1

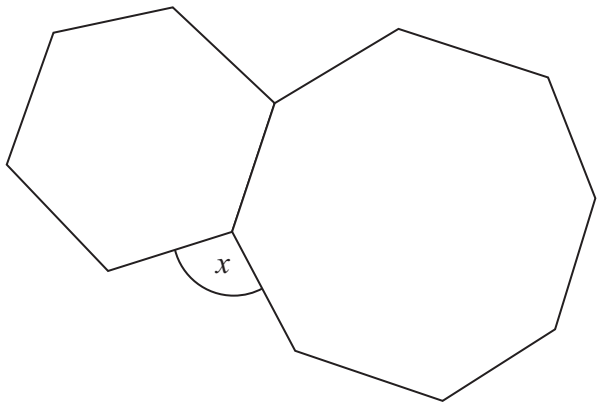


Diagram **NOT** accurately drawn

The diagram shows a regular hexagon and a regular octagon.

Calculate the size of the angle marked x.
You must show all your working.

.....°

(Total for Question 1 is 4 marks)

2

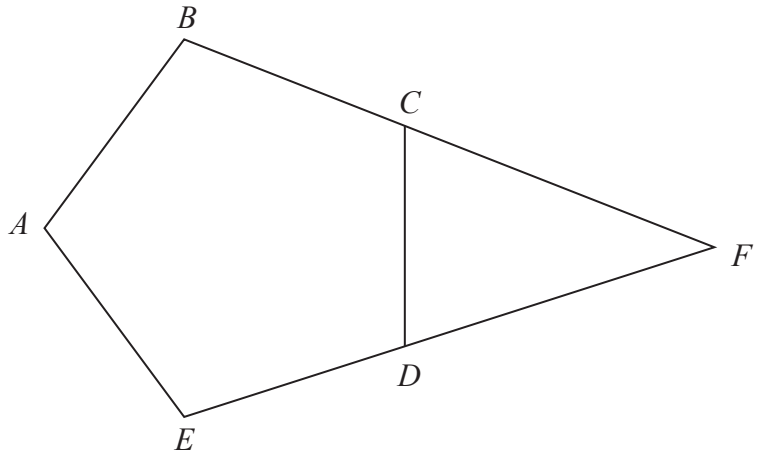


Diagram **NOT** accurately drawn

ABCDE is a regular pentagon.
BCF and *EDF* are straight lines.

Work out the size of angle *CFD*.
You must show how you got your answer.

.....°

(Total for Question 2 is 3 marks)

3

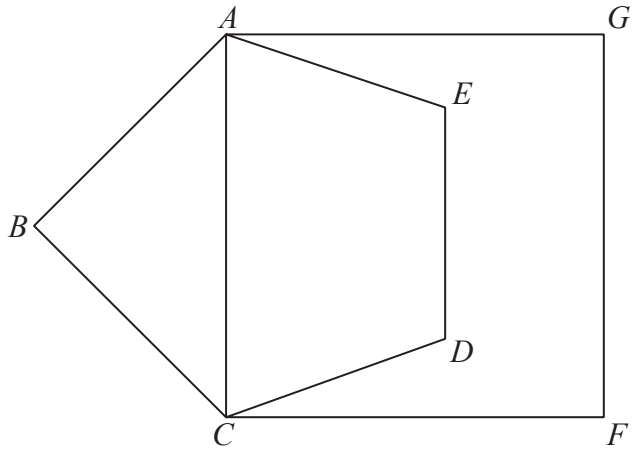


Diagram **NOT** accurately drawn

ABCDE is a regular pentagon.
ACFG is a square.

Work out the size of angle *DCF*.
You must show all your working.

