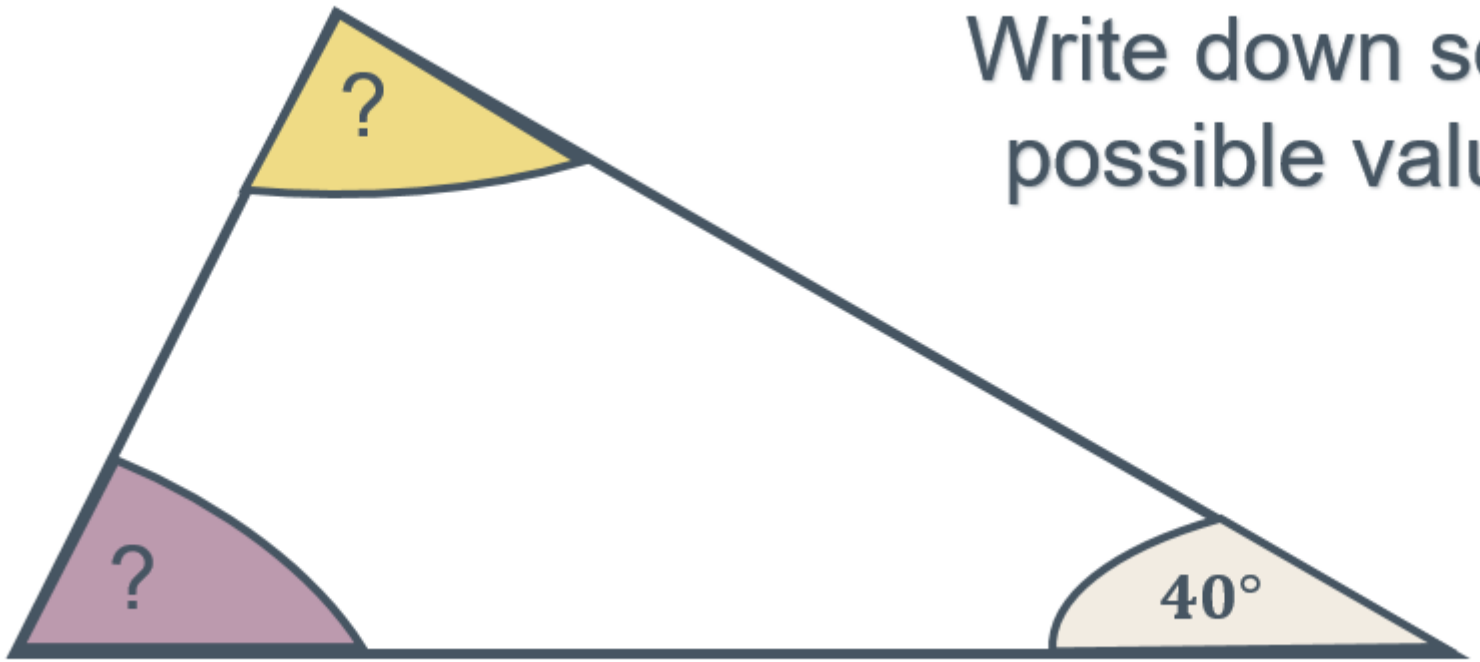
Where could an isosceles triangle go?

less than four sides but either one right angle or no right angles because you can have a right-angled isosceles triangle

