Year 5/6
Maths
Booklet 3

Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

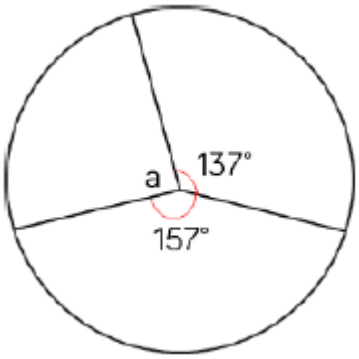
1) 7 x 2 = _____
2) 3 x 8 = _____
3) 4 x 6 = _____
4) 2 x 9 = _____
5) 6 x 4 = _____
6) 8 x 4 = _____
7) 7 x 5 = _____
8) 9 x 10 = _____
9) 6 x 6 = _____
21) 8 x 6 = _____
22) 7 x 9 = _____
23) 6 x 7 = _____
24) 8 x 8 = _____
25) 6 x 3 = _____
26) 9 x 6 = _____
27) 7 x 5 = _____
28) 8 x 9 = _____
29) 10 x 7 = _____

1) 6 x _____ = 18
2) 8 x _____ = 16
3) _____ x 7 = 7
4) _____ x 9 = 45
5) 7 x _____ = 21
6) _____ x 6 = 36
7) _____ x 8 = 40
8) 9 x _____ = 90
9) _____ x 8 = 32
10) _____ x 6 = 24
11) 7 x _____ = 63
12) _____ x 6 = 0
13) _____ x 8 = 80
14) 9 x _____ = 54
15) 6 x _____ = 42
16) _____ x 8 = 56
17) _____ x 9 = 81
18) 6 x _____ = 30
19) 8 x _____ = 48
20) _____ x 9 = 18
21) _____ x 7 = 49
22) 8 x _____ = 72
23) _____ x 6 = 48
24) 9 x _____ = 45
25) _____ x 7 = 63
26) 6 x _____ = 36
27) 8 x _____ = 64
28) _____ x 6 = 42
29) _____ x 9 = 72
30) 7 x _____ = 56
31) _____ x 8 = 48
32) 6 x _____ = 60
33) 9 x _____ = 45
34) _____ x 8 = 72
35) _____ x 7 = 28
36) 9 x _____ = 81
37) _____ x 6 = 6
38) _____ x 8 = 64
39) 7 x _____ = 49
40) _____ x 9 = 54

Date			
Subject/s	**Maths**		
Learning Objective 	To work out angles around a point		
		SA 	TA 
Success Criteria 	I know angles on a point add to 360°		
	I can add known angles together and subtract from 360°		
	I know opposite angles on two intersecting lines are equal		
Support	Independent Adult Support ( ) Group Work		

Pre-task:

Calculate the missing angle **a**



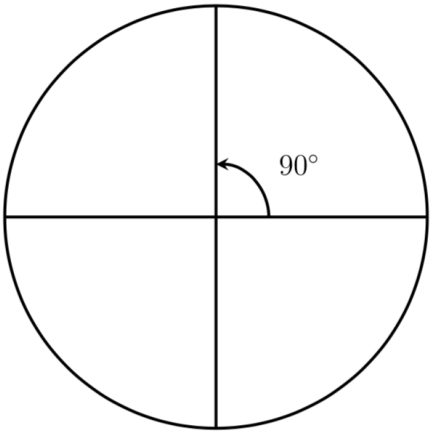
Teacher Led

https://corbettmaths.com/2012/08/10/angles-in-a-full-circle/

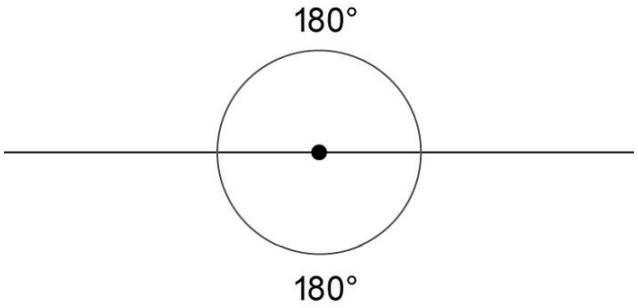
What do you already know?

90 degrees in a right angle

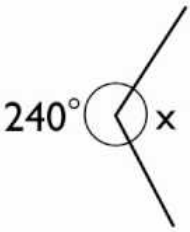
How many right angles are there in a circle? How many degrees must be in a circle?



You also know that there 180 degrees on a straight line and there are two straight lines in a circle.



There are 360degrees in a circle, this may also be called "Around a point".



Angles around a point add up to 360°

If I know one angle is 240 degrees and that angles around a point add to 360 degrees, I need to work out the missing number.

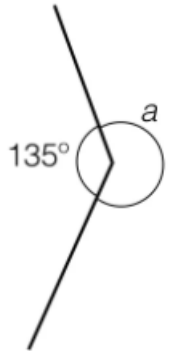
____ + 240 = 360

So

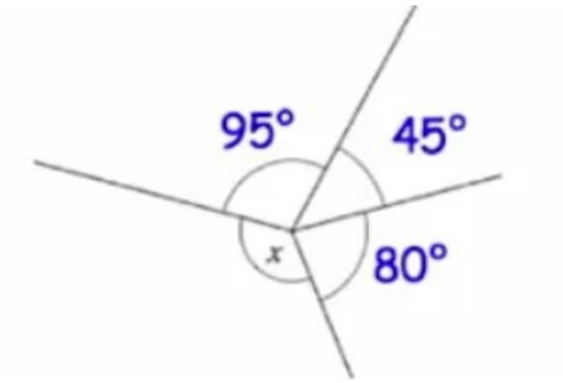
360—240 = 120 degrees

X = 120degrees

Your turn



My turn



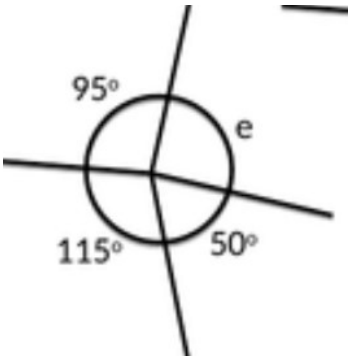
If there is more than one known point, I need to add them together first, then subtract from 360. I know that they must all equal 360 as they are all around a point.

