

## Angles in Regular Polygons

Calculate the sum of the interior angles of a polygon with:

- (a) 16 sides      (b) 11 sides  
(c) 20 sides      (d) 14 sides

- (a)  $2520^\circ$     (b)  $1620^\circ$   
(c)  $3240^\circ$     (d)  $2160^\circ$

Calculate the size of the exterior and interior angles of a polygon with:

- (a) 15 sides      (b) 12 sides  
(c) 18 sides      (d) 36 sides

- (a)  $I = 156^\circ$      $E = 24^\circ$   
(b)  $I = 150^\circ$      $E = 30^\circ$   
(c)  $I = 160^\circ$      $E = 20^\circ$   
(d)  $I = 170^\circ$      $E = 10^\circ$

Calculate the number of sides of a polygon whose exterior angle is:

- (a)  $12^\circ$       (b)  $20^\circ$   
(c)  $18^\circ$       (d)  $40^\circ$

- (a) 30      (b) 18  
(c) 20      (d) 9

Calculate the number of sides of a polygon whose interior angle is:

- (a)  $120^\circ$       (b)  $162^\circ$   
(c)  $160^\circ$       (d)  $174^\circ$

- (a) 6      (b) 20  
(c) 18      (d) 60

Explain why it is not possible to have a polygon with an exterior angle of  $23^\circ$ .

Explain why it is not possible to have a polygon with an interior angle of  $143^\circ$ .

$\frac{360}{23}$  does not give a whole number of sides

Exterior angle =  $37^\circ$

$\frac{360}{37}$  does not give a whole number of sides

Find the name of the regular polygon whose interior angle is three times that of its exterior angle.

Octagon    Int =  $135^\circ$   
Ext =  $45^\circ$