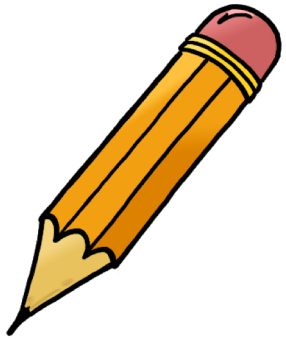
Year 6

Thursday 16th July 2020

Maths

LO: Angles in regular polygons



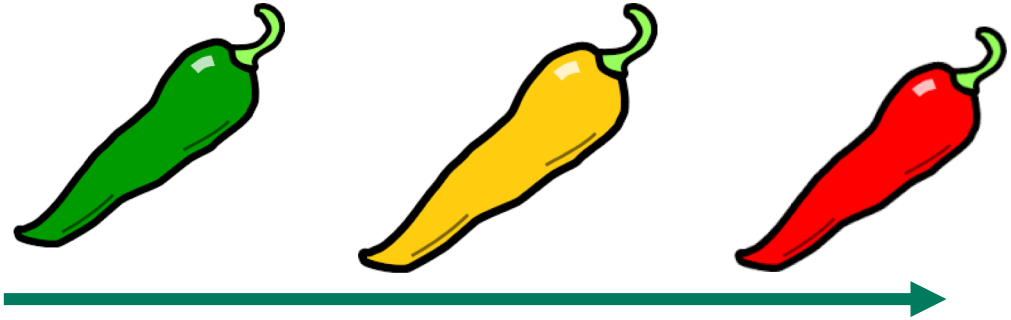
The video of this lesson is available here – Summer Term – Week 10 - lesson 4

This link works on the printable version and is available above the PowerPoint.

You will need to watch this video to learn the skills you need in this lesson.

The independent work continues on the next two slides. There are 5 questions and 1 extension.

(Espanol - cinco preguntas y una extensión)



The chili suggests a good starting point depending on how confident you are feeling. If you have time you can complete all the independent work!

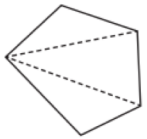
Angles in regular polygons

1 The sum of the interior angles of a triangle is 180°.

Split the polygons into triangles to work out the sum of their interior angles. Your lines should not overlap.

The first one has been done for you.

a)



number of sides = 5

number of triangles = 3

3 × 180 = 540

The sum of the interior angles of a pentagon is 540°

b)

number of sides = ☐

number of triangles = ☐

☐ × 180 = ☐

The sum of the interior angles of a hexagon is ☐

c)

number of sides = ☐

number of triangles = ☐

☐ × 180 = ☐

The sum of the interior angles of a heptagon is ☐

What do you notice about the number of sides compared to the number of triangles?

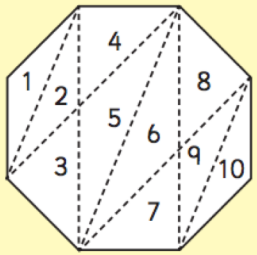
2 Complete the table.

Shape	Number of sides	Number of triangles	Sum of interior angles
quadrilateral	4	2	360°
pentagon			
nonagon			
decagon			
	6		
		6	
			1,800°

Compare answers with a partner.

3 Dani is working out the sum of the interior angles of a polygon.

Here are her workings.



10 × 180 = 1,800°

Do you agree with Dani? _____

Explain your answer.

4 Rosie, Amir and Eva are drawing polygons.

a)

I have split my polygon into four triangles.

Rosie

What polygon has Rosie drawn? _____

b)

The sum of the interior angles of my polygon is 1,080°.

Amir

What polygon has Amir drawn?

_____

c)

My polygon has more sides than Rosie's but fewer than Amir's.

Eva

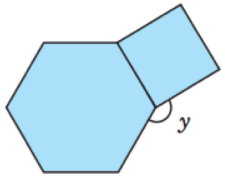
What is the sum of the interior angles of Eva's polygon?

☐

5 Each compound shape is made up of regular polygons.

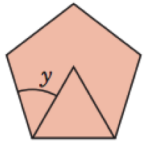
Work out angle y in each case.

a)



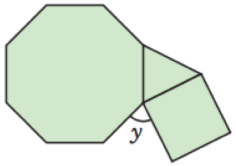
y = ☐

c)



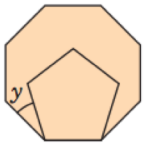
y = ☐

b)



y = ☐

d)

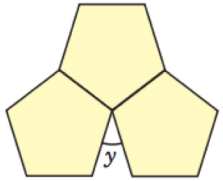


y = ☐

Ext: The pentagons shown are regular.