95 + 45 + 80 = 220

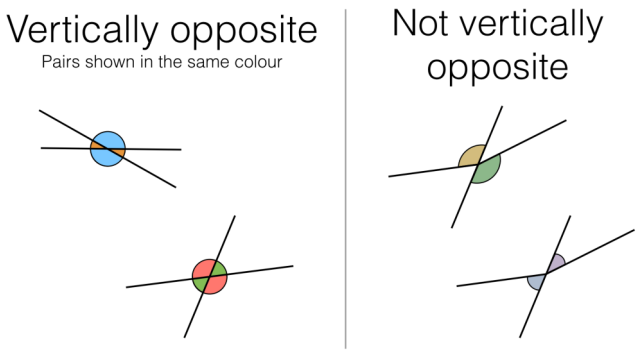
360—220 = 140

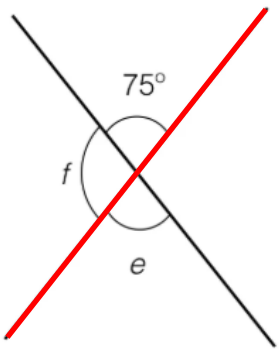
X = 140 degrees

Your turn



My turn





Vertically opposite angles are also always equal!

I can either work this question out as angles around a point or angles on a straight lines.

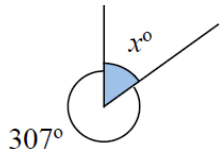
Looking at this I know 75degrees + f = 180degrees as they are both on the red straight line.

So f = 105 degrees

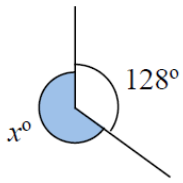
I also know that e + f = 180 degrees as they are both on the black straight line, and e is the same as f as they are opposite each other.

Fluency

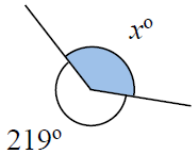
A1 Find the value x



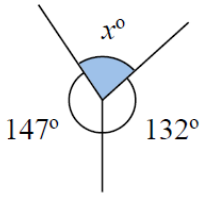
A2 Find the value x



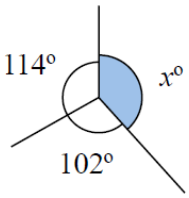
A3 Find the value x



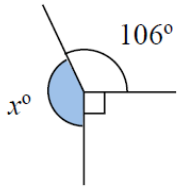
B1 Find the value x



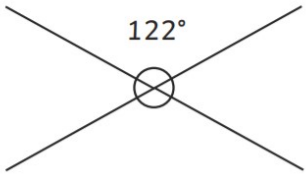
B2 Find the value x



B3 Find the value x



1.



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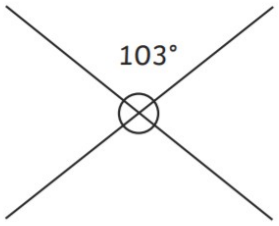

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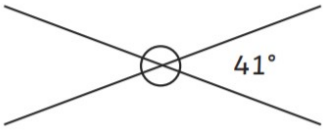

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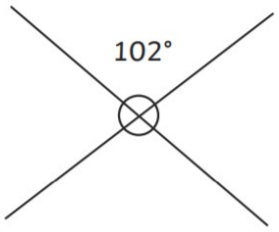
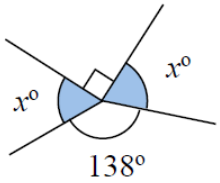
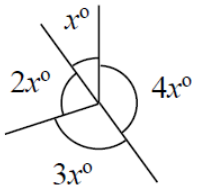


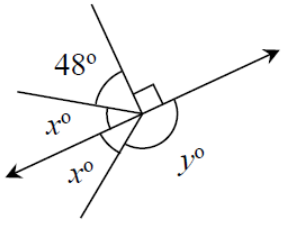
A3 Find the value of x



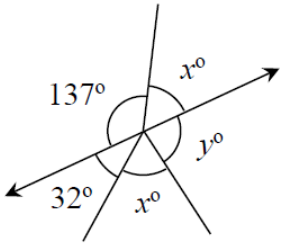
A4 Find the size of each of the four angles



B3 Find the values of x and y



B4 Find the values of x and y



Use it!

Four angles lie on a straight line.

One angle is 81°

Prove it!

The other three angles are equal.

What size are the other three angles?

Draw a diagram to prove your answer.

Explain it!

Five equal angles all meet around a point.

What is the size of each angle?

Explain how you know.

Use it!

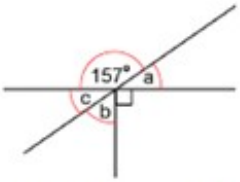
Here is a pie chart showing the colour of cars sold by a car dealer.

The number of blue cars sold is equal to the total number of red and green cars sold.

The number of red cars sold is twice the number of green cars sold.

Work out the inside angle of each section of the pie chart.

Explain it!

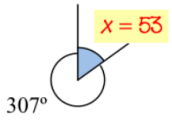


Rachel says that it's not possible to calculate all of the missing angles.

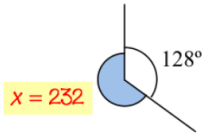
Do you agree? Explain why.