.....°

(Total for Question 3 is 4 marks)

4

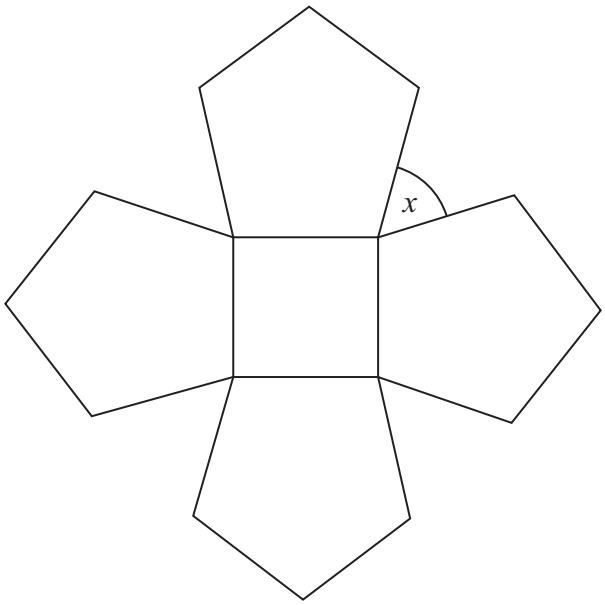


Diagram **NOT** accurately drawn

The diagram shows a square and 4 regular pentagons.

Work out the size of the angle marked x.

.....°

(Total for Question 4 is 3 marks)

5

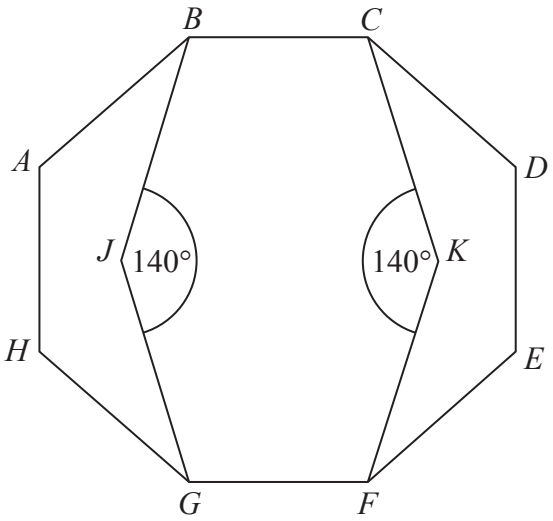


Diagram **NOT** accurately drawn

ABCDEFGH is a regular octagon.
BCKFGJ is a hexagon.

JK is a line of symmetry of the hexagon.
Angle *BJG* = angle *CKF* = 140°

Work out the size of angle *KFE*.
You must show all your working.

.....°

(Total for Question 5 is 4 marks)

6

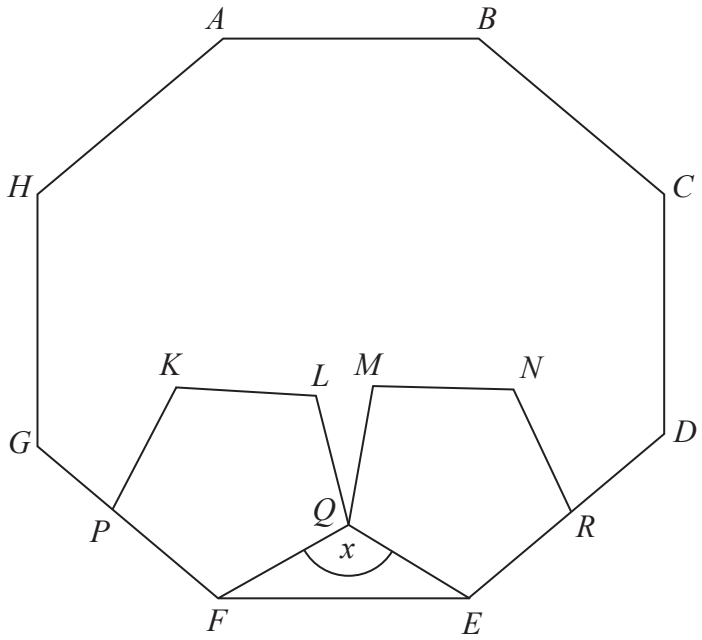


Diagram **NOT** accurately drawn

ABCDEFGH is a regular octagon.
KLQFP and *MNREQ* are two identical regular pentagons.

Work out the size of the angle marked *x*.
You must show all your working.