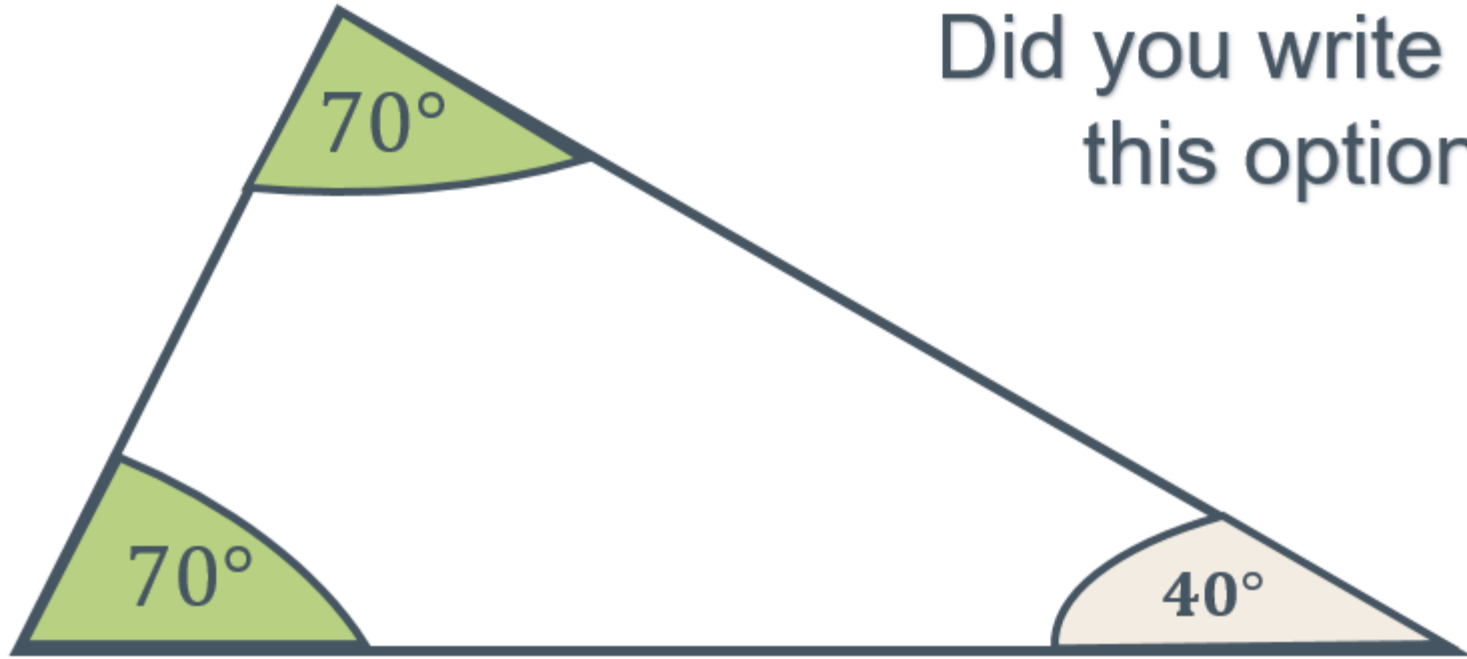
Angles in a triangle add to 180°



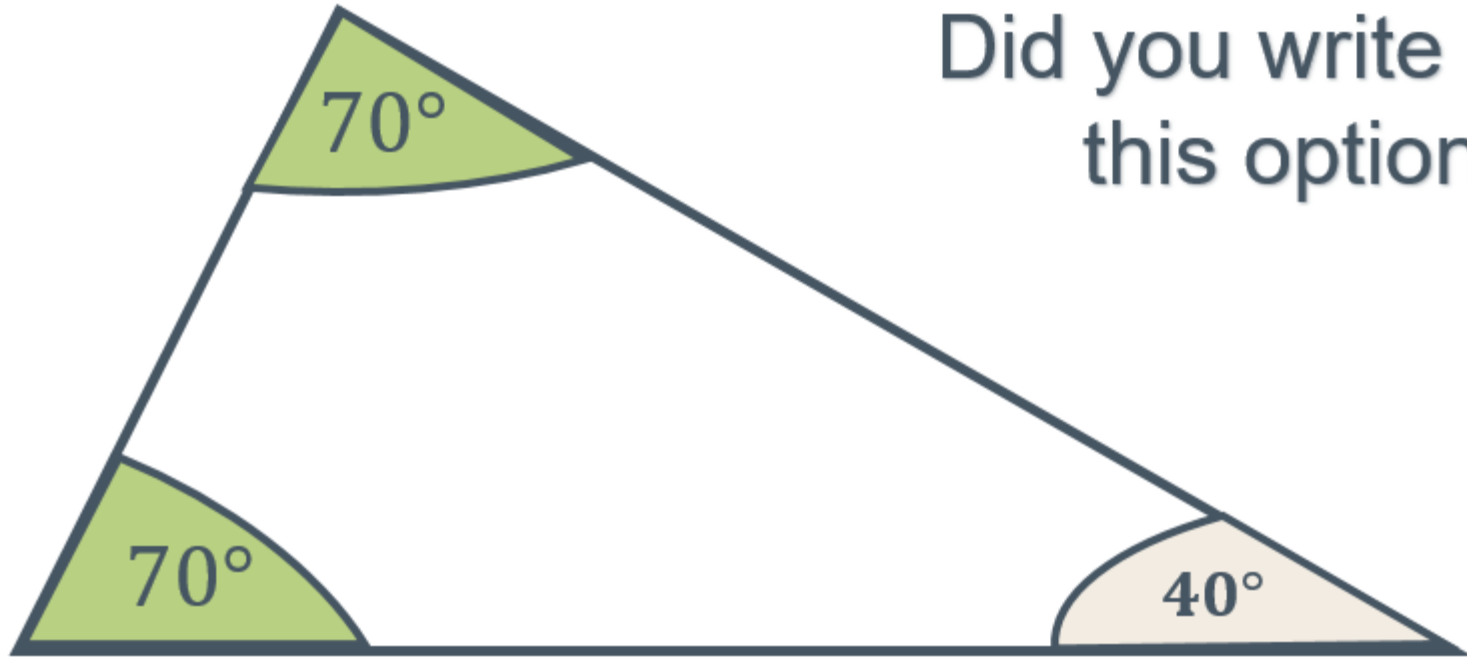
Angles on a straight line add to 180°



Write down some possible values



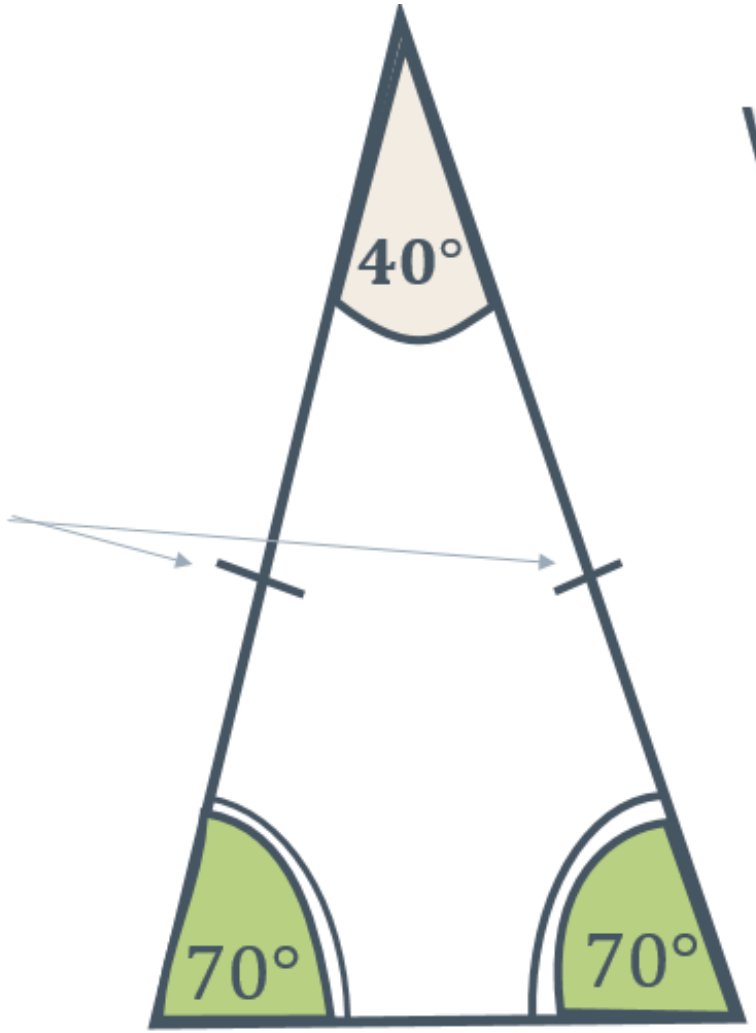
Did you write down this option?



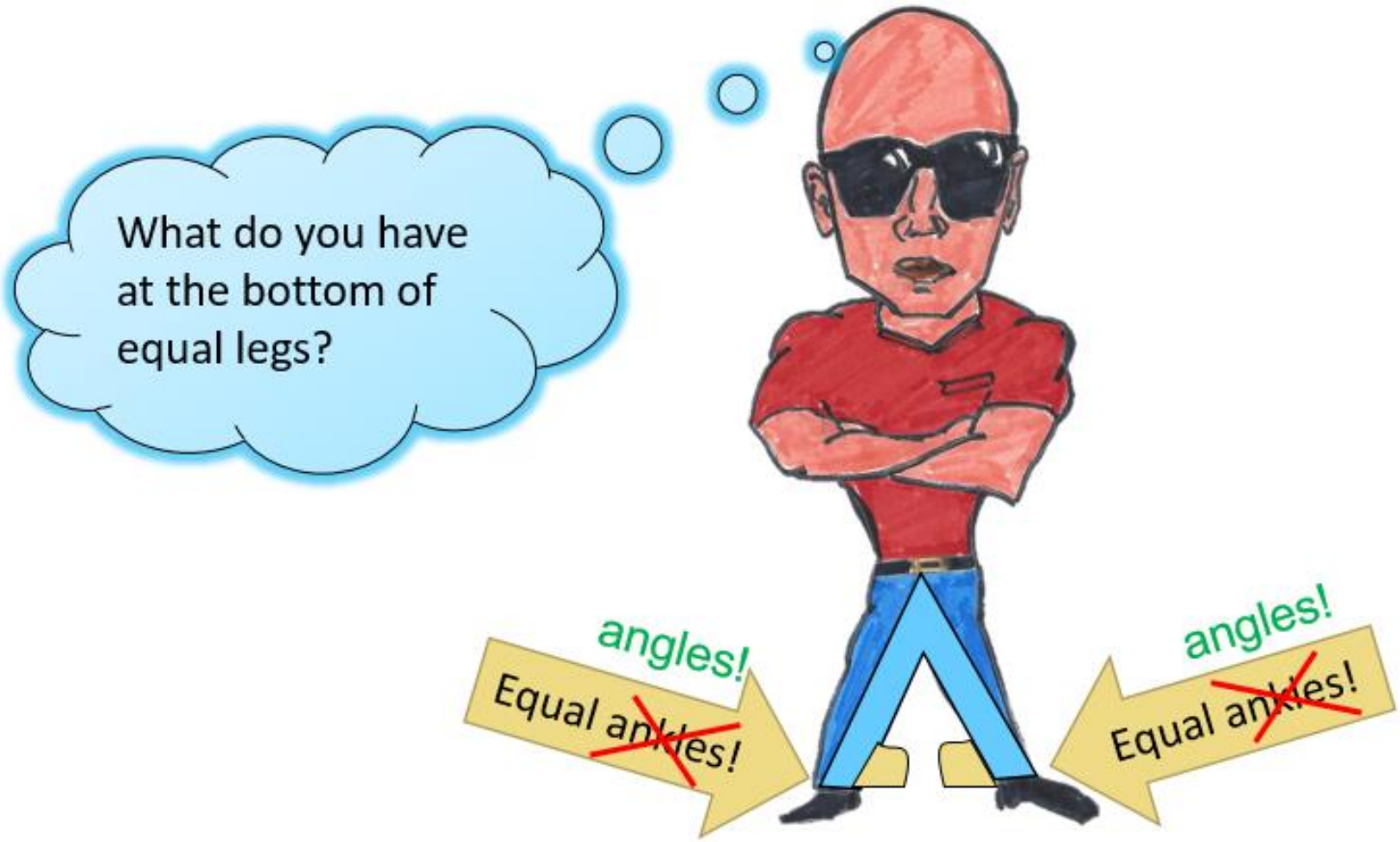
Did you write down this option?

What type of triangle do we have here?

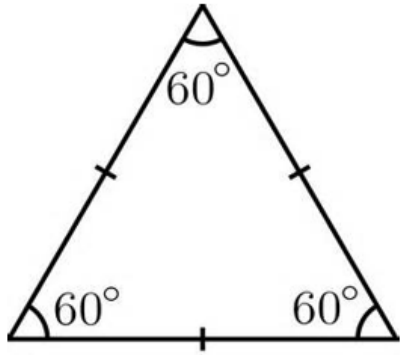
Means both sides are the same length



The word "isosceles" means 'equal legs'.



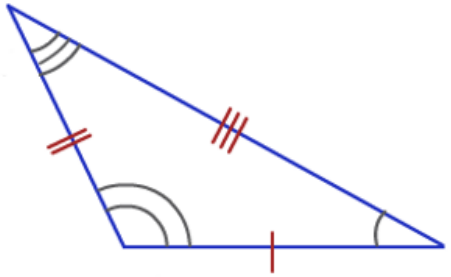
FACTS



Equilateral triangles

All angles are equal and all sides are equal in length

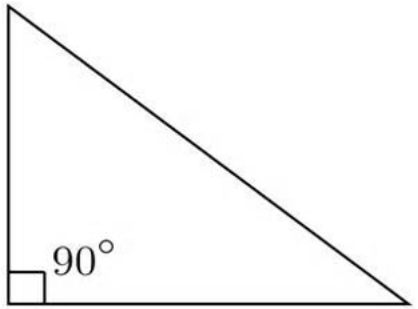
FACTS



Scalene triangles

All sides are different lengths and all angles are different

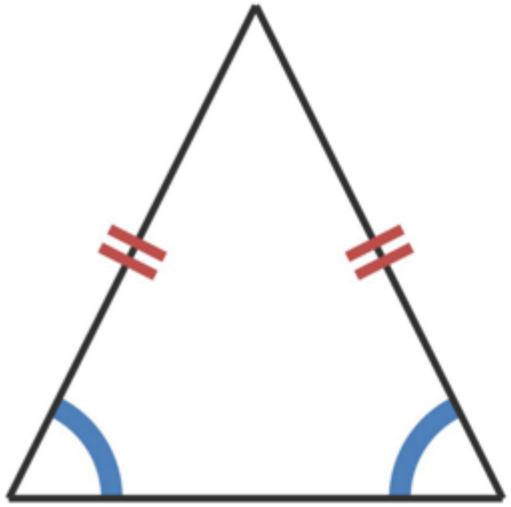
FACTS



Right-angled triangles

One 90° angle and two angles that add to 90°

FACTS



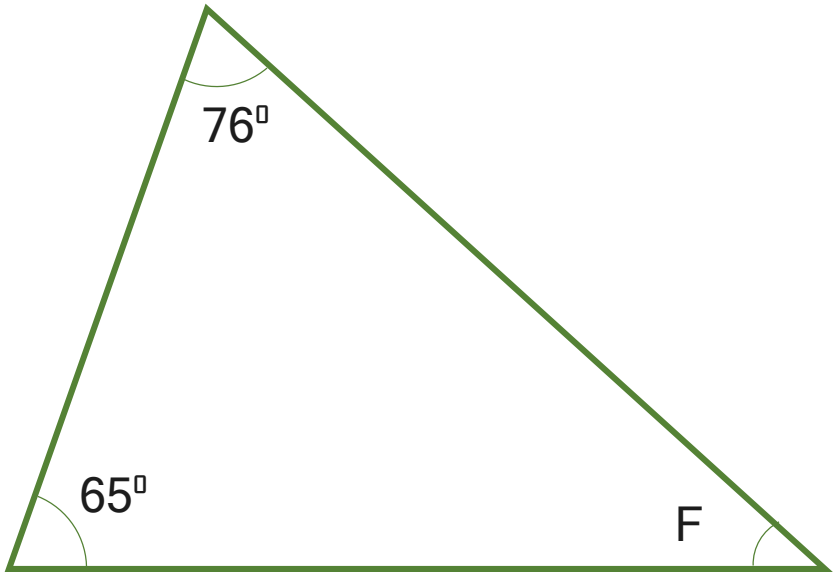
Isosceles triangles

Where are the base angles?