Fluency Answers

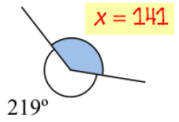
A1 Find the value x



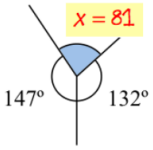
A2 Find the value x



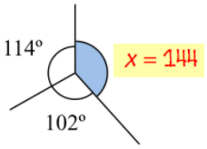
A3 Find the value x



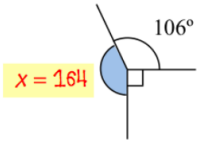
B1 Find the value x



B2 Find the value x



B3 Find the value x



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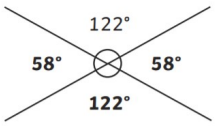

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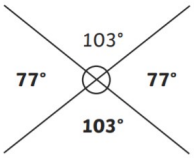

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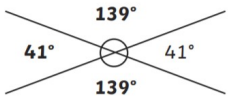

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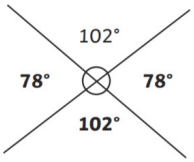
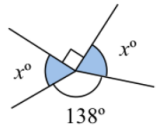


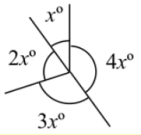
A3 Find the value of x



2x = 132 x = 66

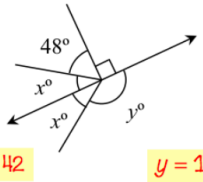
A4 Find the size of each of the four angles

10x = 360 ⇒ x = 36°



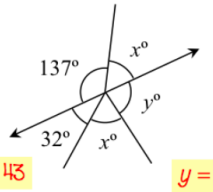
36°, 72°, 108° and 144°

B3 Find the values of x and y



x = 42 y = 138

B4 Find the values of x and y



x = 43 y = 105

Problem solving and reasoning answers

Answers
33°
72° because 360 ÷ 5 = 72
Blue: 180° Red: 120° Green: 60°
I disagree because: 180 – 157 = 23 so a = 23° because angles on a straight line add up to 180° Angles a and c are equal because they are vertically opposite so c = 23° Then angles around a point add up to 360° so b = 67°

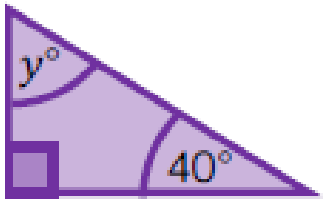
Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

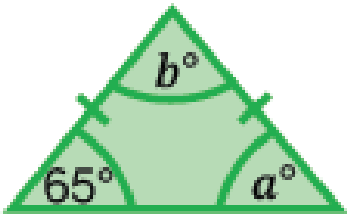
3 x 4 =	7 x 8 =	9 ÷ 3 =	36 ÷ 12 =
21 ÷ 7 =	8 x 6 =	12 x 4 =	10 x 8 =
4 x 8 =	3 x 9 =	4 x 7 =	3 x 11 =
40 ÷ 8 =	15 ÷ 3 =	27 ÷ 9 =	20 ÷ 4 =
4 x 11 =	48 ÷ 6 =	8 ÷ 4 =	6 x 8 =
5 x 8 =	11 x 3 =	5 x 8 =	80 ÷ 10 =
24 ÷ 4 =	88 ÷ 11 =	24 ÷ 3 =	4 x 1 =
72 ÷ 8 =	8 x 4 =	9 x 4 =	8 x 5 =
10 x 3 =	16 ÷ 4 =	8 x 11 =	6 x 4 =
5 x 4 =	32 ÷ 8 =	6 ÷ 3 =	3 ÷ 3 =
12 ÷ 3 =	3 x 6 =	48 ÷ 12 =	44 ÷ 11 =
4 x 9 =	8 ÷ 8 =	3 x 4 =	7 x 3 =
11 x 8 =	4 x 3 =	0 x 8 =	12 x 8 =
3 x 12 =	48 ÷ 8 =	18 ÷ 3 =	28 ÷ 4 =
24 ÷ 8 =	30 ÷ 10 =	3 x 3 =	56 ÷ 7 =
27 ÷ 3 =	8 x 9 =	64 ÷ 8 =	4 x 12 =
7 x 4 =	10 x 4 =	36 ÷ 4 =	5 x 3 =
36 ÷ 9 =	16 ÷ 8 =	8 x 8 =	56 ÷ 7 =
56 ÷ 8 =	8 x 3 =	21 ÷ 3 =	4 x 6 =
3 x 0 =	72 ÷ 9 =	4 x 12 =	32 ÷ 4 =
12 ÷ 4 =	3 x 8 =	96 ÷ 12 =	12 x 3 =
33 ÷ 3 =	4 x 4 =	24 ÷ 8 =	7 x 8 =
6 x 3 =	9 x 8 =	2 x 3 =	9 x 3 =
40 ÷ 4 =	4 ÷ 4 =	11 x 4 =	21 ÷ 3 =
28 ÷ 7 =	3 x 7 =	32 ÷ 8 =	8 x 12 =

Date			
Subject/s	**Maths**		
Learning Objective	To work out angles in triangles		
		SA	TA
Success Criteria	I know angles in a triangle add to 180°		
	I know that there are 90° in a right angle		
	I can use my knowledge of properties of shapes and link it to angles		
Support	Independent Adult Support ( ) Group Work		

Pre-task:

What are the missing angles? How do you know?





Teacher Led

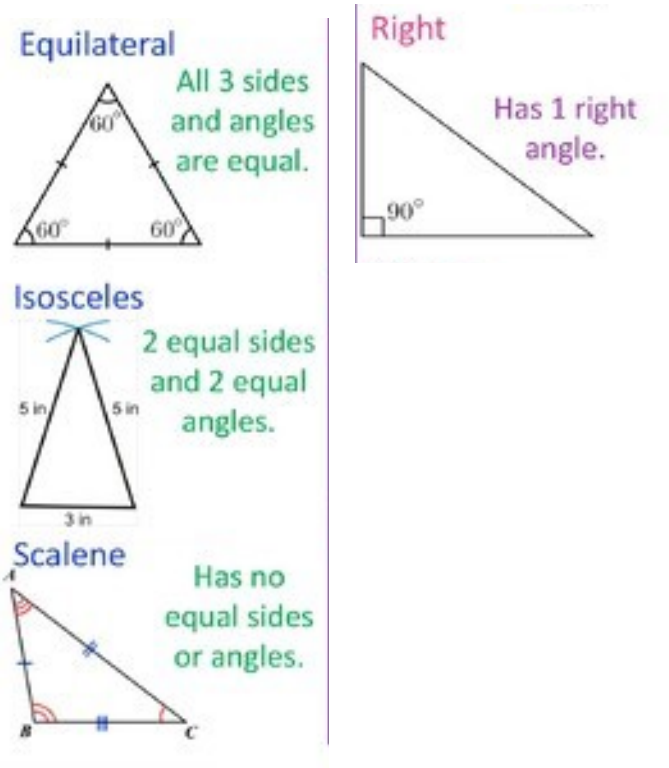
Make a triangle with a piece of paper. Rip off the four corners and put them together. What does it make? What do angles in a triangle add up to?

