

Maths



Starter

SPEED TABLES

WALT

WALT calculate angles in a regular polygon

✓ I know what a regular polygon is.

✓ I know the names and properties of different polygons.

✓ I can use my prior knowledge.



What is a Polygon?

A polygon is a flat, two-dimensional (2D) shape with straight sides that is fully closed (all the sides are joined up). The sides must be straight. Polygons may have any number of sides.



A polygon



A shape with curved sides is not a polygon.



A shape that is not fully closed is not a polygon.

Regular and Irregular Polygons

A regular polygon is a polygon in which all sides are of all the same length and at the same angles.

An irregular polygon is a polygon with sides and/or angles of differing lengths and sizes. (Although they still must be straight and joined up.)

Regular

Irregular

Triangle
(3 sides)



Quadrilateral
(4 sides)



Pentagon
(5 sides)



Hexagon
(6 sides)



Heptagon
(7 sides)



Octagon
(8 sides)



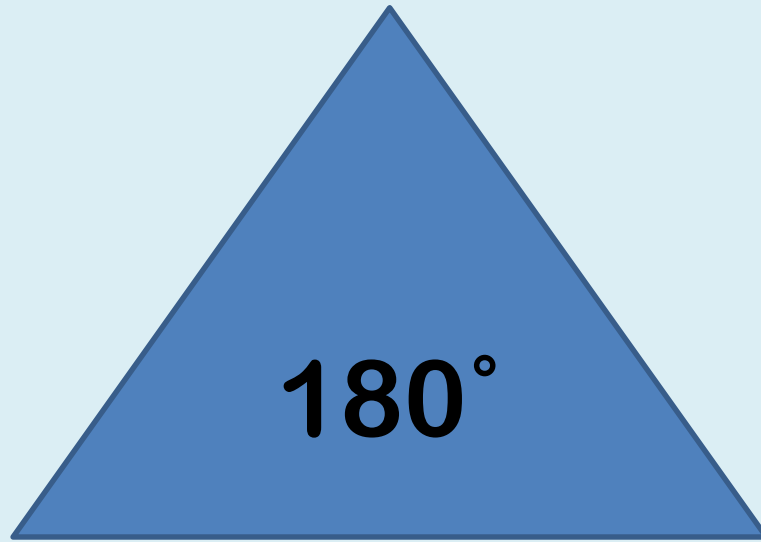
Nonagon
(9 sides)



Decagon
(10 sides)

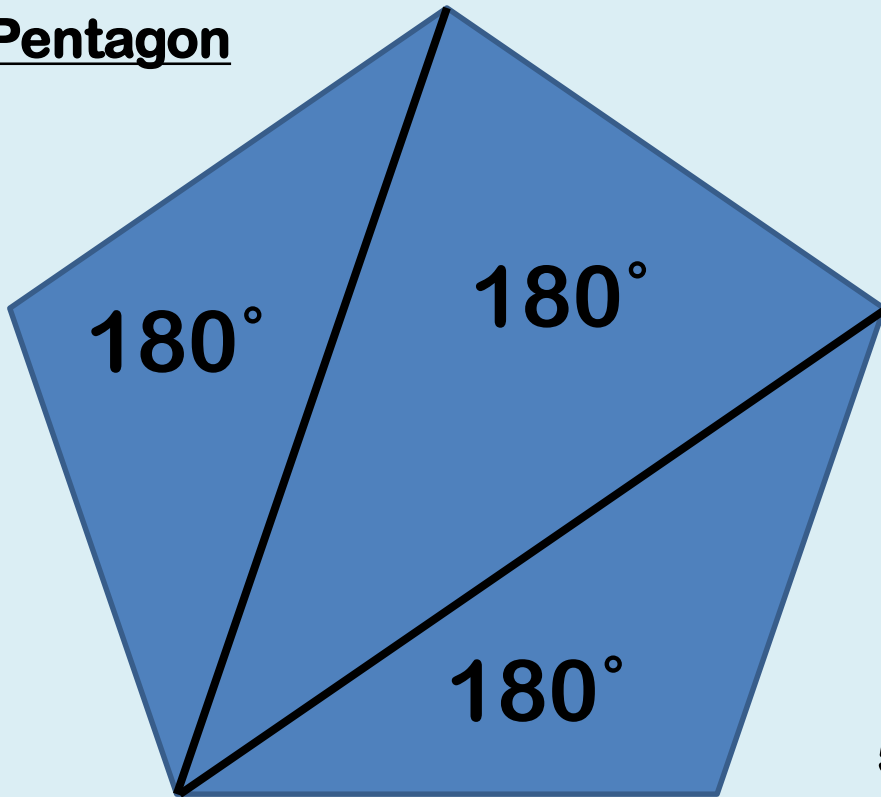


What is the sum of the angles in a triangle?



Let's see how we can use triangles to help us calculate the total angles in this shape....

Pentagon



$$\begin{array}{r} 180^\circ \times \\ 3 \end{array}$$

$$540^\circ$$

$$2$$

1. What shape is this?
2. Is it a polygon? Why?
3. Without a protractor how could we calculate the angles in this shape?
4. How many triangles are there inside the regular pentagon?
5. What do we know about the total angles in a triangle?
6. What is the total of the internal angles of the pentagon?

2

Complete the table.

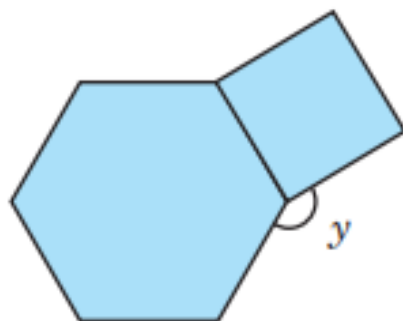
Shape	Number of sides	Number of triangles	Sum of interior angles
quadrilateral	4	2	360°
pentagon	5	3	
nonagon	9	7	
decagon			
	6		
		6	
			$1,800^\circ$

Do you notice a pattern?

5 Each compound shape is made up of regular polygons.

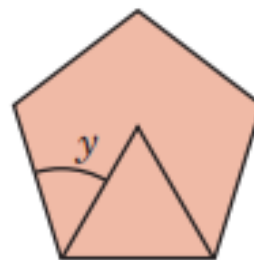
Work out angle y in each case.

a)



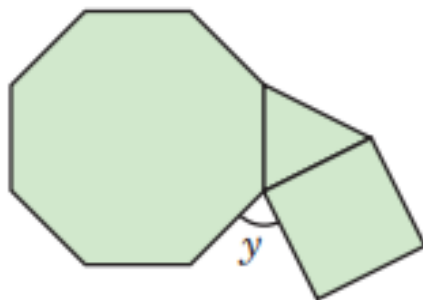
$$y = \boxed{}$$

c)

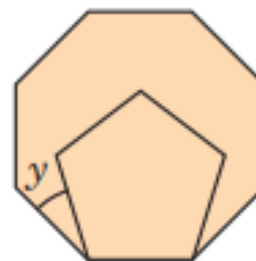


$$y = \boxed{}$$

b)



d)



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