.....°

(Total for Question 6 is 4 marks)

7

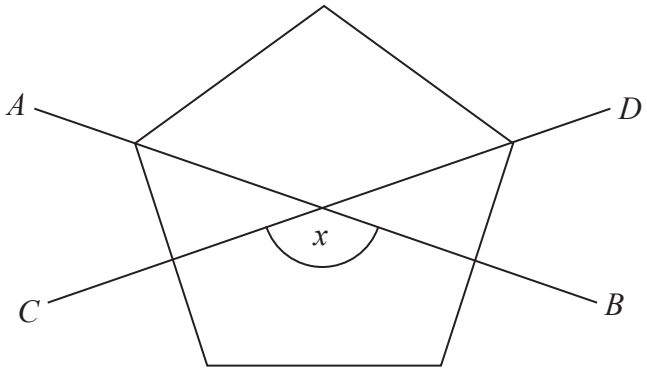


Diagram **NOT** accurately drawn

The diagram shows a regular pentagon.
AB and *CD* are two of the lines of symmetry of the pentagon.

Work out the size of the angle marked *x*.
You must show all your working.

.....°

(Total for Question 7 is 4 marks)

8 The diagram shows a pattern using four identical rhombuses.

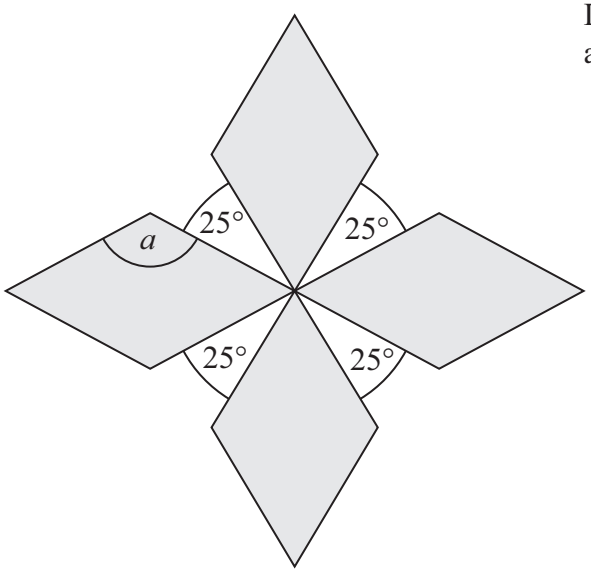


Diagram **NOT** accurately drawn

Work out the size of the angle marked *a*.
You must show your working.

.....°

(Total for Question 8 is 4 marks)

9 Each interior angle of a regular polygon is 162°

Work out the number of sides the polygon has.

.....

(Total for Question 9 is 3 marks)

10 The diagram shows parts of three regular polygons, **A**, **B** and **C**, meeting at a point.

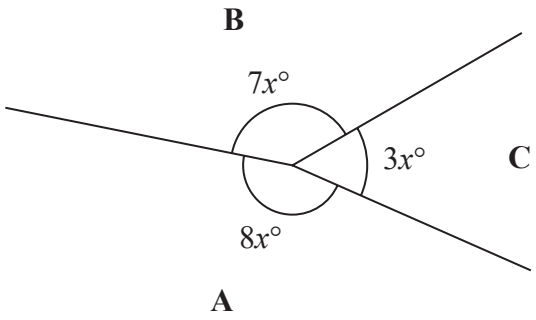


Diagram **NOT** accurately drawn

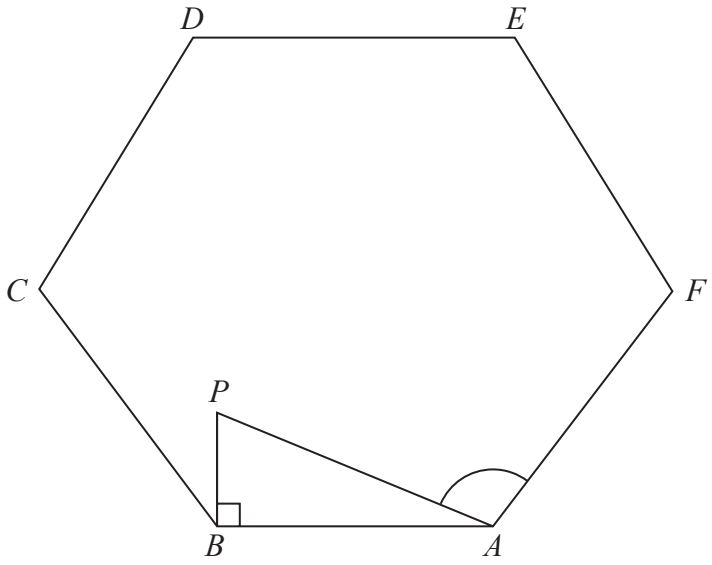
Polygon **B** has n sides.

