1 The diagram shows a regular octagon *ABCDEFGH*.

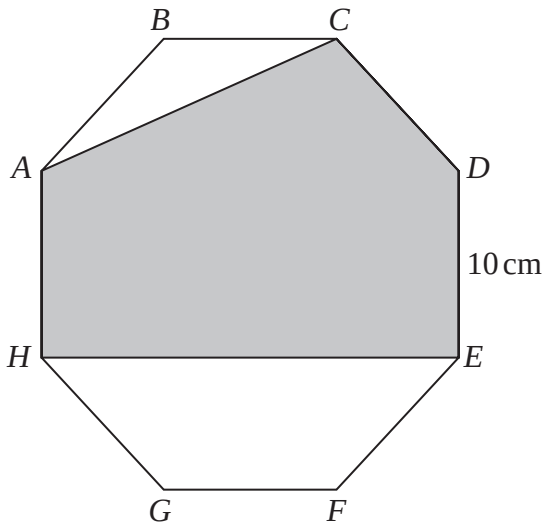

Diagram **NOT** accurately drawn

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 1 is 6 marks)

2 Here is a 10-sided polygon.

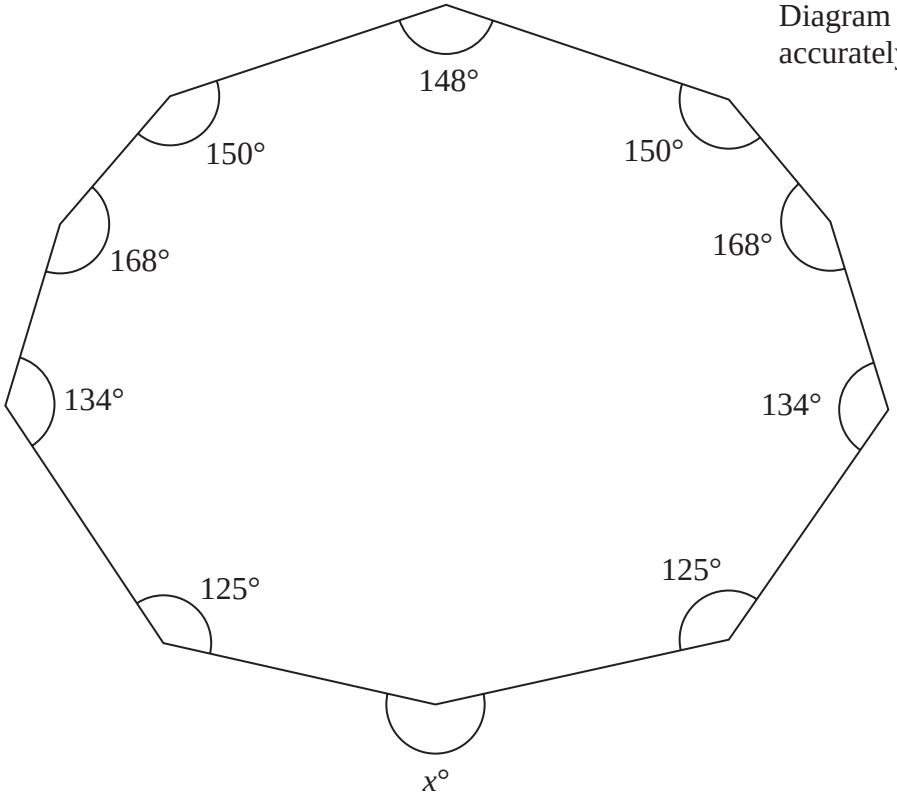

Diagram **NOT** accurately drawn

Work out the value of x.

$x =$ .....

(Total for Question 2 is 4 marks)

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

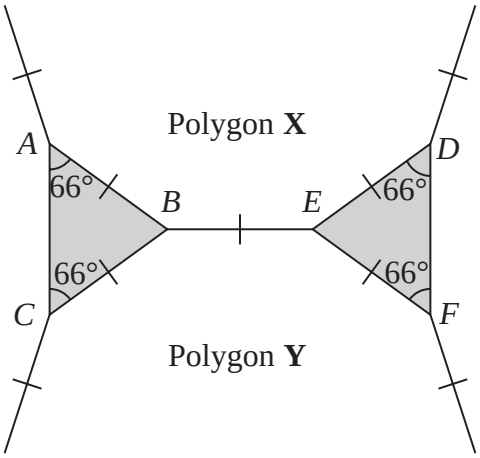

Diagram **NOT** accurately drawn

The two regular polygons each have n sides.

