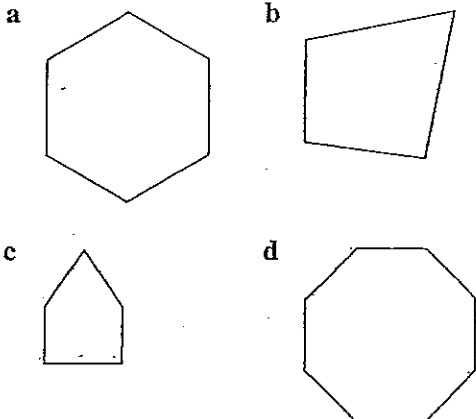


Worksheet 3-09

Angle sum of a polygon

A polygon with n sides has an angle sum (A) of $A = 180(n - 2)^\circ$

1 Use the formula above to calculate the angle sum of these figures.



2 Calculate the angle sum of:

- a a decagon b a triangle
c a heptagon d a dodecagon

3 Calculate the angle sum of a polygon with:

- a 16 sides b 9 sides
c 21 sides d 25 sides
e 100 sides f 58 sides

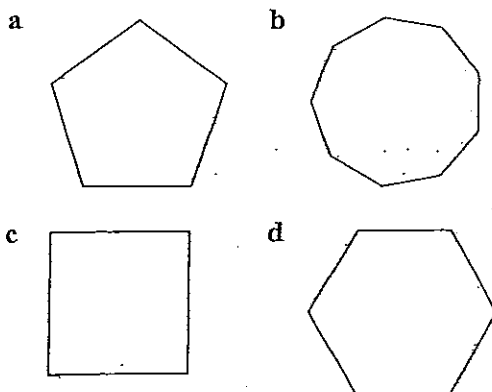
4 Find the number of sides of the polygon that has an angle sum of:

- a 900° b 2340°
c 3060° d 6840°

5 a What is the angle sum of a regular octagon?

b So what is the size of one of these angles?

6 Find the size of one angle in each of these regular polygons.



7 Calculate the size of one angle in a regular polygon with:

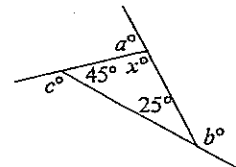
- a 12 sides b 30 sides
c 15 sides d 24 sides

8 Find the number of sides of the regular polygon that has equal angles of size:

- a 140° b 150° c 162° d 170°

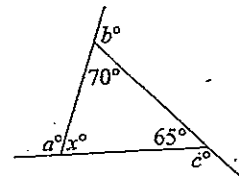
9 This triangle has three exterior angles, a° , b° and c° .

- a Find the values of x , a , b and c .
b What is $a + b + c$, the exterior angle sum of the triangle?



10 a Find x , a , b and c for this triangle.

b What is $a + b + c$?

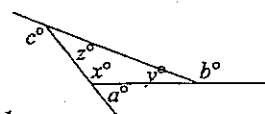


11 a Write a possible value of each of x , y and z .

b Hence find a , b and c .

c What is $a + b + c$?

d Complete: The exterior angle sum of any triangle is $\underline{\hspace{2cm}}^\circ$.

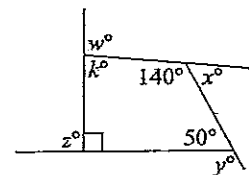


12 This quadrilateral has four exterior angles:

w° , x° , y° and z° .

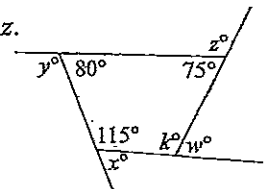
a Find the values of k , w , x , y and z .

b What is $w + x + y + z$, the exterior angle sum of the quadrilateral?



13 a Find k , w , x , y and z .

b What is $w + x + y + z$?

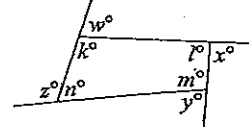


14 a Write a possible value for each of k , l , m and n .

b Hence find w , x , y and z .

c What is $w + x + y + z$?

d Complete: The exterior angle sum of any quadrilateral is $\underline{\hspace{2cm}}^\circ$.