https://www.youtube.com/watch?v=hEAFyu_tA7g

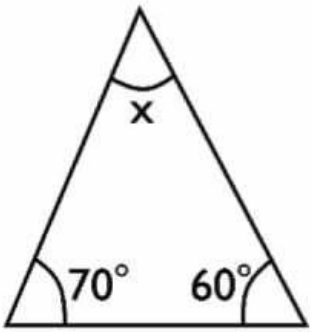
https://corbettmaths.com/2012/08/10/angles-in-a-triangle/

All angles add up to 180 degrees!

What are the three different types of triangles? What do their properties tell you about the angles they will have?



My turn



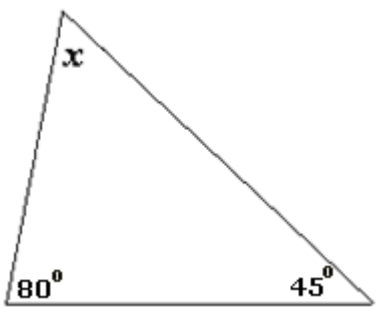
I know angles in a triangle add to 180 degrees. So 70 + 60 + x = 180degrees

70 + 60 = 130

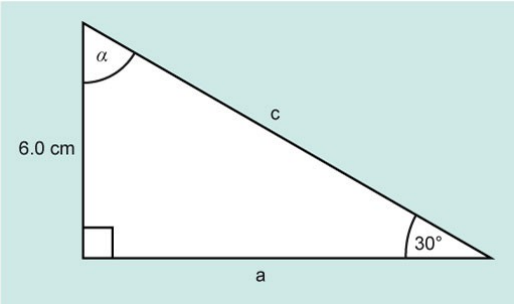
180—130 = 50

X = 50 degrees

Your turn



My turn

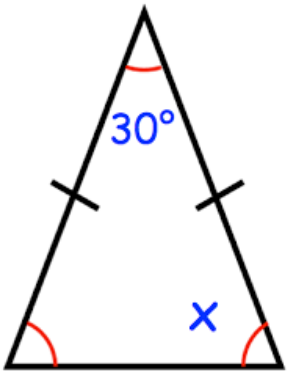


I know this is a right angled triangle by the square in the corner. So 90 + 30 + a = 180

90 + 30 = 120

180—120 = 60

A = 60 degrees



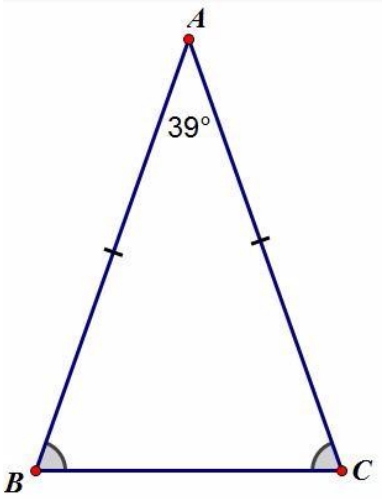
As this triangle has two sides labelled the same, I know it is an isosceles so must have two angles the same. The two unknown angles are the same so I know

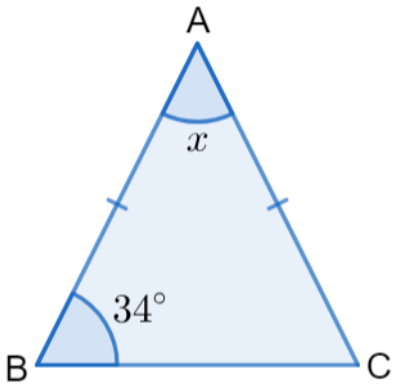
30 + x + x = 180

180—30 = 150

So if x + x = 150 I can just divide 150 by 2, so x = 75 degrees.

Your turn



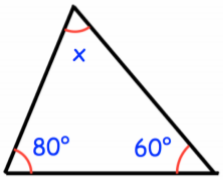


Be careful, think about which two angles are the same!

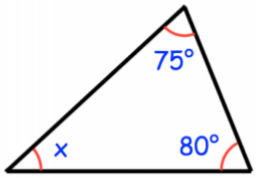
Fluency

Question 1: Find the size of each missing angle.

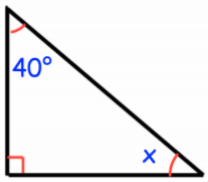
(a)



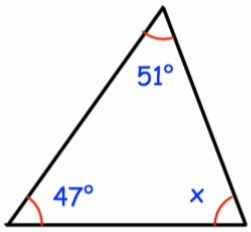
(b)



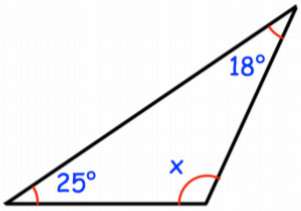
(c)



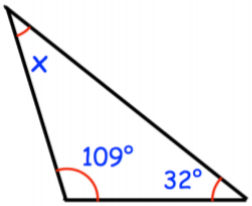
(d)



(e)

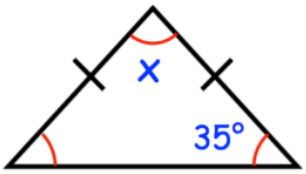


(f)

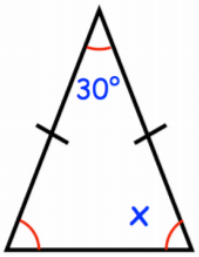


Question 2: Find the size of each missing angle.

