12.06.20

WALT understand angles in polygons

Mathematical Talk

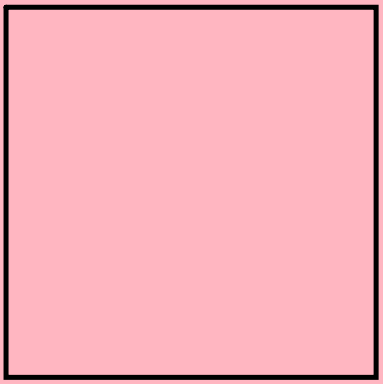
What is a regular polygon? What is an irregular polygon?

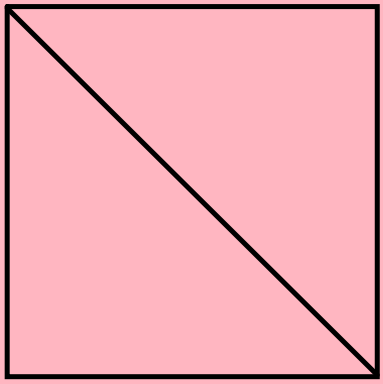
What is the sum of interior angles of a triangle?

How can we use this to work out the interior angles of polygons?

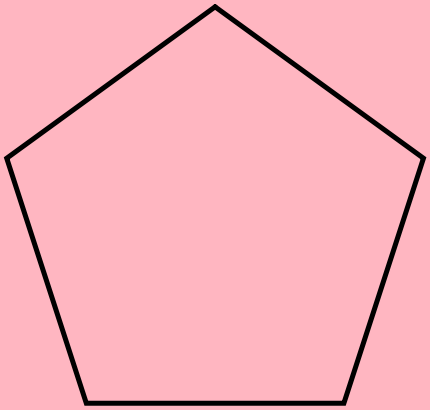
Can we spot a pattern in the table? What predictions can we make?

To work out the total of the interior angles in polygons we draw lines between corners to make triangles

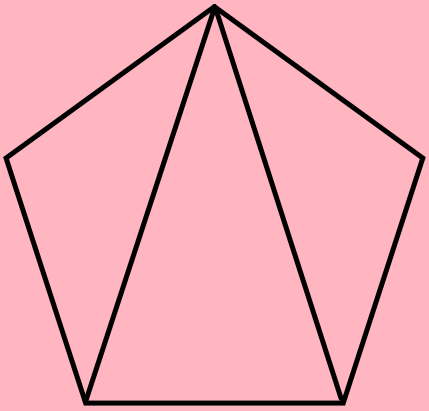




We can make 2 triangles in a quadrilateral. We know the interior angles in a triangle = 180. 2 x 180 = 360. So, the interior angles in a quadrilateral = 360 degrees

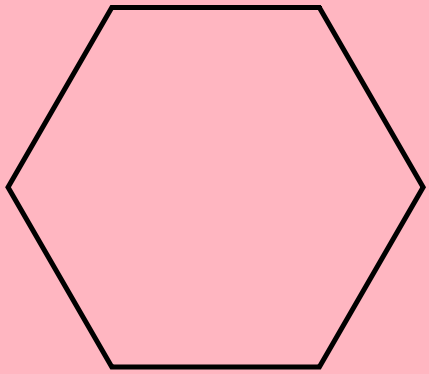


How many triangles can we make out of a pentagon?

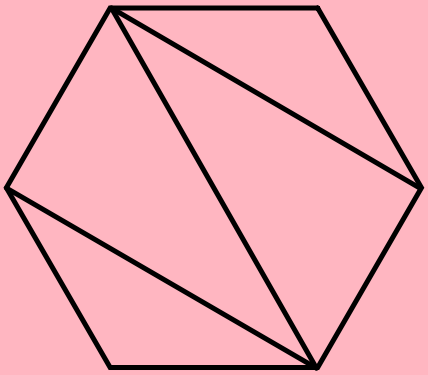


3 triangles. So, 3 x 180 = 540 Degrees

The interior angles of a pentagon = 540 Degrees



How many triangles can you fit into a hexagon going corner to corner?

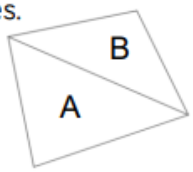


4 x 180 = 720.

The total interior angles of a hexagon equals = 720 Degrees

Varied Fluency

Draw any quadrilateral and partition it into 2 triangles.
What do the interior angles of triangle A add up to?
What do the interior angles of triangle B add up to?
What is the sum of angles in a quadrilateral?



Use the same method to complete the table.

Shape	No. of sides	No. of triangles	180 × no. of triangles	Sum of internal angles
Quadrilateral	4	2	180 × 2	360°
Pentagon	5	3		
Hexagon				
Heptagon				

What do you notice?
Can you predict the angle sum of any other polygons?

Use the clues to work out what shape each person has.

Dora

My polygon is made up of 5 triangles.

The sum of my angles is more than 540° but less than 900°

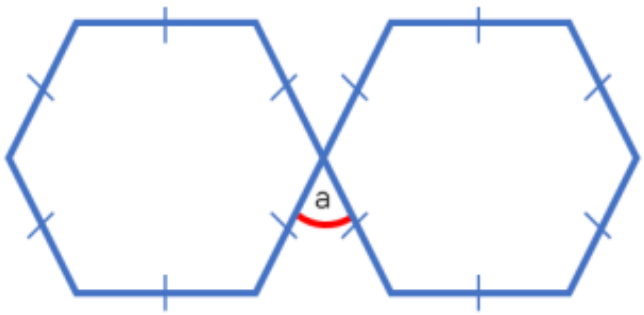
Tommy

Alex

The sum of my angles is equivalent to the sum of angles in 3 triangles.

What is the sum of the interior angles of each shape?

Here are two regular hexagons.



The interior angles of a hexagon sum to 720°

Use this fact to work out angle a in the diagram.