

FORM 3 TERM 3

STRAND : GEOMETRY

TOPIC : Polygons

KEY POINTS : concept of a polygon in concrete, representational and abstract modes; problem solving

NOTES:

A polygon with 3 sides is called a **triangle**

with 4 sides, a **quadrilateral**

with 5 sides, a **pentagon**

with 6 sides, a **hexagon**

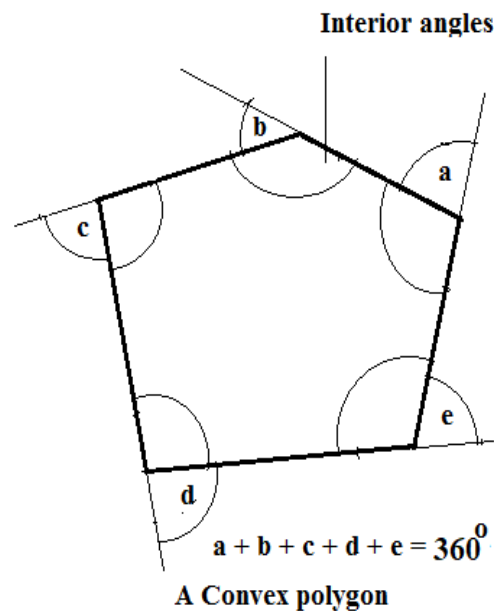
with 7 sides, a **heptagon**

with 8 sides, an **octagon**

with 9 sides, a **nonagon**

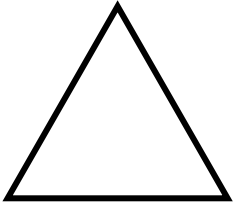
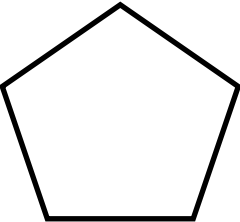
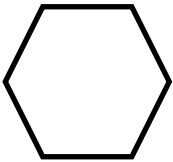
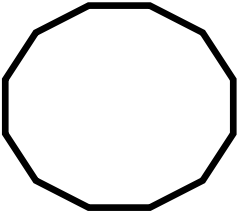
with 10 sides, a **decagon**

Properties of convex polygons:

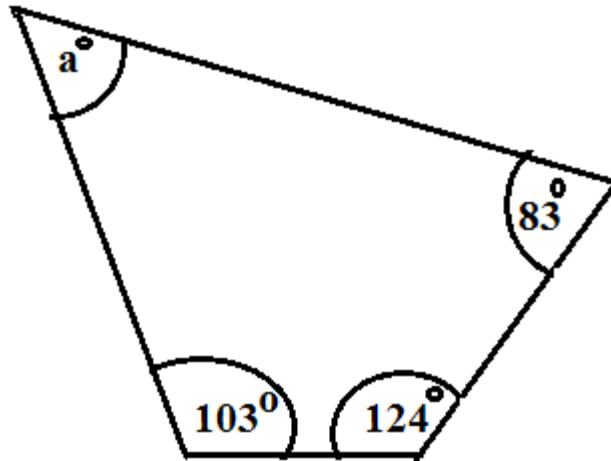


- i) Every internal angle is less than 180° degrees
- ii) With n sides, the sum of the interior angles is $(2n - 4)$ right angles = $(2n - 4) 90^\circ$ or $(n - 2) 180^\circ$
- iii) The sum of the exterior angles is 360° . At any vertex the (interior + exterior) angle = 180°

1) Complete the table below:

	Regular Polygon	Number of Sides	Name of Polygon	Sum of the Interior Angles	Size of Each Interior angle	Size of each Exterior angle
a)		3	Triangle	$[2(3) - 4] \times 90^\circ$ $= 180^\circ$ or $[3 - 2] \times 180^\circ$ $= 180^\circ$	$\frac{180}{3}$ $= 60^\circ$	$\frac{360}{3}$ $= 120^\circ$
b)						
c)						
d)						
e)		12				

2) Determine the size of the angles marked “a”



3) A hexagon has interior angles of 110° , 130° , 140° and 150° . If the remaining two angles are equal, then what is the size of each angle?

4) Determine the number of sides of a polygon in which the exterior angles of each are as follows:

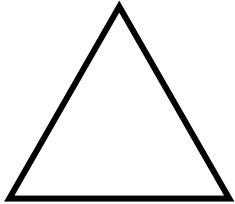
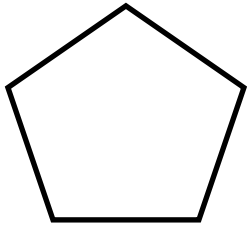
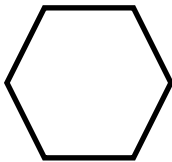
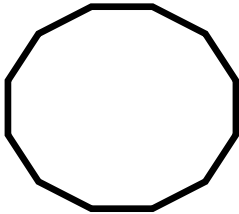
- a) 60°
- b) 40°
- c) 45°
- d) 30°
- e) 15°

5) Each interior angle of a regular polygon is 120° . How many sides does it have?

6) Each interior angle of a regular polygon is 135° . How many sides does it have?

ANSWERS**FORM 3 TERM 3****STRAND :GEOMETRY****TOPIC : Polygons****KEY POINTS** :concept of a polygon in concrete, representational and abstract modes; problem solving

1)

	Regular Polygon	Number of Sides	Name of Polygon	Sum of the Interior Angles	Size of Each Interior angle
a)		3	Triangle	$[2(3) - 4] \times 90 = 180^\circ$	$\frac{180}{3} = 60^\circ$
b)		4	Quadrilateral (rectangle)	360°	90°
c)		5	Pentagon	540°	108°
d)		6	Hexagon	720°	120°
e)		12	Dodecagon	1800°	150°

- 2) $a = 50^\circ$
- 3) Each angle = 95°
- 4)
 - a) 6
 - b) 9
 - c) 8
 - d) 12
 - e) 24
- 5) Polygon has 6 sides
- 6) Polygon has 8 sides