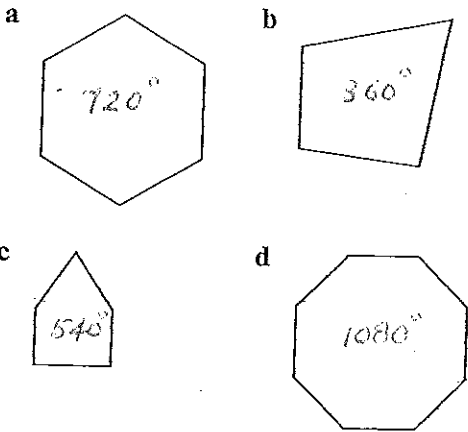


Worksheet 3-09

Angle sum of a polygon

A polygon with n sides has an angle sum (A) of $A = 180(n - 2)^\circ$

1 Use the formula above to calculate the angle sum of these figures.

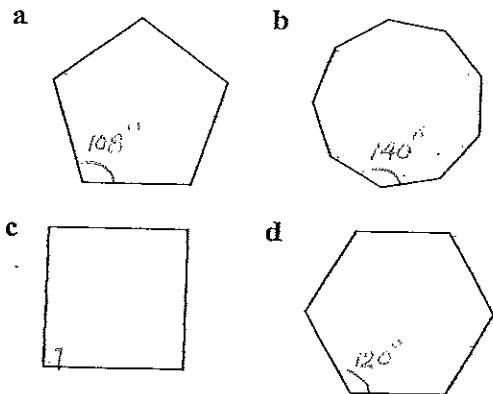


- 2 Calculate the angle sum of:
 a a decagon 1440° b a triangle 180°
 c a heptagon 900° d a dodecagon 1800°
- 3 Calculate the angle sum of a polygon with:
 a 16 sides 2520° b 9 sides 1260°
 c 21 sides 3420° d 25 sides 4140°
 e 100 sides 17640° f 58 sides 10080°

- 4 Find the number of sides of the polygon that has an angle sum of:
 a 900° 7 b 2340° 15
 c 3060° 19 d 6840° 40

- 5 a What is the angle sum of a regular octagon? 1080°
 b So what is the size of one of these angles? 135°

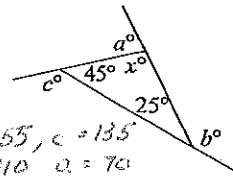
6 Find the size of one angle in each of these regular polygons.



- 7 Calculate the size of one angle in a regular polygon with:
 a 12 sides 150° b 30 sides 168°
 c 15 sides 156° d 24 sides 165°

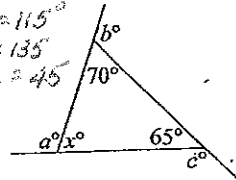
- 8 Find the number of sides of the regular polygon that has equal angles of size:
 a 140° 9 b 150° 12 c 162° 20 d 170° 36

9 This triangle has three exterior angles, a° , b° and c° .

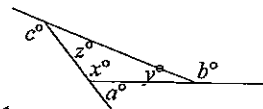


- a Find the values of x , a , b and c . $b = 155, c = 135, x = 110, a = 70$
 b What is $a + b + c$, the exterior angle sum of the triangle? 360°

- 10 a Find x , a , b and c for this triangle. $b = 110, c = 115, a = 135, x = 45$
 b What is $a + b + c$? $= 360^\circ$

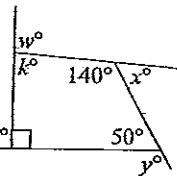


11 a Write a possible value of each of x , y and z .



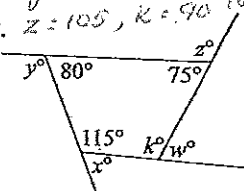
- b Hence find a , b and c . *Tutor to check*
 c What is $a + b + c$? $= 360$
 d Complete: The exterior angle sum of any triangle is 360° .

12 This quadrilateral has four exterior angles: w° , x° , y° and z° .

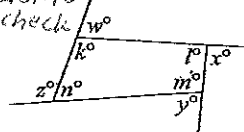


- a Find the values of k , w , x , y and z . $k = 80, w = 100, z = 90$
 b What is $w + x + y + z$, the exterior angle sum of the quadrilateral? $= 360$

- 13 a Find k , w , x , y and z . $y = 100, z = 65, w = 90, z = 105, k = 90$
 b What is $w + x + y + z$? $= 360$



- 14 a Write a possible value for each of k , l , m and n . *Tutor to check*
 b Hence find w , x , y and z .



- c What is $w + x + y + z$? $= 360$
 d Complete: The exterior angle sum of any quadrilateral is 360° .