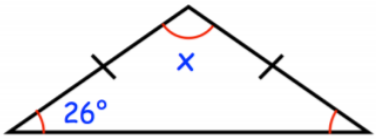
(a)



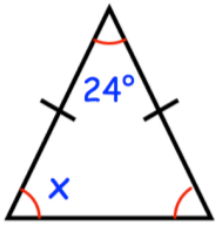
(b)



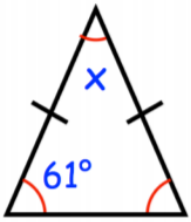
(c)



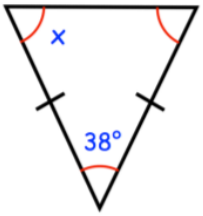
(d)



(e)

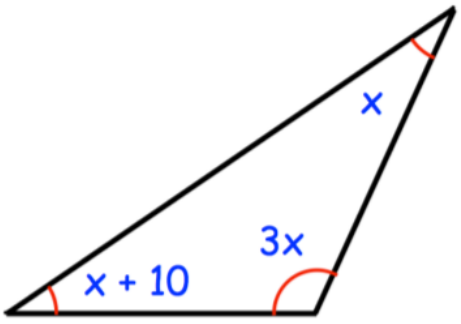


(f)



Question 6: The ratio of angles in a triangle is 2:3:5
Find the size of the smallest angle.

Question 7: Find the size of each angle



Problem Solving and Reasoning

Problem Solving and Reasoning

Prove it!

Mo says,

My triangle has two 90° angles.

Can Mo be right? Prove it.

Prove it!

True or False?

A triangle can never have 3 acute angles.

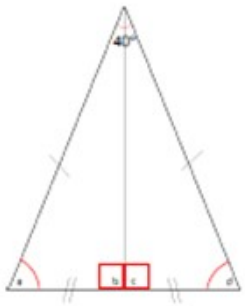
Use it!

I have an isosceles triangle.
One angle measures 42 degrees.

What could the other angles measure?

Use it!

How many sentences can you write to express the relationships between the angles in the triangles?
One has been done for you.



$40° + a + d = 180°$

Fluency Answers

(a) 40° (b) 25° (c) 50°

(d) 82° (e) 137° (f) 39°

Question 2

(a) 110° (b) 75° (c) 128°

(d) 78° (e) 58° (f) 71°

Question 6: 36°

Question 7: 34°, 44° and 102°

Problem solving and reasoning answers

Mo can't be right because these two angles would add up to 180 degrees, and the third angle can't be 0 degrees.
False
The angles could be: 42°, 42°, 96° or 42°, 69°, 69°
Possible responses: $20° + a + b = 180°$ $20° + c + d = 180°$ $b = 90°$ $c = 90°$ $b = c$ $a = d$ etc. Children could also work out the value of each angle.

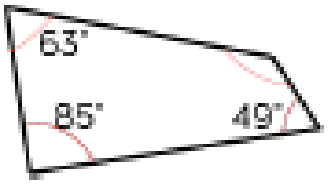
Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

1	9 X 7		30	6 x 9		59	9 X 4	
2	8 x 4		31	12 x 3		60	7 x 6	
3	7 x 10		32	3 x 8		61	4 x 8	
4	9 x 9		33	8 X 8		62	12 X 2	
5	6 x 2		34	6 x 8		63	3 x 6	
6	4 x 7		35	11 x 7		64	4 x 10	
7	9 X 2		36	10 x 1		65	9 x 11	
8	12 x 12		37	10 x 5		66	3 x 12	
9	5 X 9		38	3 x 5		67	3 x 10	
10	7 X 7		39	12 x 11		68	4 X 4	
11	11 x 6		40	6 x 6		69	4 x 9	
12	5 x 11		41	2 x 9		70	4 x 11	
13	4 x 6		42	12 x 7		71	6 x 5	
14	9 x 5		43	11 x 8		72	7 x 2	
15	8 X 12		44	2 x 6		73	5 x 12	
16	10 x 10		45	4 x 5		74	2 x 10	
17	7 x 3		46	4 x 9		75	4 x 12	
18	5 x 8		47	8 x 2		76	7 x 8	
19	3 x 3		48	7 x 9		77	6 x 10	
20	10 x 11		49	12 x 8		78	12 x 6	
21	11 x 2		50	9 X 4		79	7 x 12	
22	2 x 7		51	5 X 5		80	2 X 2	
23	6 x 12		52	10 x 12		81	11 x 0	
24	5 x 7		53	8 x 11		82	2 x 12	
25	10 x 6		54	4 x 3		83	2 X 4	
26	9 x 12		55	2 x 5		84	8 x 5	
27	5 x 4		56	5 x 10		85	7 x 11	
28	11 x 11		57	9 x 3		86	9 x 6	
29	7 x 4		58	8 x 10		87	10 x 11	

Date			
Subject/s	**Maths**		
Learning Objective	To work out angles in quadrilaterals		
		SA	TA
Success Criteria	I know all quadrilaterals have 4 sides		
	I know angles in a quadrilateral add to 360°		
	I can use my knowledge of properties of shapes and link it to an-		
Support	Independent Adult Support ( ) Group Work		

Pre-task:

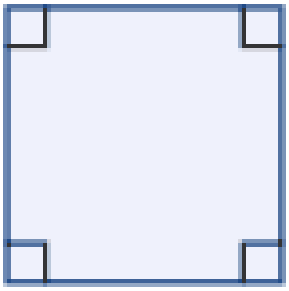
What are the missing angles? How do you know?