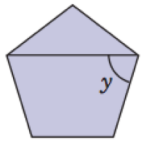
Work out the size of angle y in each case.

a)

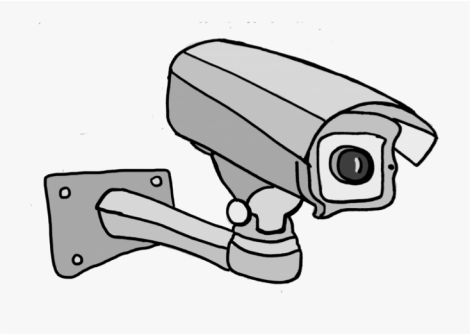


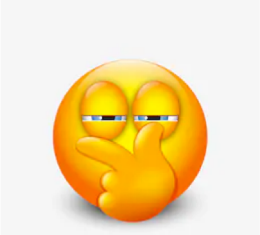
y = ☐

b)

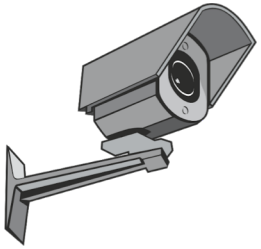


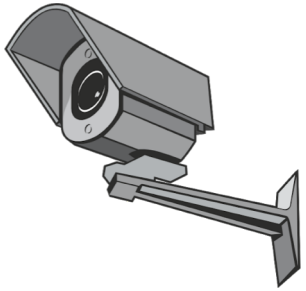
y = ☐





The next two slides contain the answers should you wish to check you work and reflect on what you understand.





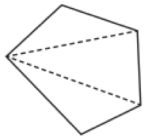
Angles in regular polygons

1 The sum of the interior angles of a triangle is 180°.

Split the polygons into triangles to work out the sum of their interior angles. Your lines should not overlap.

The first one has been done for you.

a)



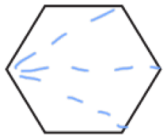
number of sides = 5

number of triangles = 3

3 × 180 = 540

The sum of the interior angles of a pentagon is 540°

b)



number of sides = 6

number of triangles = 4

4 × 180 = 720

The sum of the interior angles of a hexagon is 720°

c)

number of sides = 7

number of triangles = 5

5 × 180 = 900

The sum of the interior angles of a heptagon is 900°

What do you notice about the number of sides compared to the number of triangles?

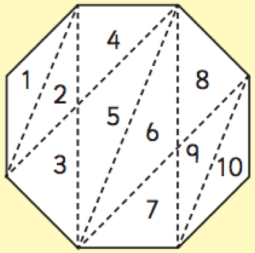
2 Complete the table.

Shape	Number of sides	Number of triangles	Sum of interior angles
quadrilateral	4	2	360°
pentagon	5	3	540°
nonagon	9	7	1,260°
decagon	10	8	1,440°
hexagon	6	4	720°
octagon	8	6	1,080°
dodecagon	12	10	1,800°

Compare answers with a partner.

3 Dani is working out the sum of the interior angles of a polygon.

Here are her workings.



10 × 180 = 1,800°

Do you agree with Dani? No

Explain your answer.

4 Rosie, Amir and Eva are drawing polygons.

a)

I have split my polygon into four triangles.

Rosie

What polygon has Rosie drawn? hexagon

b)

The sum of the interior angles of my polygon is 1,080°.

Amir

What polygon has Amir drawn?

octagon

c)

My polygon has more sides than Rosie's but fewer than Amir's.

Eva

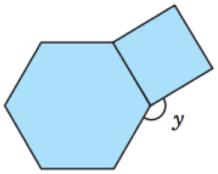
What is the sum of the interior angles of Eva's polygon?

900°

5 Each compound shape is made up of regular polygons.

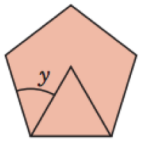
Work out angle y in each case.

a)



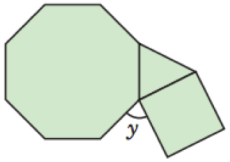
y = 150°

c)



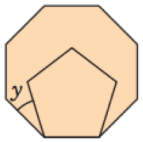
y = 48°

b)



y = 75°

d)

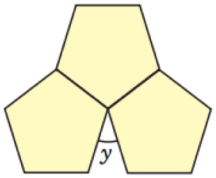


y = 27°

Ext: The pentagons shown are regular.

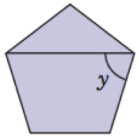
Work out the size of angle y in each case.

a)



y = 36°

b)



y = 72°