Work out the value of n.

n = ...

(Total for Question 3 is 3 marks)

4 The diagram shows parallelogram *EFGH*.

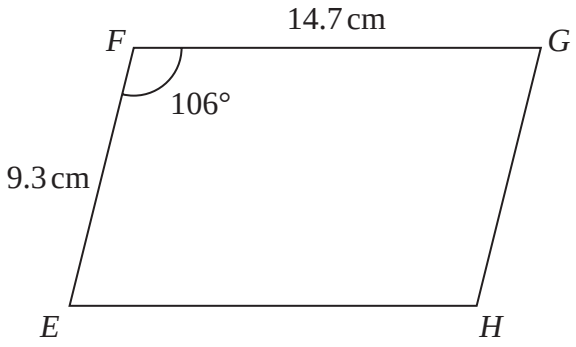

Diagram **NOT** accurately drawn

EF = 9.3 cm
FG = 14.7 cm
Angle *EFG* = 106°

(a) Work out the area of the parallelogram.
Give your answer correct to 3 significant figures.

..... cm^2
(2)

(b) Work out the length of the diagonal *EG* of the parallelogram.
Give your answer correct to 3 significant figures.

..... cm
(3)

(Total for Question 4 is 5 marks)

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

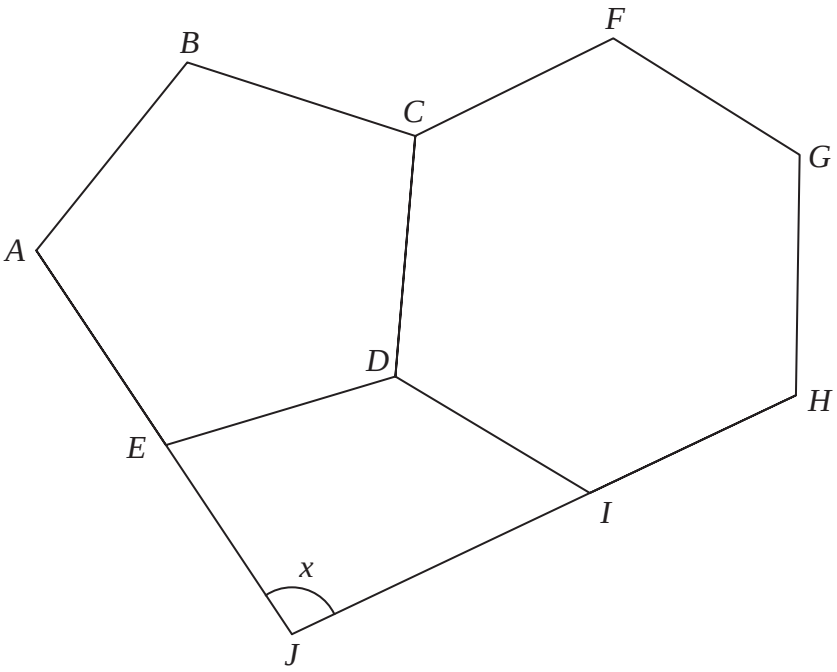

Diagram **NOT** accurately drawn

AEJ and *HIJ* are straight lines.

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

.....°

(Total for Question 5 is 5 marks)

6

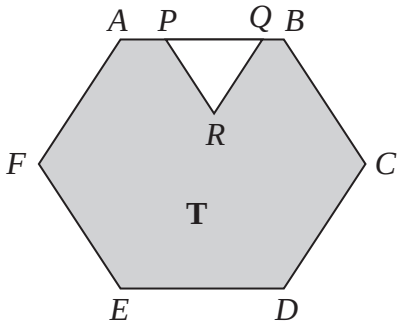

Diagram **NOT** accurately drawn

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 6 is 4 marks)