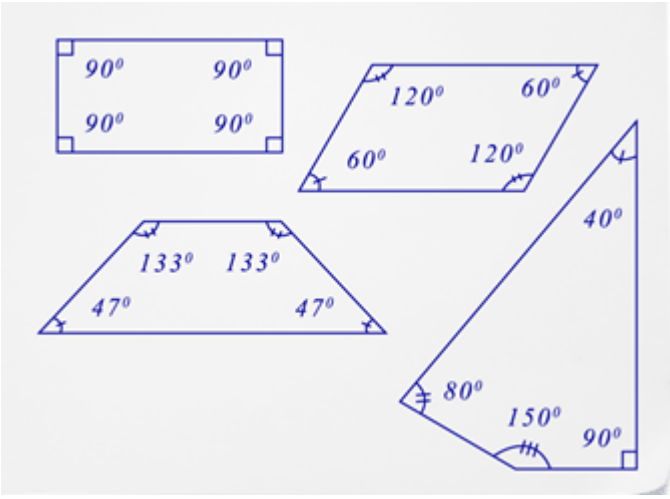
Teacher Led

https://corbettmaths.com/2013/03/17/angles-in-quadrilaterals/

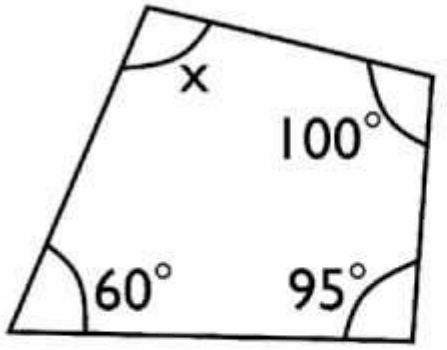
What are the angles in a square? What do these add up to?



All angles in a quadrilateral (four sided shape) add to 360 degrees.



My turn



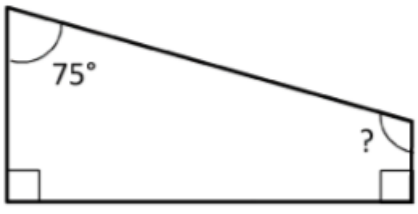
100 + 95 + 60 + x = 360 degrees

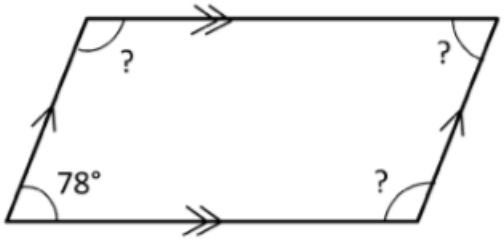
100 + 95 + 60 = 255

360—255 = 105

X = 105 degrees

Your turn

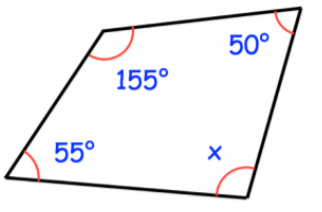




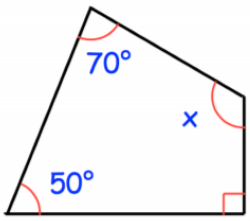
Fluency

Question 1: Find the size of each missing angle.

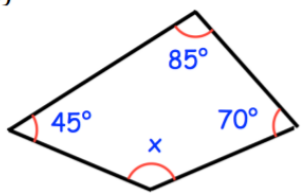
(a)



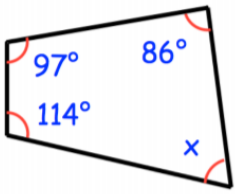
(b)



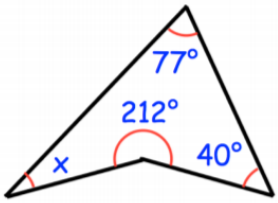
(c)



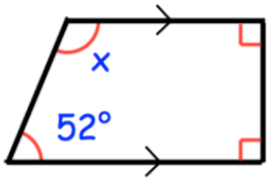
(d)



(e)

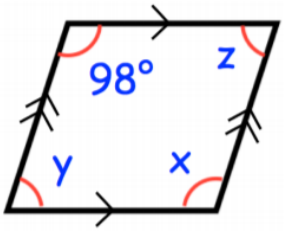


(f)

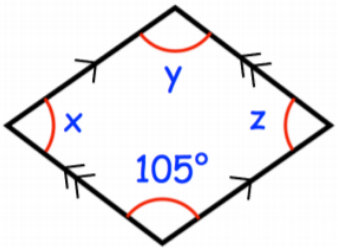


Question 4: Shown below are three rhombuses.
Find the size of each missing angle.

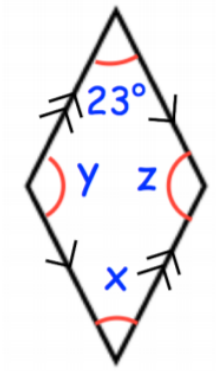
(a)



(b)

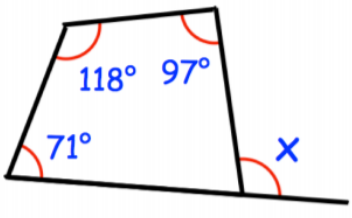


(c)

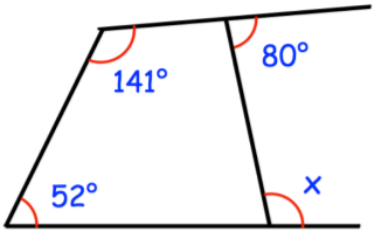


Question 6: Find the size of each missing angle.

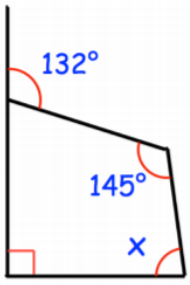
(a)



(b)



(c)



Problem Solving and Reasoning

Prove It!

Adam says,

All quadrilaterals have at least one right angle.

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

Prove It!

This quadrilateral is split into two triangles.

Use your knowledge of angles in a triangle to find the total of angles in a quadrilateral.

Try splitting other quadrilaterals into triangles too. What do you notice?

Further Challenge

Use the same method to complete the table.

Shape	Number of sides	Number of triangles	180 × number of triangles	Sum of internal angles
Square	4	2	180 × 2	360°
Pentagon	5	3	180 × 3	540°
Hexagon				
Heptagon				

What do you notice?

Can you predict the angle sum of any other polygon?