2 sides the same length and 2 angles the same size

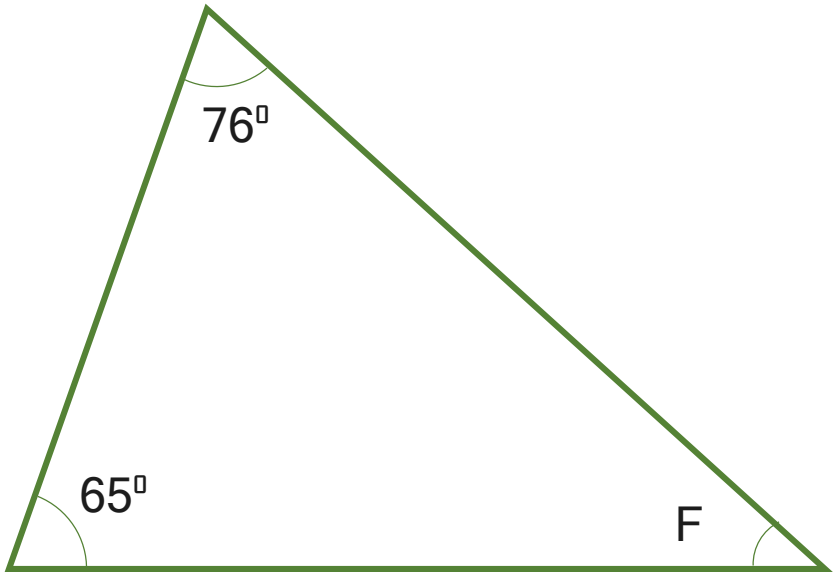
Triangles

- Calculate the missing angle:



Triangles

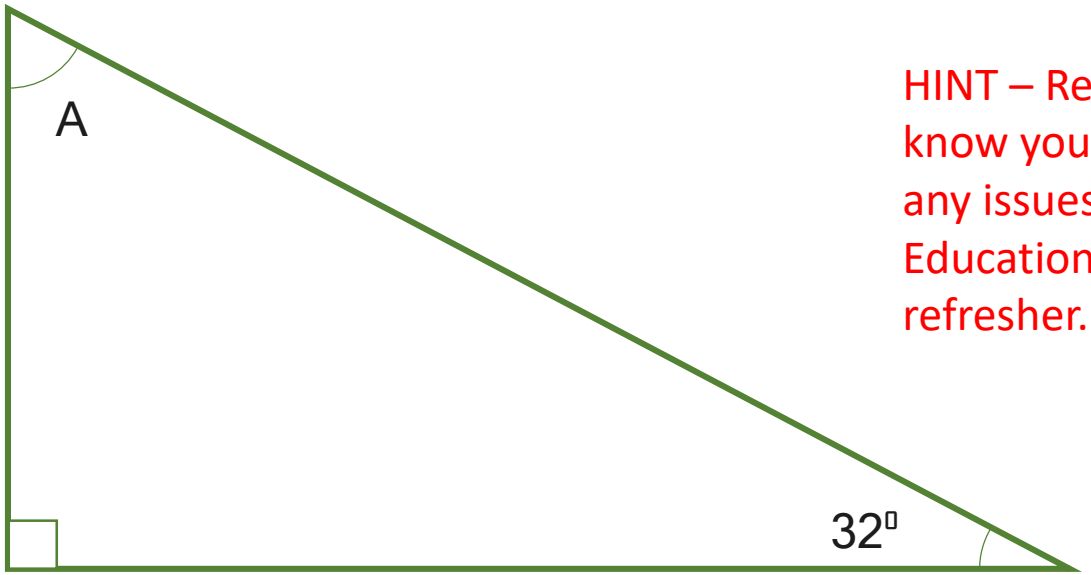
- Calculate the missing angle:



F = 39°

Triangles

- Calculate the missing angle:

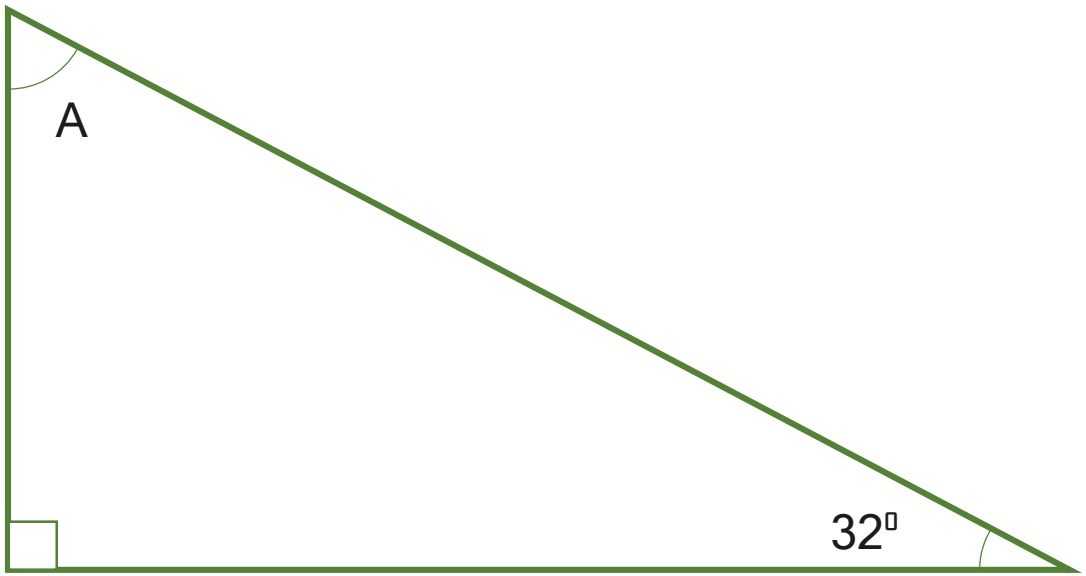


HINT – Remember you need to know your angles. If you have any issues here please go to Education City and get a refresher.

Triangles

- Calculate the missing angle:

All angles within a triangle must total 180°. Nothing more or nothing less.