Work out the value of n.

$n =$ .....

(Total for Question 10 is 4 marks)

11 The diagram shows triangle *ABP* inside the regular hexagon *ABCDEF*



AB = 5 cm *BP* = 2 cm Angle *ABP* = 90°

Work out the size of angle *PAF*
Give your answer correct to 3 significant figures.

.....°

(Total for Question 11 is 5 marks)

12 The diagram shows a regular pentagon, *ABCDE*, a regular hexagon, *CFGHID*, and a quadrilateral, *EDIJ*.

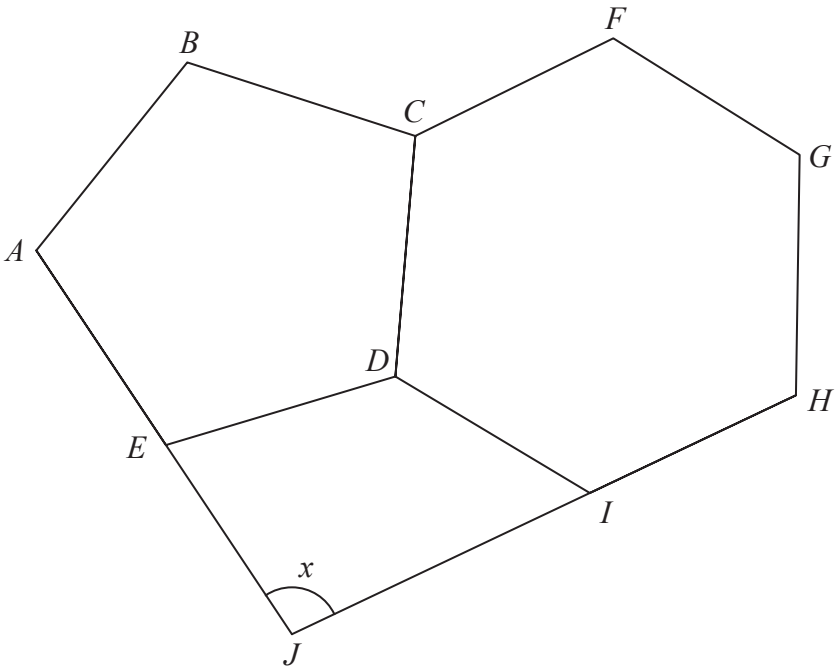


Diagram **NOT** accurately drawn

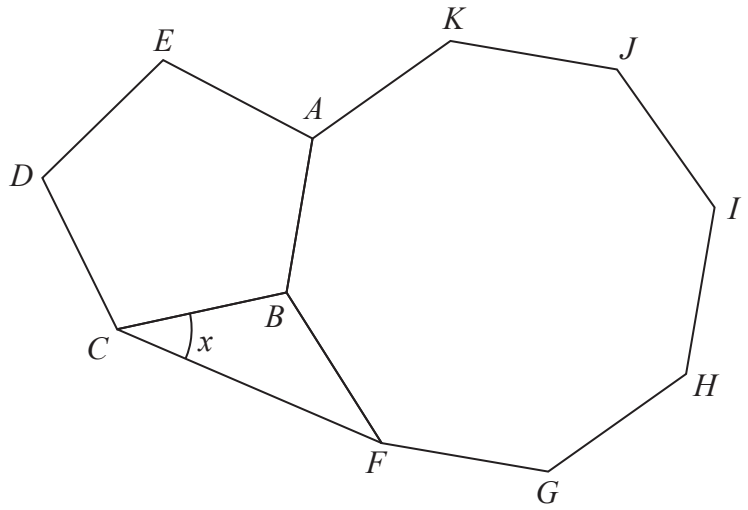
AEJ and *HIJ* are straight lines.