Answers

Question 1

(a) 100° (b) 150° (c) 160°

(d) 63° (e) 31° (f) 128°

Question 4

(a) x = 98° y = 82° z = 82°

(b) x = 75° y = 105° z = 75°

(c) x = 23° y = 157° z = 157°

Question 6

(a) 106°

(b) 113°

(c) 77°

Problem Solving and Reasoning Answers
Examples: Trapezium (without a right angle) Rhombus Parallelogram
Children should find that angles in any quadrilateral will always add up to 360 degrees.

Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

2 x 2 =	3 x 3 =	4 x 4 =	11 x 10 =
3 x 5 =	6 x 8 =	7 x 5 =	10 x 2 =
4 x 6 =	12 x 5 =	8 x 12 =	3 x 12 =
7 x 4 =	8 x 6 =	10 x 11 =	4 x 9 =
10 x 10 =	10 x 12 =	4 x 2 =	5 x 7 =
9 x 3 =	11 x 2 =	10 x 3 =	9 x 8 =
7 x 2 =	3 x 9 =	6 x 8 =	10 x 7 =
11 x 3 =	4 x 11 =	12 x 10 =	7 x 8 =
10 x 5 =	2 x 5 =	2 x 11 =	4 x 3 =
2 x 4 =	6 x 10 =	8 x 3 =	12 x 4 =
5 x 6 =	10 x 9 =	3 x 4 =	5 x 8 =
7 x 10 =	2 x 12 =	4 x 5 =	8 x 8 =
9 x 2 =	5 x 3 =	7 x 8 =	12 x 2 =
3 x 11 =	9 x 4 =	8 x 10 =	5 x 4 =
10 x 4 =	5 x 5 =	2 x 8 =	9 x 5 =
8 x 5 =	8 x 8 =	8 x 0 =	8 x 11 =
9 x 8 =	9 x 10 =	4 x 12 =	2 x 10 =
4 x 10 =	5 x 2 =	12 x 8 =	4 x 7 =
3 x 2 =	6 x 3 =	3 x 6 =	11 x 5 =
7 x 3 =	6 x 4 =	5 x 10 =	2 x 3 =
4 x 8 =	5 x 11 =	8 x 2 =	8 x 9 =
5 x 9 =	2 x 6 =	3 x 7 =	8 x 4 =
12 x 8 =	3 x 10 =	11 x 4 =	11 x 8 =
2 x 9 =	2 x 7 =	5 x 12 =	12 x 3 =
10 x 8 =	3 x 8 =	0 x 4 =	8 x 7 =

Steps to Success

Date			
Subject/s	**Maths**		
Learning Objective 	I can draw angles		
		SA 	TA 
Success Criteria 	I can put my protractor at the end of the line		
	I can decide which scale to use		
	I can use my knowledge of angles around a point to draw reflect angles		
Support	Independent Adult Support ( ) Group Work		

Pre-task:

In your book...

Draw a triangle with the angle 60° and 96°.

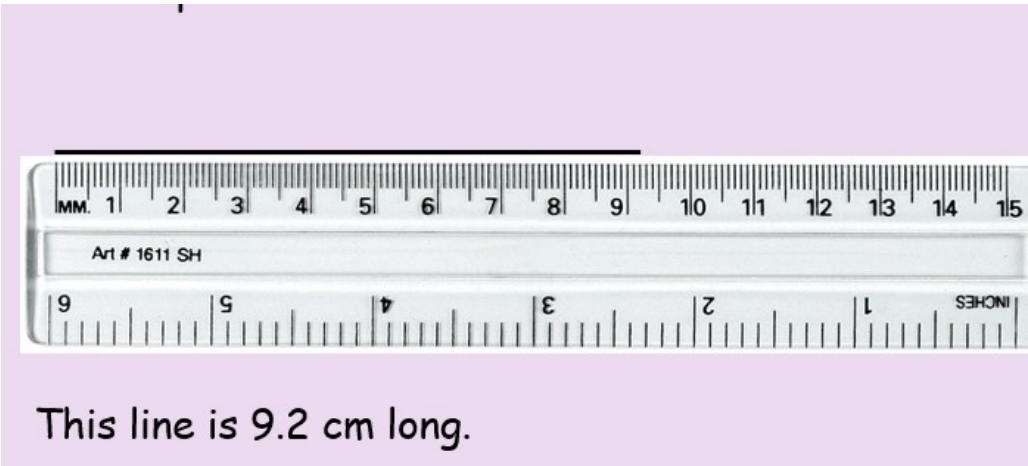
What is the third angle?