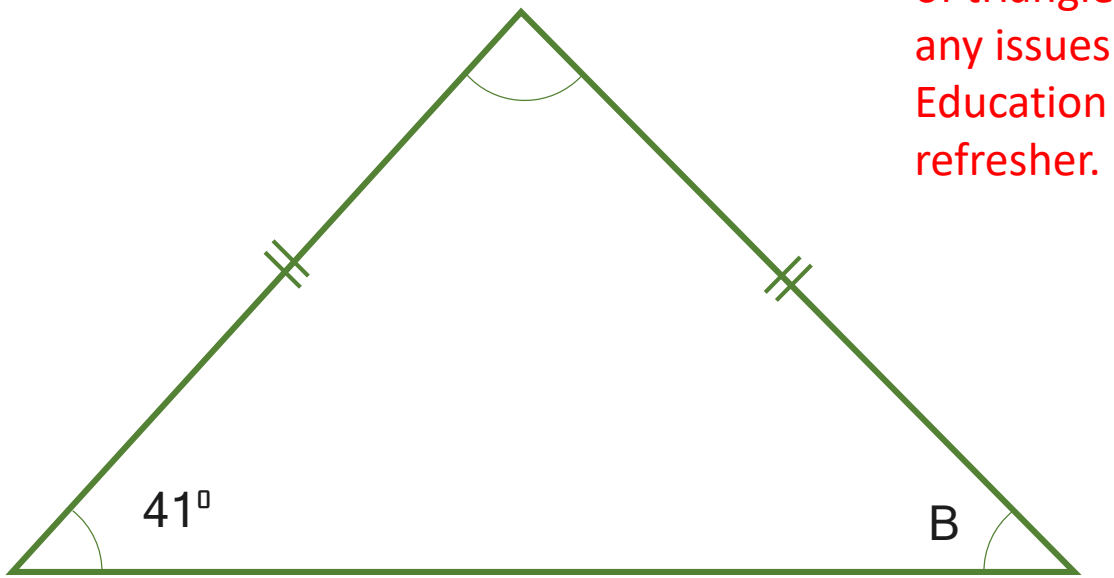


A = 58°

Triangles

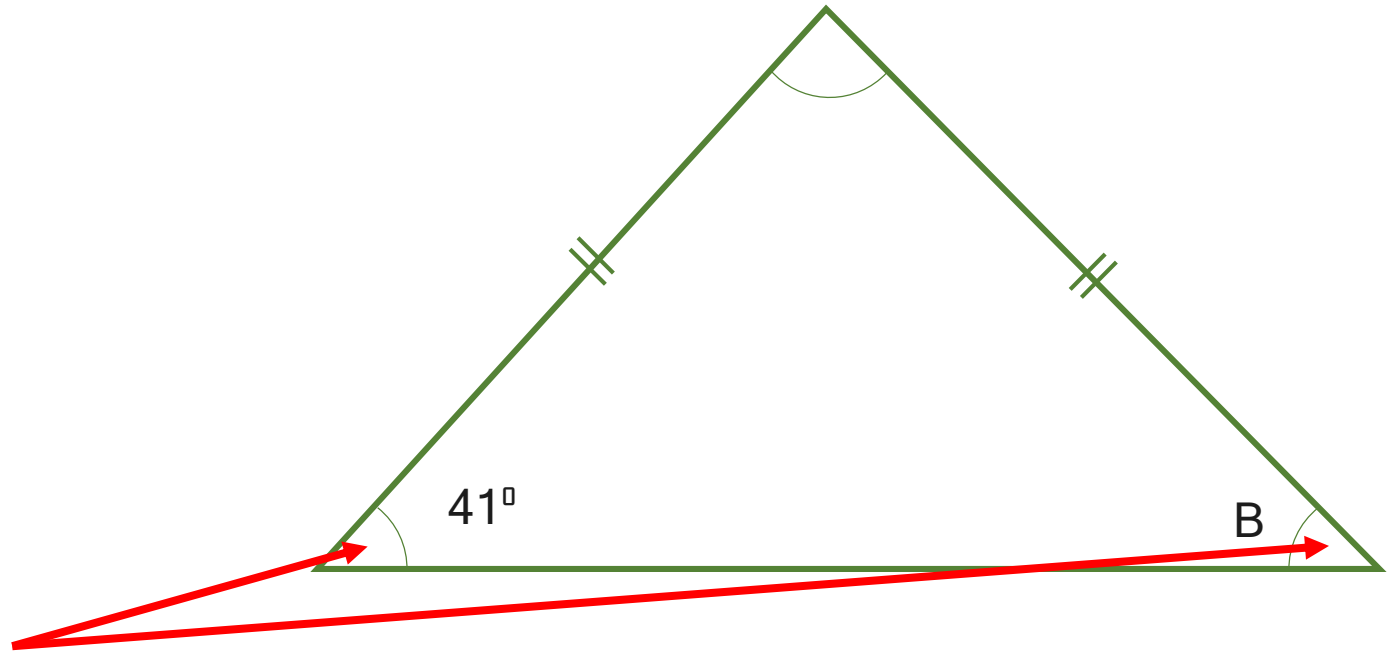
- Calculate the missing angle:

HINT – Think about what type of triangle this is. If you have any issues here please go to Education City and get a refresher.



Triangles

- Calculate the missing angle:

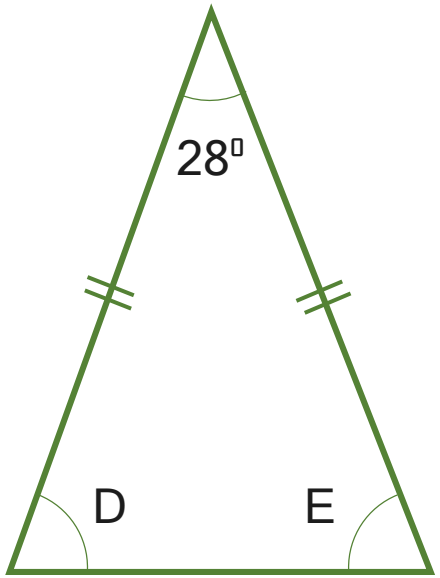


Opposing angles in an isosceles triangle must always be the same

B = 41°

Triangles

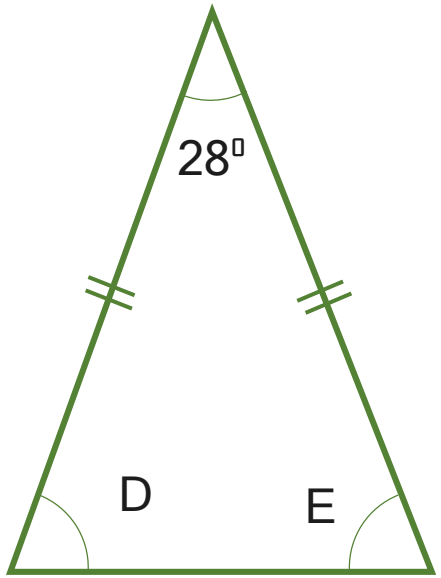
- Calculate the missing angles:



Triangles

- Calculate the missing angles:

180		
D	E	28



D = 76°

E = 76°

180° - 28° = 152°
152° ÷ 2 = 76°

Tasks

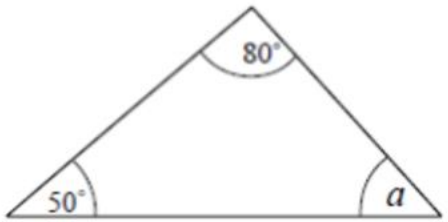
Complete –

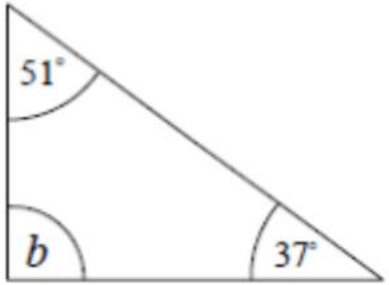
- Worksheet.

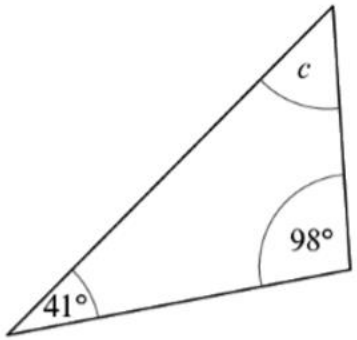
If you have any misunderstandings then please head to Education City or email the school on –

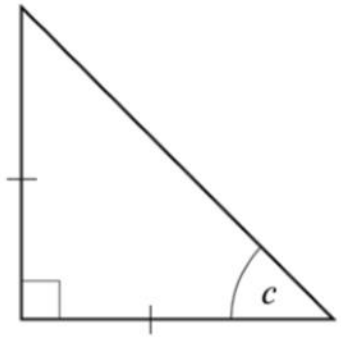
learning@wembleyprimary.brent.sch.uk

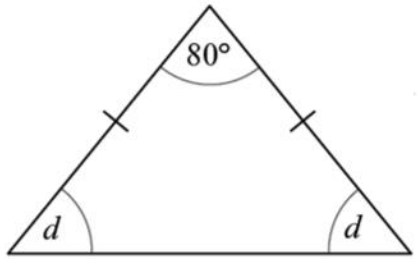
Worksheet

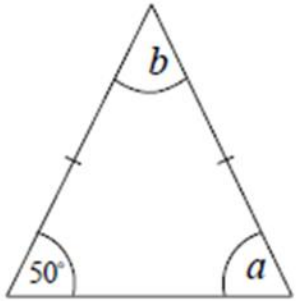


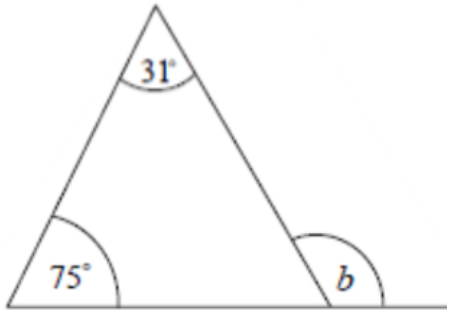


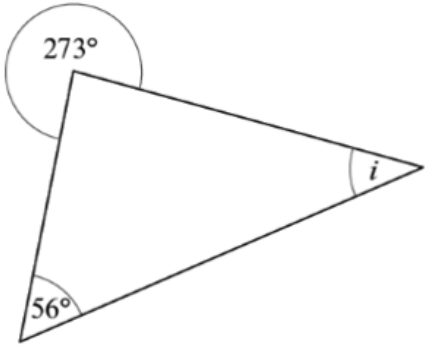






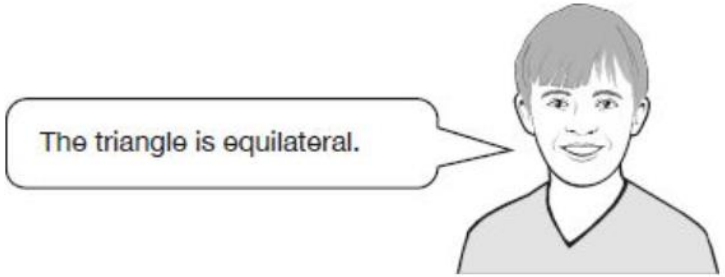






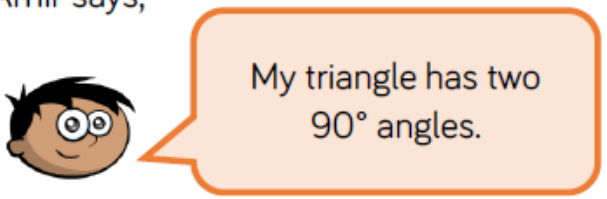
Two of the angles in a triangle are 70° and 40°

Jack says,



Explain why Jack is **not** correct.

