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Mob: +974 55249797 / 55258711

E-mail: rashed.saba@gmail.com

MATHEMATIC A
TOPIC- Geometry
POLYGONS

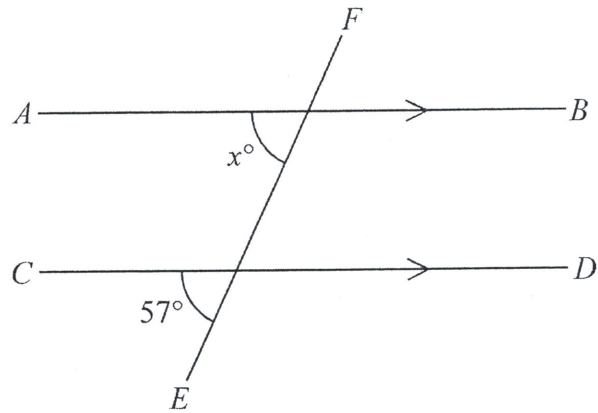


Diagram NOT accurately drawn



AB is parallel to CD
 EF is a straight line.

(a) (i) Find the value of x

$x =$

(ii) Give a reason for your answer.

(2)

Here is a pentagon.

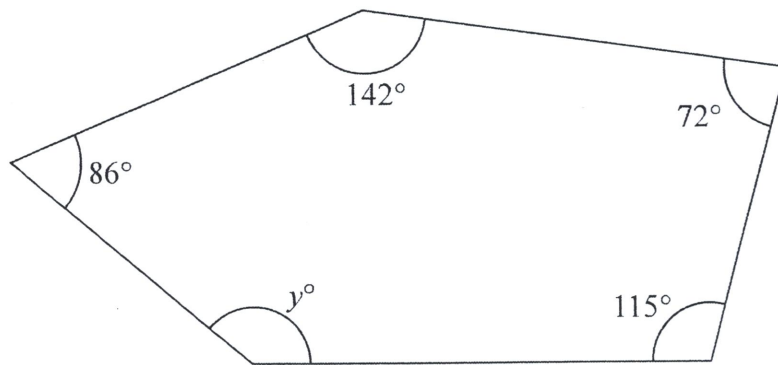


Diagram NOT accurately drawn

(b) Work out the value of y .

$y =$

(3)

(Total for Question 2 is 5 marks)



6

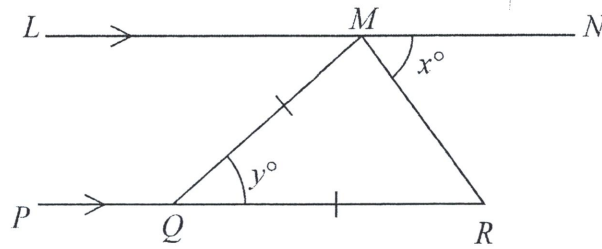


Diagram NOT accurately drawn



LMN is parallel to PQR .
 $QM = QR$.
 Angle $RMN = x^\circ$
 Angle $MQR = y^\circ$

(a) Write down an expression for y in terms of x .

$y =$
 (2)

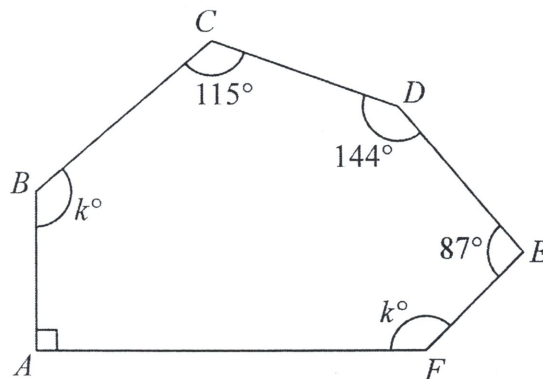


Diagram NOT accurately drawn

$ABCDEF$ is a hexagon.

(b) Work out the value of k .

$k =$
 (4)

(Total for Question 6 is 6 marks)



5 Work out the size of an exterior angle of a regular polygon with 8 sides.



(Total for Question 5 is 2 marks)

- 11 The size of each interior angle of a regular polygon with n sides is 140°
Work out the size of each interior angle of a regular polygon with $2n$ sides.



(Total for Question 11 is 5 marks)

8 Each interior angle of a regular polygon is 156°

Work out the number of sides of the polygon.



(Total for Question 8 is 3 marks)

9 Manu, Liam and Ned share £420 in the ratios 4 : 5 : 3
Liam then gives Ned £75

Express the amount of money that Ned now has as a percentage of the £420
Give your answer correct to the nearest whole number.