Draw an angle of 200°

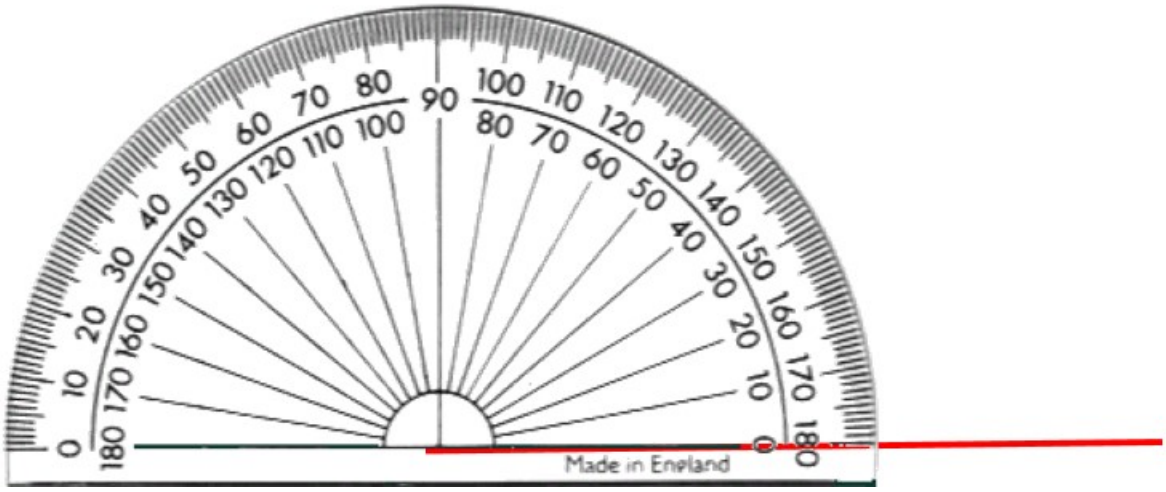
Teacher Led

https://corbettmaths.com/2013/03/04/drawing-angles/

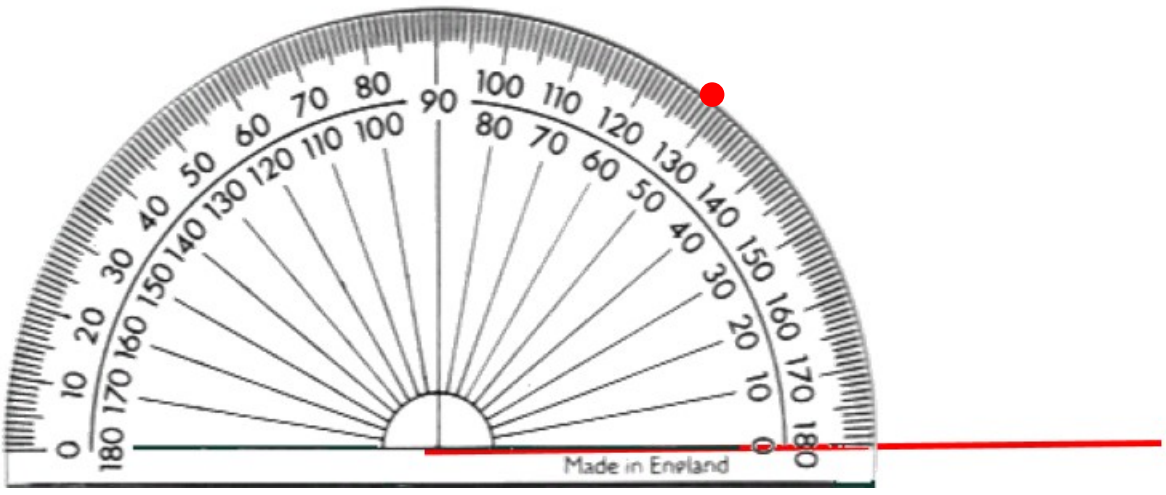
1. Start by drawing a base line with a ruler!



2. Place your protractor on one end of the line. The centre point of the protractor needs to go on the very edge of the line, and the horizontal line at the bottom of the protractor, go across the line you have drawn.



3. Put a dot on the size of the angle you want to draw. I am going to use the inside scale because that is the 0 that is on my drawn line. I'm going to draw a 52 degree angle.



4. Remove your protractor and use the ruler to join the edge of your line to the dot!

Fluency

Question 1: Draw angles of the following size

(a) 20° (b) 60° (c) 80° (d) 40°

(e) 10° (f) 70° (g) 50° (h) 45°

(i) 25° (j) 85° (k) 75° (l) 15°

Question 2: Draw angles of the following size

(a) 100° (b) 150° (c) 160° (d) 120°

(e) 170° (f) 130° (g) 110° (h) 125°

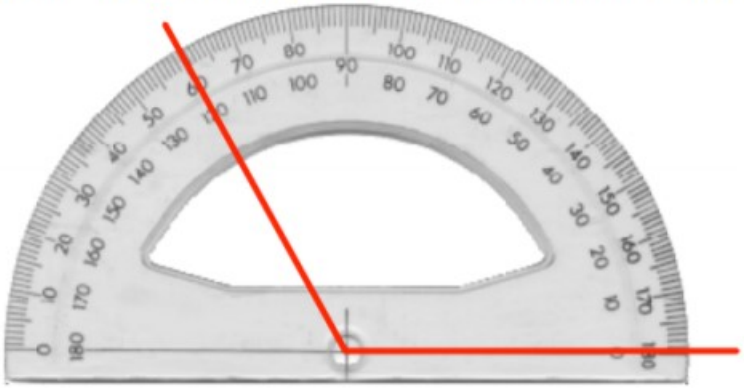
Question 3: Draw angles of the following size

(a) 200° (b) 240° (c) 270° (d) 300°

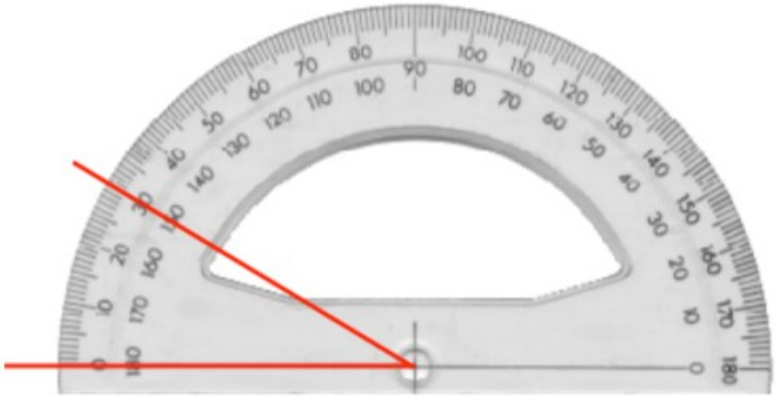
(e) 320° (f) 350° (g) 215° (h) 255°

Problem Solving and Reasoning

Question 1: Sophie has been asked to draw a 60° angle.
She has made a mistake. Explain what she has done wrong.



Question 2: Jonathan has been asked to draw a 150° angle.
He has made a mistake. Explain what he has done wrong.



Always, sometimes or never true?

- Two acute angles next to each other make an obtuse angle.
- Half an obtuse angle is an acute angle.
- 180° is an obtuse angle

Answers

Check with a protractor!

Problem solving and reasoning answers

Question 1: Sophie has drawn an angle of 120° rather than 60°. She should have read the inner numbers

Question 2: Jonathan has drawn an angle of 30° rather than 150°. He should have read the outer numbers

- Sometimes
- Always
- Never