Amir says,



Can Amir be correct? Can you demonstrate this?

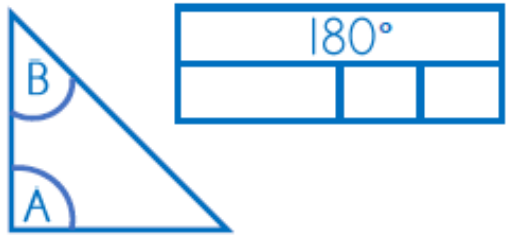
Extra Challenge

Different ways

'In the isosceles triangle, angle A is double angle B'

What are the possible sizes of angles A and B?

Solution 1



Angle A = Angle B =

Solution 2

Angle A = Angle B =

22.05.2020

L.O. – To calculate the angles within a quadrilateral.

Problems of the day.

Hit space bar for answers but don't do it until you've tried!

1 Helen has £400

She spends $\frac{1}{10}$ of the money on a new toaster.

She spends $\frac{1}{8}$ of the amount left on a pair of trousers.

Which item costs the most?

2 $\frac{3}{8}$ of people watching a play are adults.

The rest of the people watching are children.

There are 32 more children than adults watching the play.

How many people are watching the play in total?

Problems of the day.

Hit space bar for answers but don't do it until you've tried!

1 Helen has £400

She spends $\frac{1}{10}$ of the money on a new toaster.

She spends $\frac{1}{8}$ of the amount left on a pair of trousers.

Which item costs the most?

The trousers cost the most They cost £45 and the toaster only costs £40

2 $\frac{3}{8}$ of people watching a play are adults.

The rest of the people watching are children.

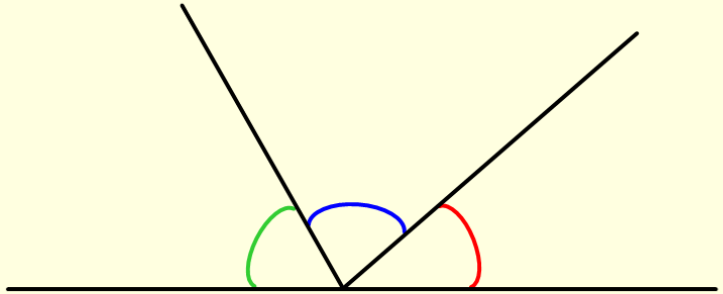
There are 32 more children than adults watching the play.

How many people are watching the play in total?

128 people are watching the play in total.

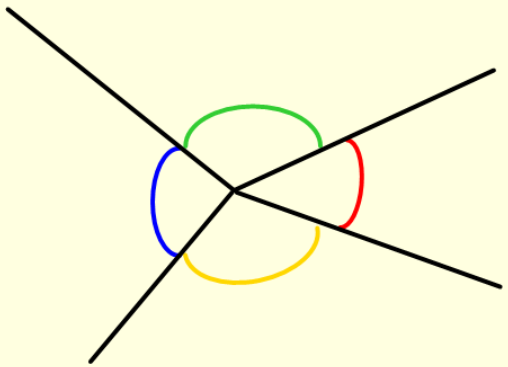
Review learning

Angles on a straight line



Angles on a straight line add up to 180°

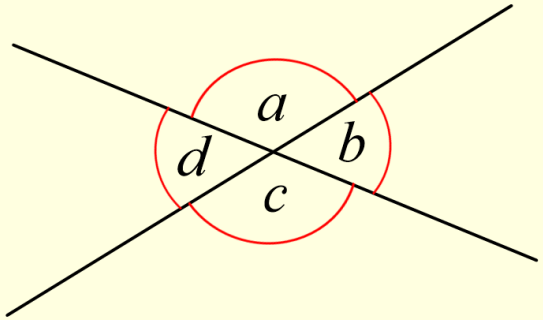
Angles around a point



Angles around a point add up to 360°

Vertically opposite angles

Vertically opposite angles are equal



$a = c$

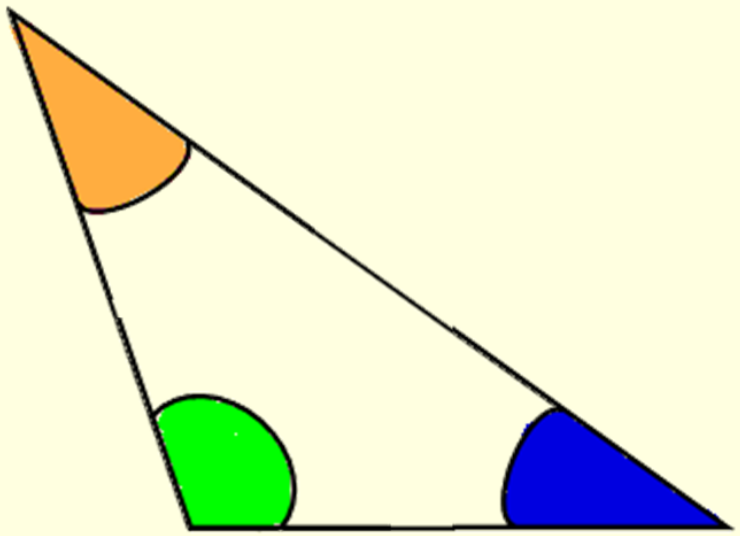
$b = d$

$a + b = 180°$ (Angles on a straight line)

$c + d = 180°$ (Angles on a straight line)