%

(Total for Question 9 is 4 marks)



7



Diagram **NOT** accurately drawn

The diagram shows part of a regular polygon.
The interior angle and the exterior angle at a vertex are marked.
The size of the interior angle is 7 times the size of the exterior angle.
Work out the number of sides of the polygon.



(Total for Question 7 is 3 marks)

8 Work out the size of each exterior angle of a regular polygon with 15 sides.

(Total for Question 8 is 2 marks)

4 The diagram shows an incomplete regular polygon.

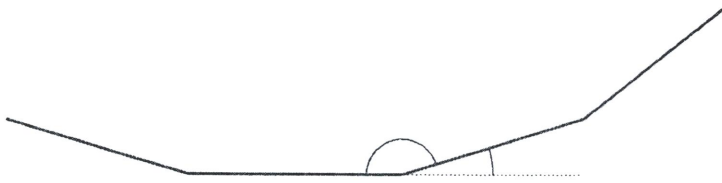


Diagram **NOT**
accurately drawn

The size of each interior angle is 140 degrees greater than the size of each exterior angle.

Work out the number of sides the regular polygon has.



(Total for Question 4 is 4 marks)

5

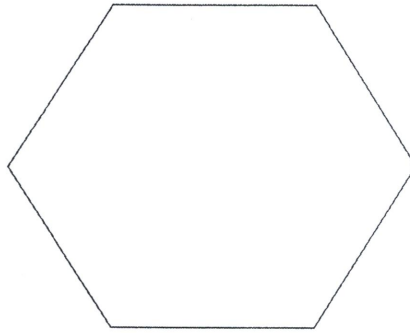


Diagram **NOT**
accurately drawn

The diagram shows a regular hexagon.
The perimeter of the hexagon is 42 cm.

Calculate the area of the hexagon.
Give your answer correct to 3 significant figures.



..... cm²

(Total for Question 5 is 5 marks)

6

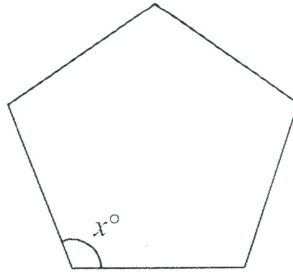


Diagram NOT
accurately drawn

The diagram shows a regular 5-sided polygon.

(a) Work out the value of x .



$$x = \dots\dots\dots$$

(2)

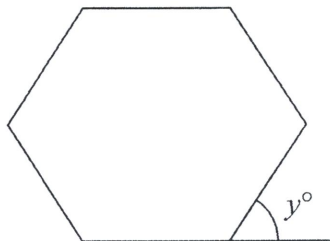


Diagram NOT
accurately drawn

The diagram shows a regular 6-sided polygon.

(b) Work out the value of y .

$$y = \dots\dots\dots$$

(2)

(Total for Question 6 is 4 marks)



10 (a) Find the sum of the interior angles of a polygon with 7 sides.

(2)

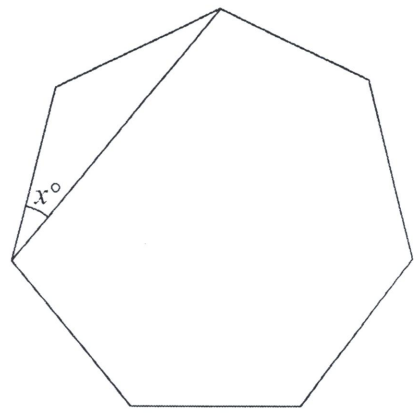


Diagram **NOT** accurately drawn

The diagram shows a regular polygon with 7 sides.

(b) Work out the value of x .
Give your answer correct to 1 decimal place.

(2)

(Total for Question 10 is 4 marks)

13 Here is a regular 10-sided polygon.

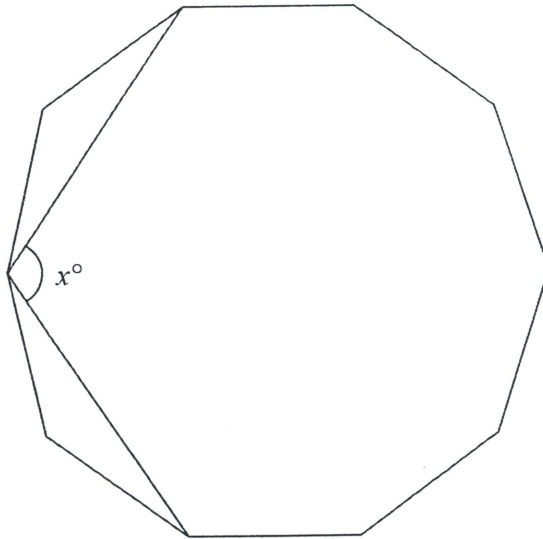


Diagram NOT
accurately drawn



Work out the value of x .
Show your working clearly.