Work out the size of the angle marked *x*.
Show your working clearly.

.....°

(Total for Question 12 is 5 marks)

13



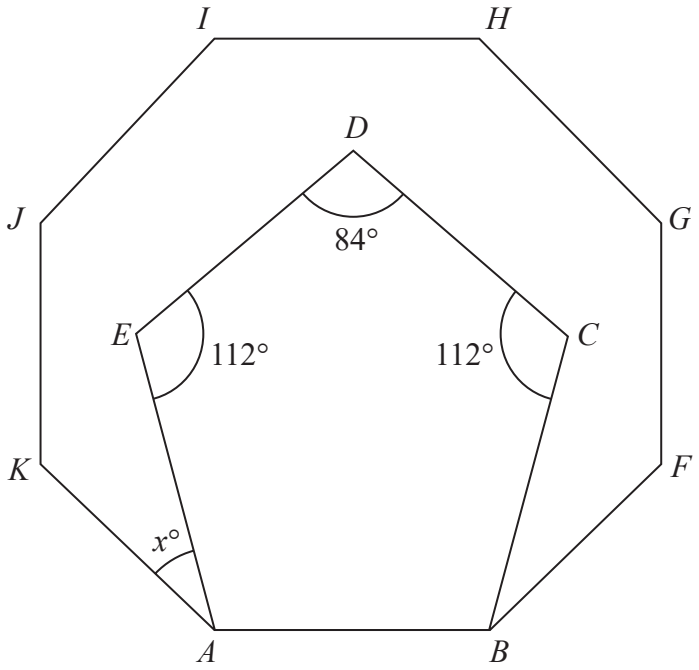
The diagram shows a regular pentagon, *ABCDE*, a regular octagon, *ABFGHIJK*, and an isosceles triangle, *BCF*.

Work out the size of angle *x*.

.....°

(Total for Question 13 is 4 marks)

14



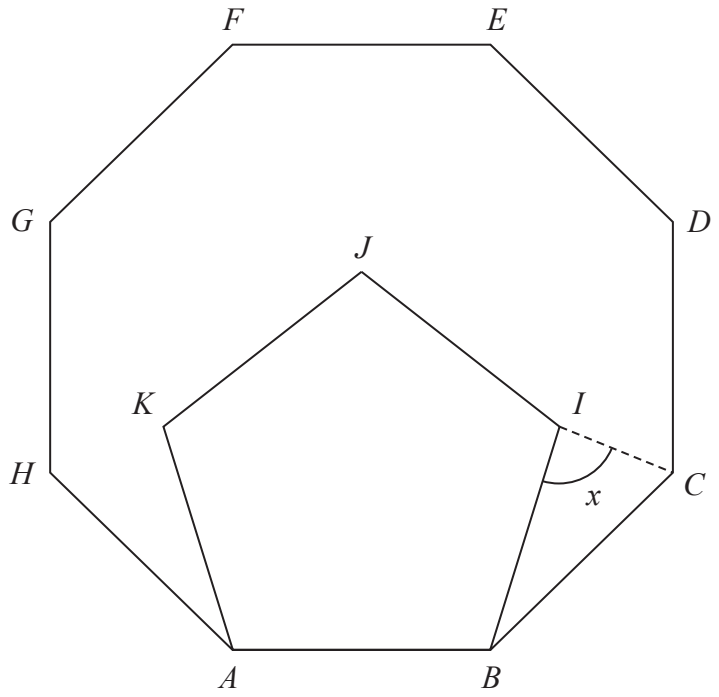
Pentagon *ABCDE* is drawn inside the regular octagon *ABFGHIJK*.
The pentagon has exactly one line of symmetry.

Work out the value of x.

