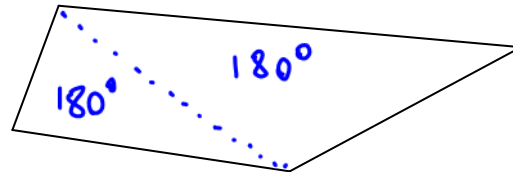
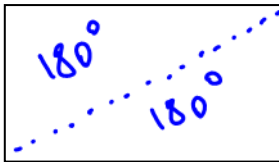


## ANGLES IN A POLYGON

The sum of the interior angles in *any* triangle is 180°. (No matter what its size or shape!)

A quadrilateral can be divided into two triangles. Draw a diagonal in each quadrilateral below to accomplish this.

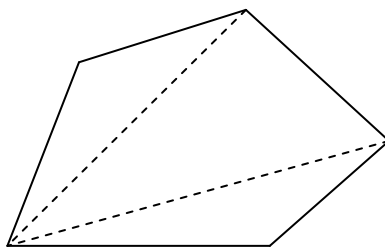


The sum of the interior angles in a quadrilateral is 360° because each of the 2 triangles contributes 180° to the angle sum.

Any polygon can be divided into triangles to determine the sum of the angles.

For example, a *pentagon* can be divided up as follows:

**Important!**  
All diagonals must be drawn starting at the same vertex.



Number of triangles = 3

Sum of angles = 3 × 180° = 540°

Complete the following chart:

$(n-2) \times 180^\circ$

POLYGON	NUMBER OF SIDES	TRIANGLES FORMED	SUM OF THE INTERIOR ANGLES
Triangle	3	1	→ 1 × 180 = 180°
Quadrilateral	4	2	→ 2 × 180 = 360°
Pentagon	5	3	→ 3 × 180 = 540°
hexagon	6	4	→ 4 × 180 = 720°
heptagon	7	5	900°
Octagon	8	6	1080°
Nonagon	9	7	1260°
decagon	10	8	1440°
100-gon	100	98	17640°
22-gon	22	20	3600°
17-gon	17	15	2700°
n-gon	n	n-2	$(n-2) \cdot 180^\circ$

$(n-2) \cdot 180 = 2700$   
 $(n-2) = \frac{2700}{180}$   
 $(n-2) = 15$   
 $n = 15 + 2$   
 $n = 17$