$x =$

(Total for Question 13 is 4 marks)





2 Each exterior angle of a regular polygon is 15°

(a) How many sides has the regular polygon?

(2)

The diagram shows 3 identical regular pentagons.

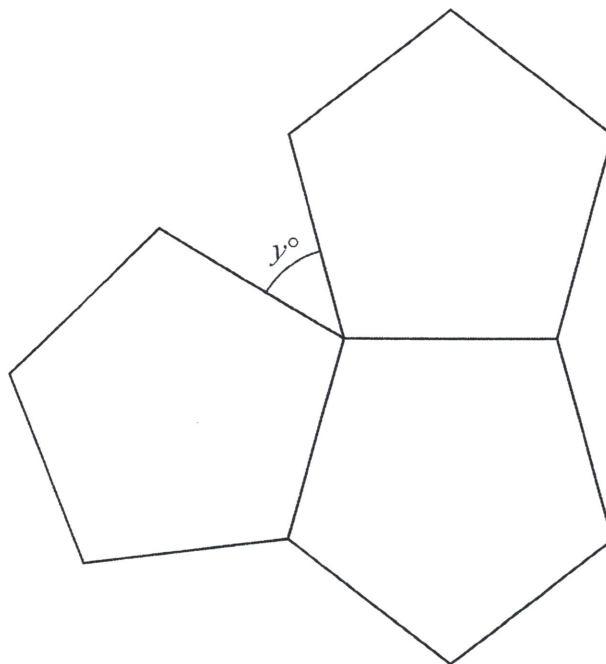


Diagram NOT accurately drawn

(b) Work out the value of y .

$y = \dots\dots\dots$

(3)

(Total for Question 2 is 5 marks)

- 7 Here is a kite $ABCD$.

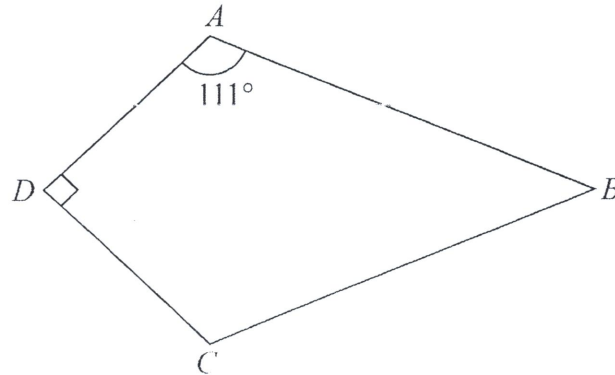


Diagram NOT
accurately drawn

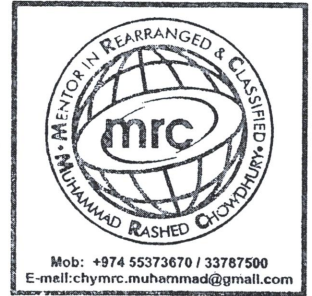
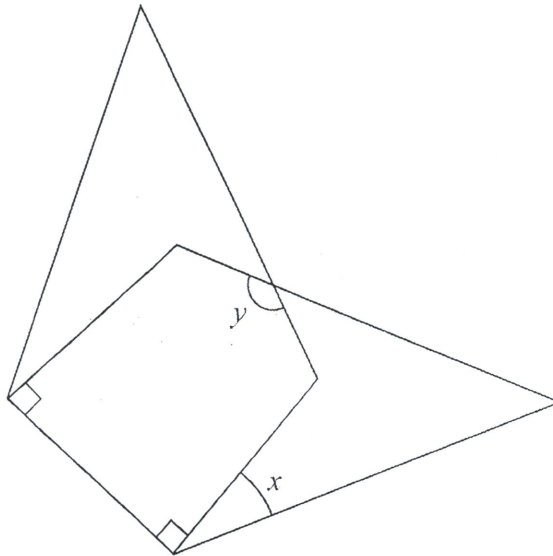


Angle $DAB = 111^\circ$
Angle $ADC = 90^\circ$

- (a) Work out the size of angle ABC .

Two of these kites are arranged so that a shorter side of one of the kites is placed on top of a shorter side of the other kite, as shown in the diagram below.

Diagram **NOT** accurately drawn



(b) Work out the size of angle x .

.....
 (2)

(c) Work out the size of angle y .

.....
 (3)

(Total for Question 7 is 7 marks)