$x =$

(Total for Question 14 is 4 marks)

15 The diagram shows a regular octagon *ABCDEFGH* and a regular pentagon *ABIJK*

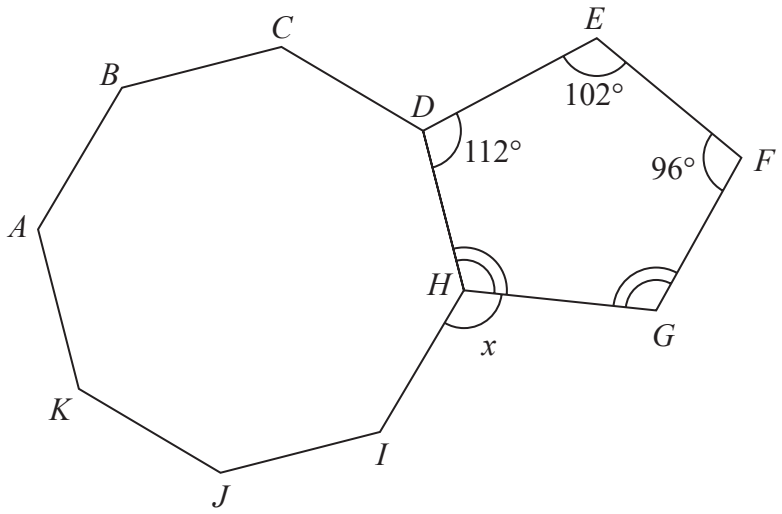


Work out the size of the angle x

.....°

(Total for Question 15 is 4 marks)

16 The diagram shows a regular octagon *ABCDHIJK* and a pentagon *DEFGH*.



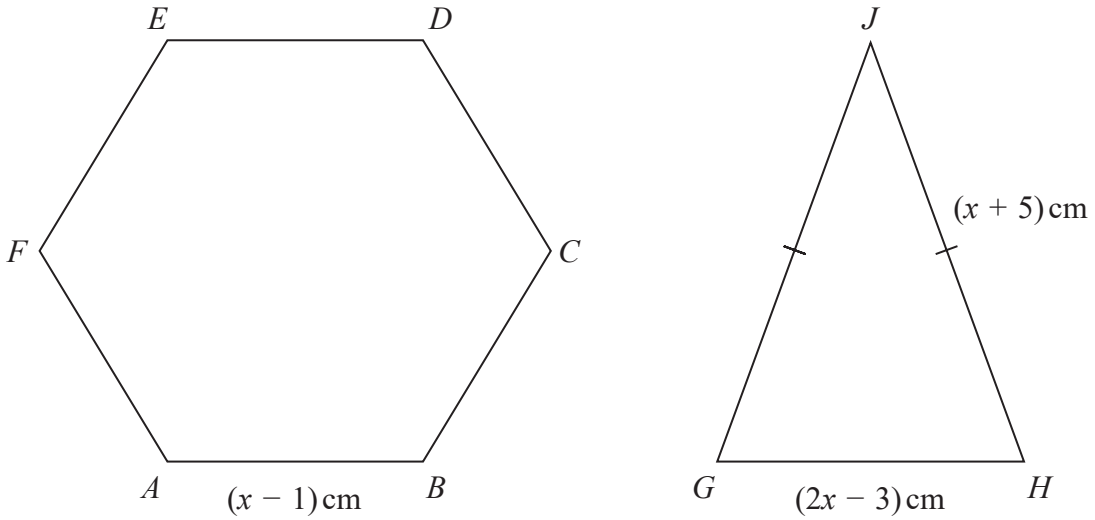
Angle *GHD* = angle *FGH*.

Work out the size of the angle marked *x*.
Show your working clearly.