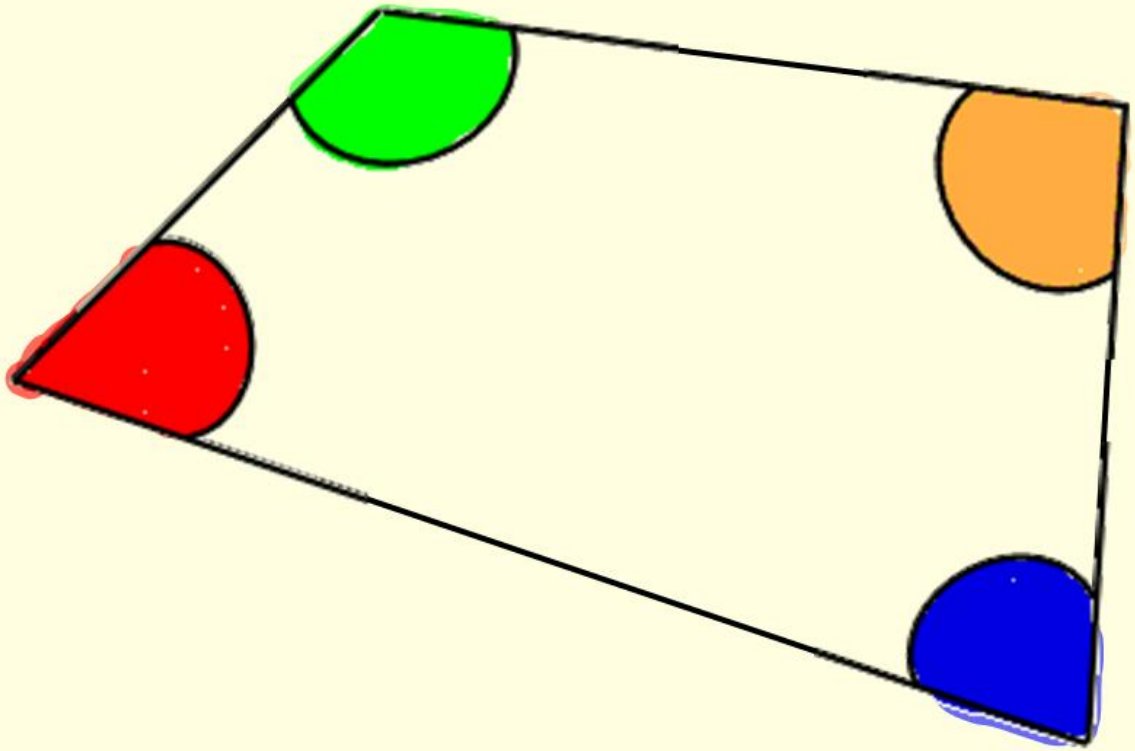
Review learning

Angles in a triangle



Angles in a triangle add up to 180°

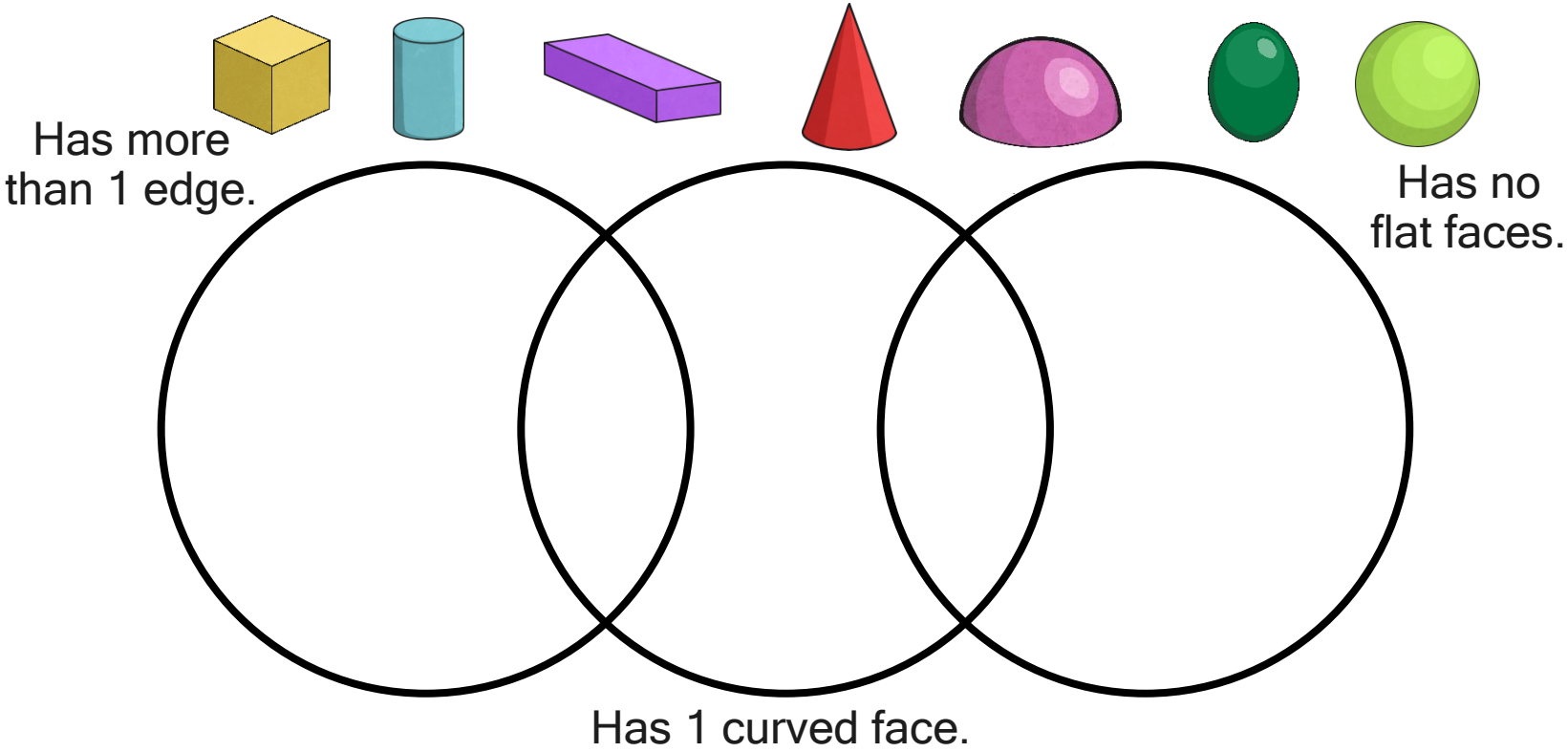
Angles in a quadrilateral



Angles in a quadrilateral add up to 360°

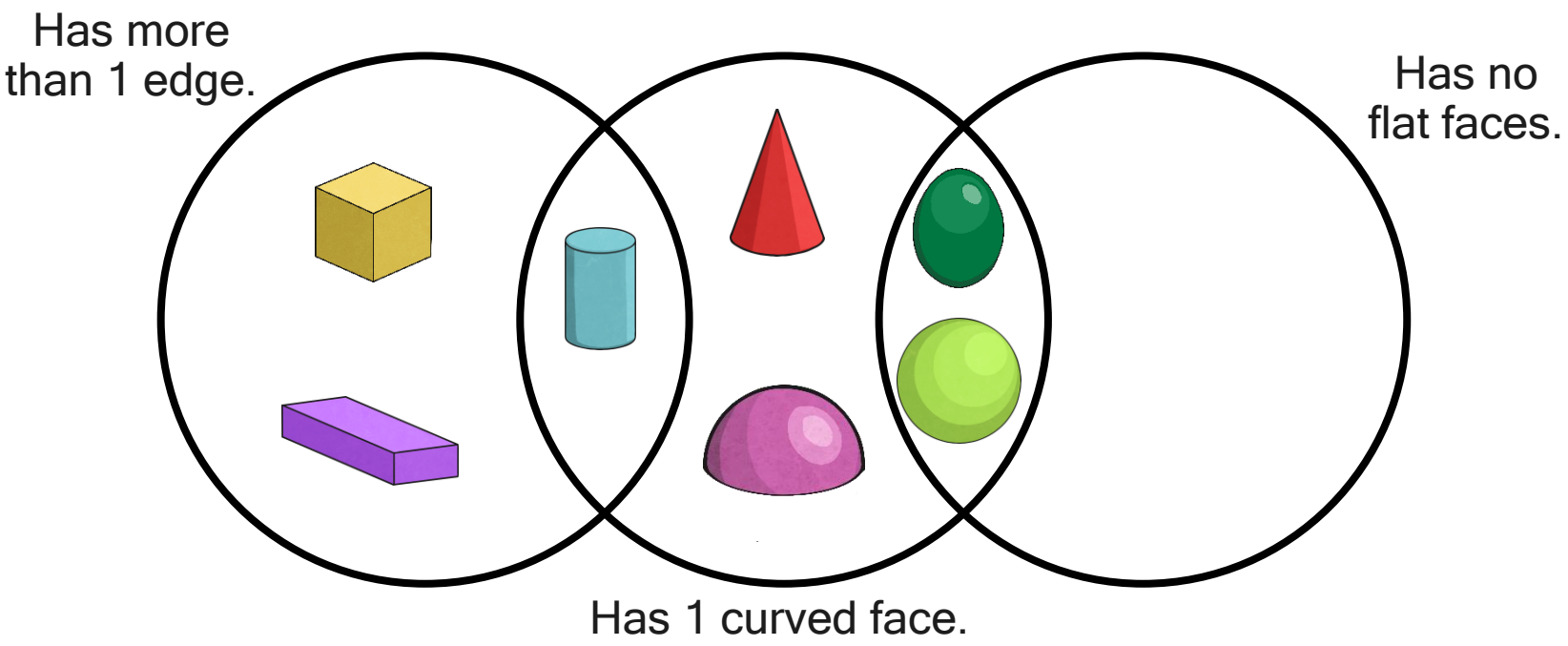
Venn Diagram

- Complete this Venn diagram for these shapes:



Venn Diagram

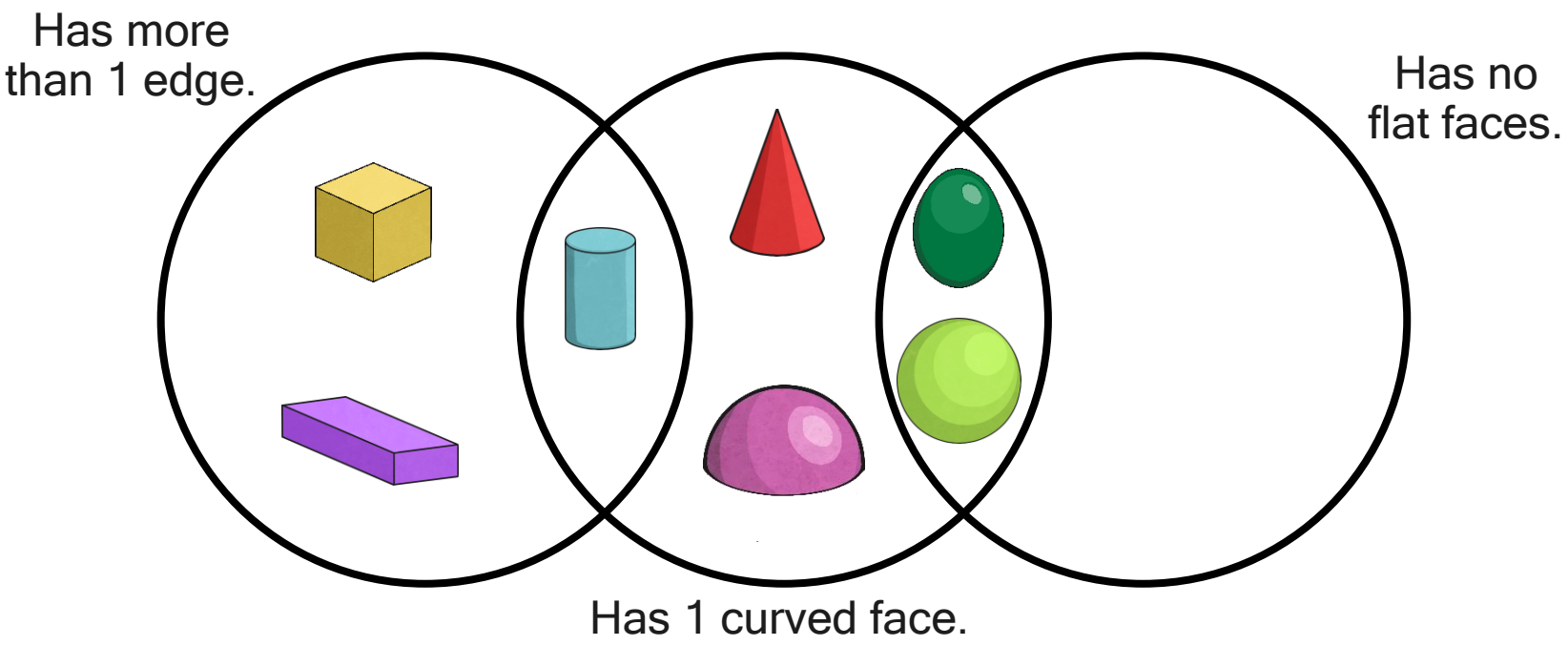
- Complete this Venn diagram for these shapes:



Can you describe a shape that could go in “Has no flat faces” only?

Venn Diagram

- Complete this Venn diagram for these shapes:



Can you describe a shape that could go in “Has no flat faces” only?

A shape like a lens which has 2 curved faces and one edge between.

What 2D Shape Am I?

Read the clues and work out which 2D shape I could be…

My internal angles total 180°. I have one right angle.

I have no right angles and four equal sides.

I have four sides and one set of parallel lines.

a) All my internal angles are equal and are 180° - 36° each.

My two opposite angles are right angles. Of the two remaining angles, one is acute and the other obtuse.

What 2D Shape Am I?

Read the clues and work out which 2D shape I could be…

My internal angles total 180°. I have one right angle.

right-angled triangle

I have no right angles and four equal sides.

rhombus

I have four sides and one set of parallel lines.

trapezium

a) All my internal angles are equal and are 180° - 36° each.

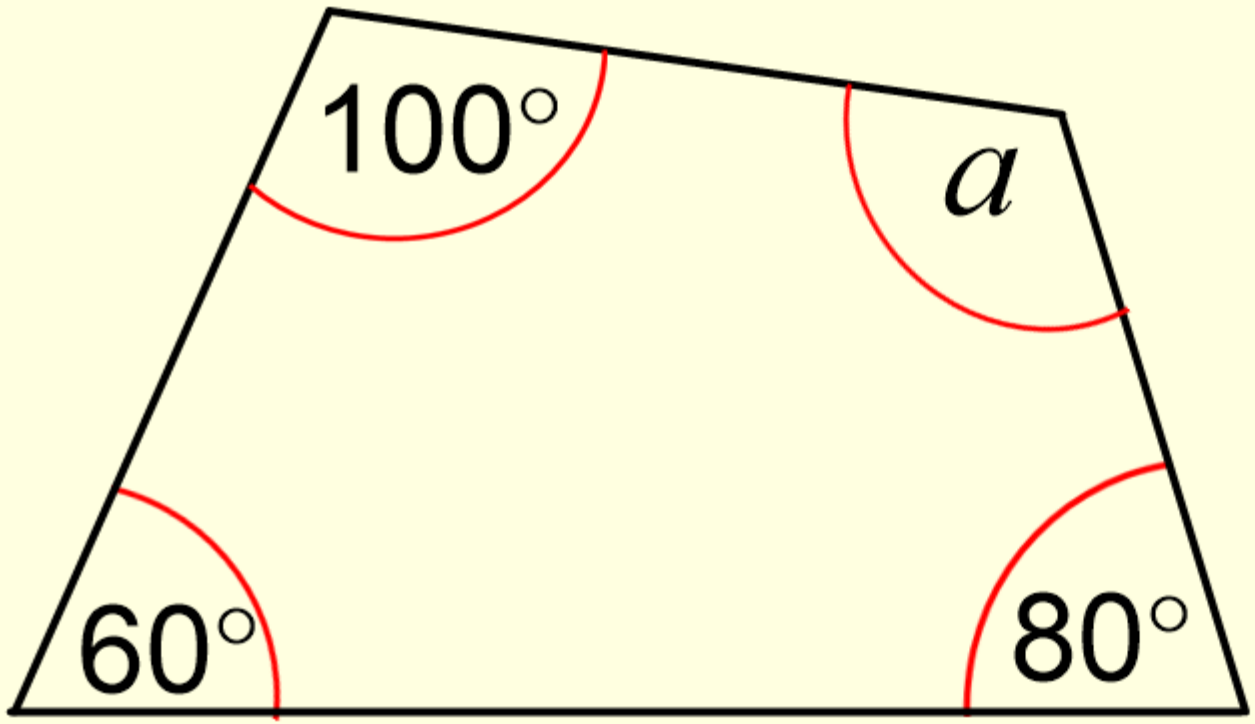
decagon

My two opposite angles are right angles. Of the two remaining angles, one is acute and the other obtuse.

kite

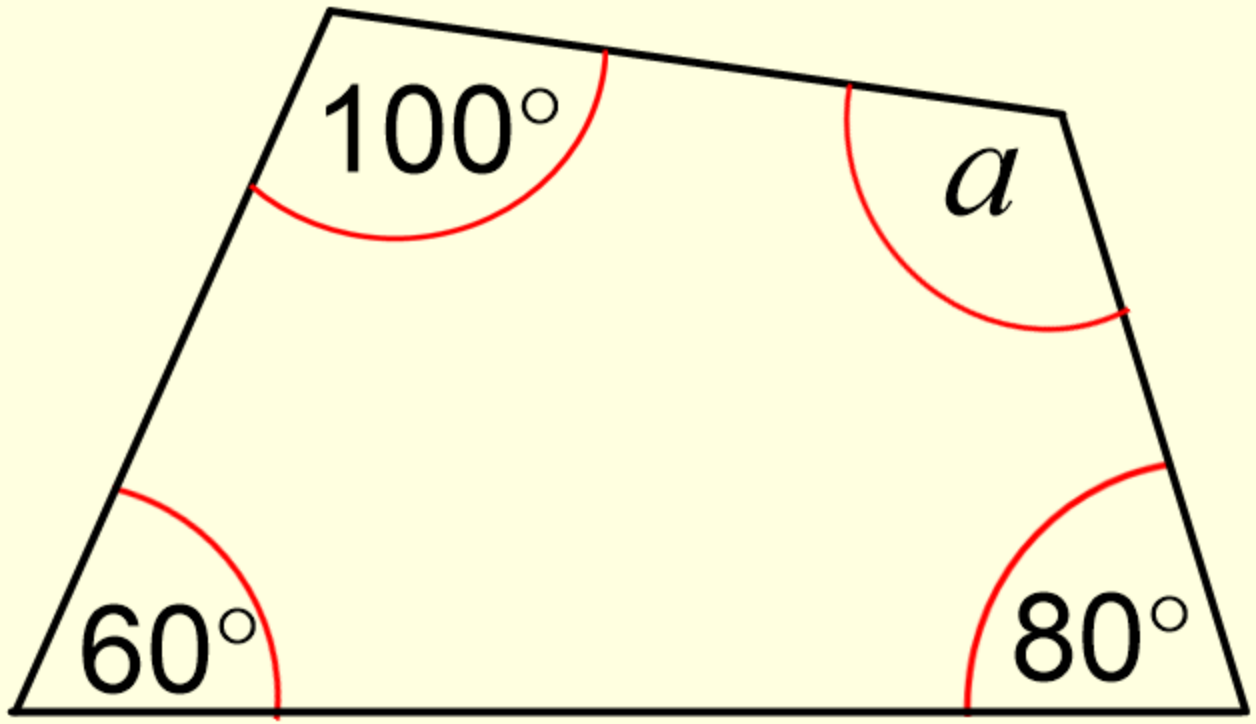
Angles in a quadrilateral add up to 360°

Calculate the value of the missing angles.



Angles in a quadrilateral add up to 360°

Calculate the value of the missing angles.



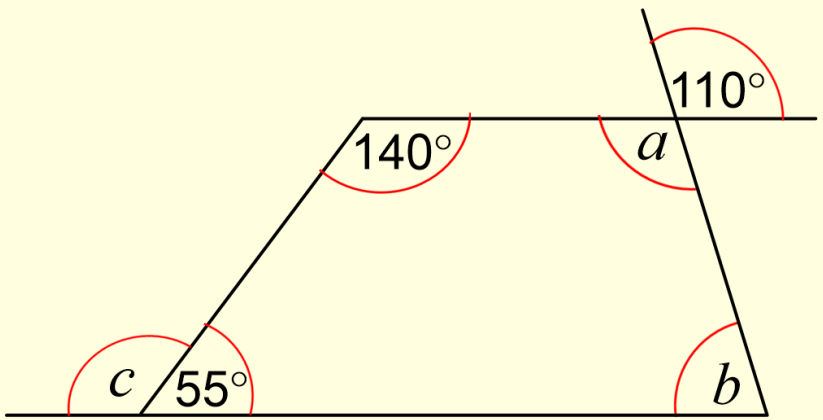
$60^0 + 80^0 + 100^0 = 240^0$

$360^0 - 240^0 = 120^0$

$a = 120^0$

Angles in a quadrilateral add up to 360°

Calculate the value of the missing angles giving reasons for your answers.



$c = 145^0$

because angles on a straight line add up to 180^0

so $180^0 - 55^0 = 145^0$

$a = 110^0$

because opposite angles are equal

$b = 55^0$

because angles in a quadrilateral add up to 360^0

so

$110^0 + 55^0 + 140^0 = 305^0$

$360^0 - 305^0 = 55^0$

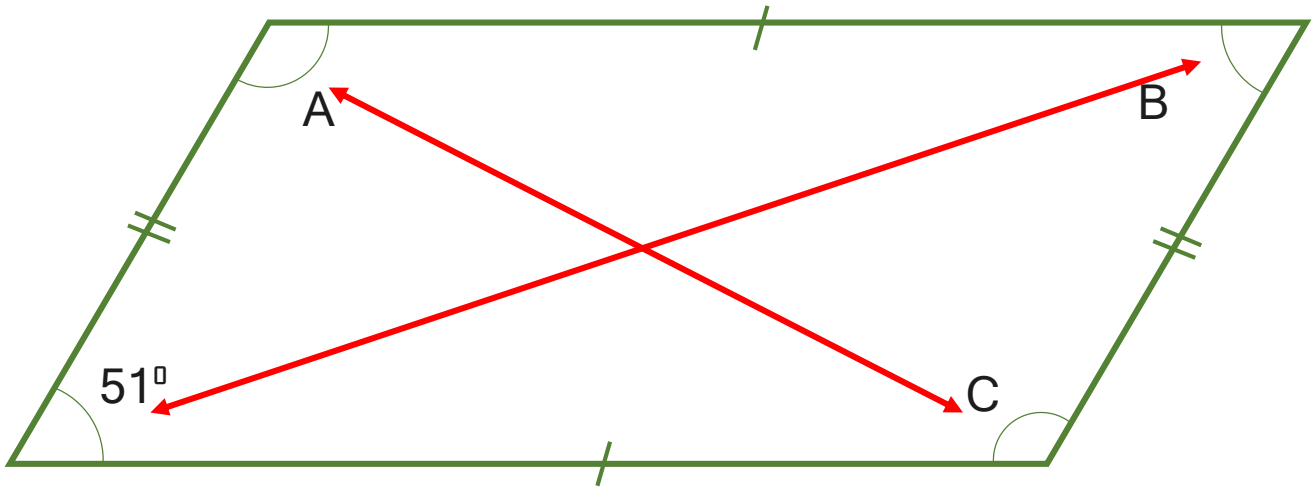
Quadrilaterals

- Calculate the missing angles:

HINT – Remember you need to know your angles. If you have any issues here please go to Education City and get a refresher.