.....°

(Total for Question 16 is 5 marks)

17 The diagram shows a regular hexagon, *ABCDEF*, and an isosceles triangle, *GHJ*.



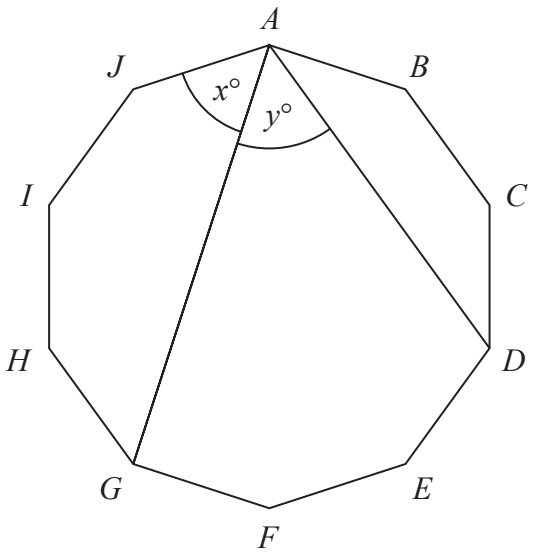
The perimeter of the hexagon is equal to the perimeter of the triangle.

Find the length of each side of the hexagon.
Show clear algebraic working.

..... cm

(Total for Question 17 is 5 marks)

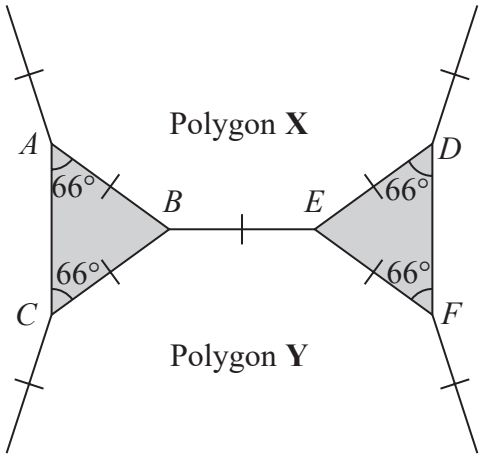
18 The diagram shows a regular 10-sided polygon, *ABCDEFGHIJ*



Show that $x = y$

(Total for Question 18 is 4 marks)

19 The diagram shows two congruent isosceles triangles and parts of two congruent regular polygons, **X** and **Y**.



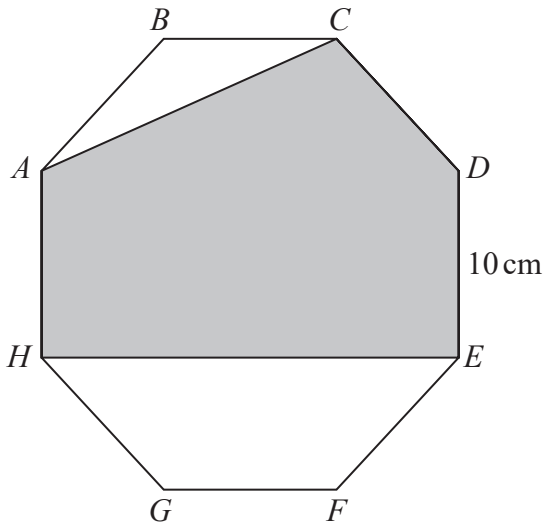
The two regular polygons each have n sides.

Work out the value of n.

$n =$ .....

(Total for Question 19 is 3 marks)

20 The diagram shows a regular octagon *ABCDEFGH*.



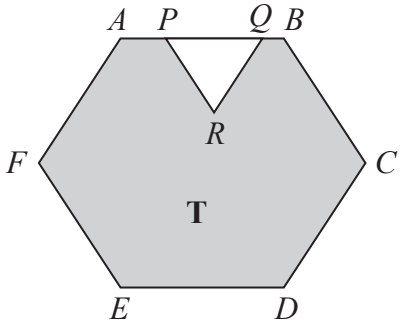
Each side of the octagon has length 10 cm.

Find the area of the shaded region *ACDEH*.
Give your answer correct to the nearest cm^2

..... cm^2

(Total for Question 22 is 6 marks)

21



The diagram shows a shaded region **T** formed by removing an equilateral triangle *PQR* from a regular hexagon *ABCDEF*.

The points *P* and *Q* lie on *AB* such that $AB = 1.5 \times PQ$

Given that the area of region **T** is $72\sqrt{3}$ cm^2

work out the length of *PQ*.

..... cm

(Total for Question 21 is 4 marks)