Quadrilaterals

- Calculate the missing angles:



A = 129°

B = 51°

C = 129°

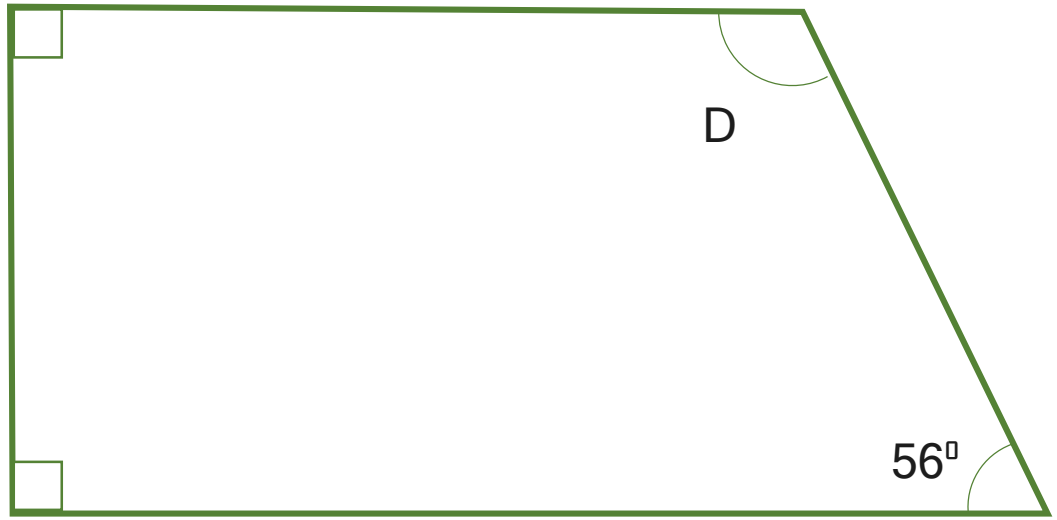
360° - 51°x 2 = 258°
258° ÷ 2 = 129°

Remember -

- Opposite angles in a parallelogram are the same.
- All the angles within a quadrilateral must total 360°.

Quadrilaterals

- Calculate the missing angles:



Quadrilaterals

- Calculate the missing angles:

Remember -

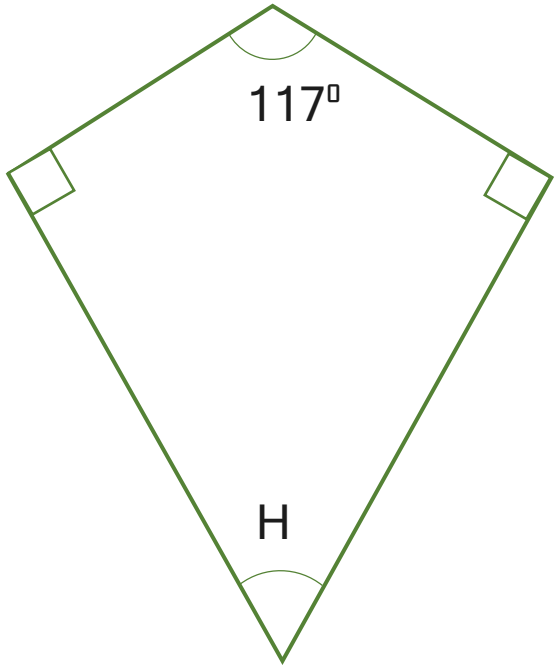
- The squares in the corners represent 90°.

D = 124°

360° - 56° - 90° - 90° = 124°

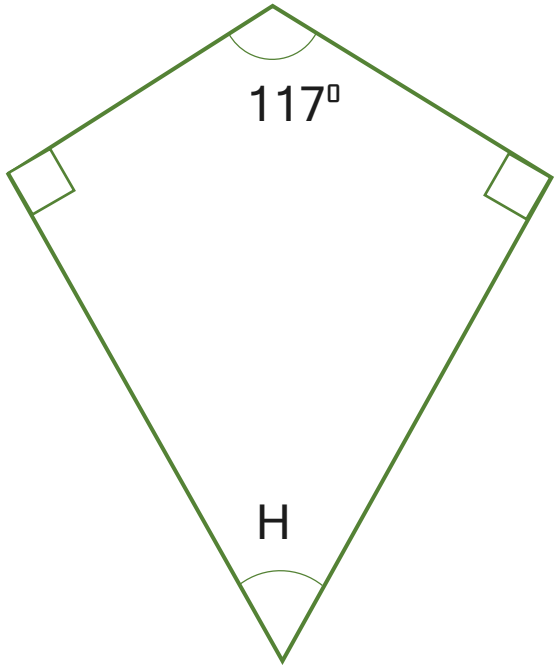
Quadrilaterals

- Calculate the missing angles:



Quadrilaterals

- Calculate the missing angles:



H = 63°

Hide Answers

Tasks

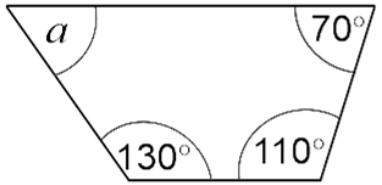
Complete –

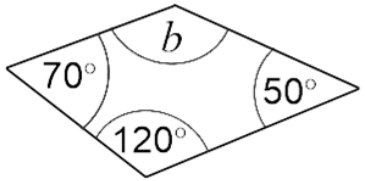
- Worksheet.

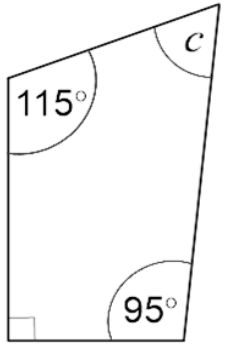
If you have any misunderstandings then please head to Education City or email the school on –

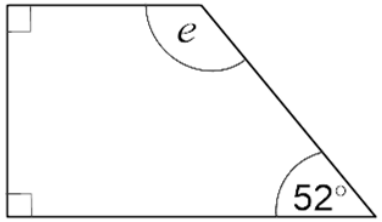
learning@wembleyprimary.brent.sch.uk

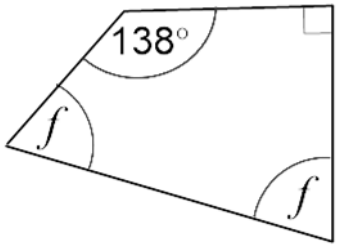
Worksheet

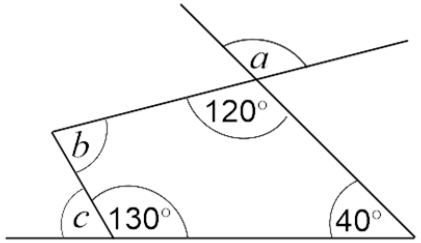


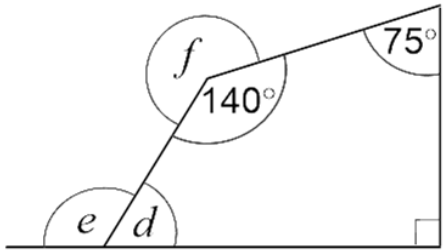












For each statement, put a tick (✓) if it is true.
Put a cross (✗) if it is not true.

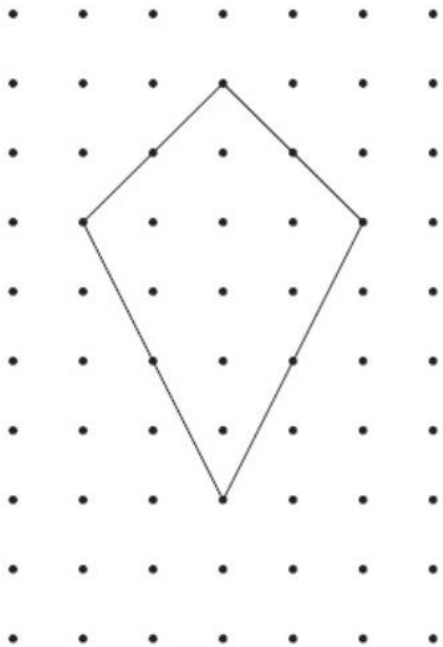
The shape is a quadrilateral. ☐

The shape has 2 lines of symmetry. ☐

The shape is a parallelogram. ☐

The shape has one right angle. ☐

Here is a shape on a grid.



Jack says,

All quadrilaterals have at least one right angle.

Draw two different shapes to prove Jack wrong. Measure and mark on the angles.