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

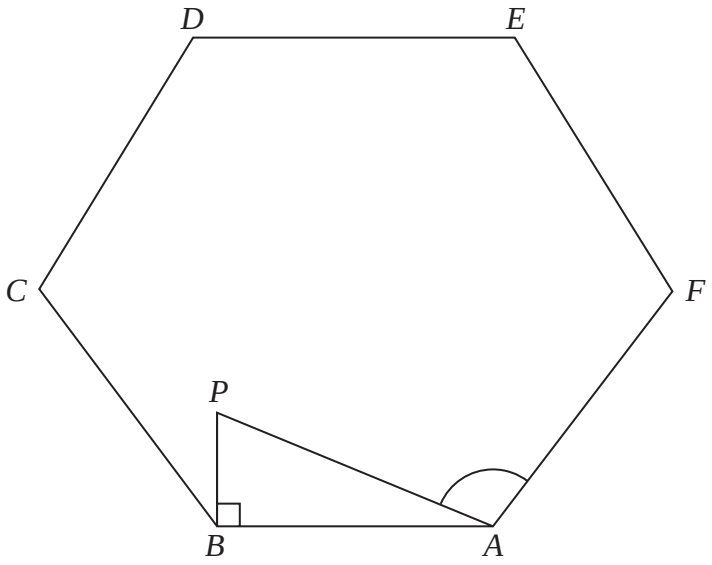

Diagram **NOT** accurately drawn

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 7 is 5 marks)

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

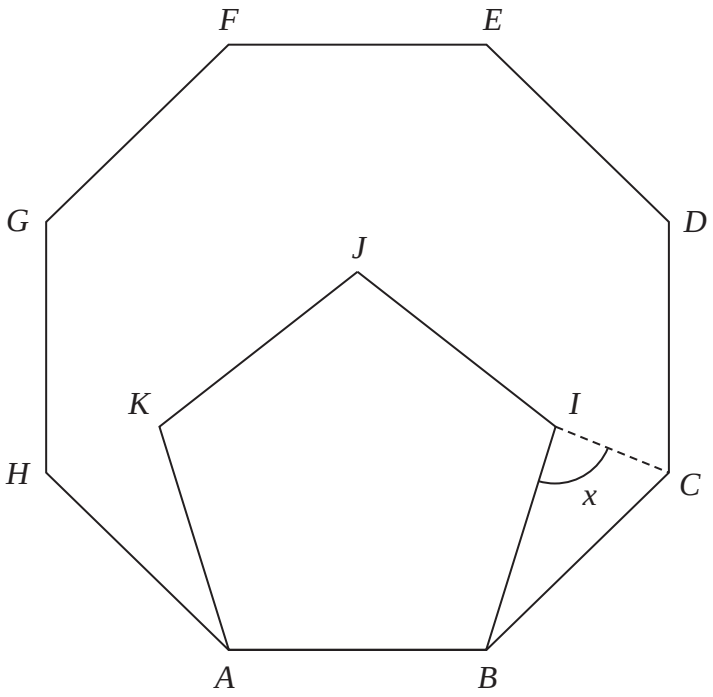

Diagram **NOT** accurately drawn

Work out the size of the angle *x*

.....°

(Total for Question 8 is 4 marks)

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

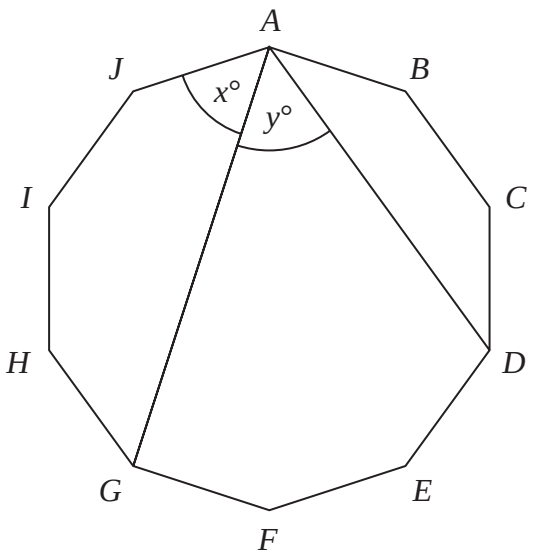

Diagram **NOT** accurately drawn

Show that $x = y$

(Total for Question 9 is 4 marks)

10

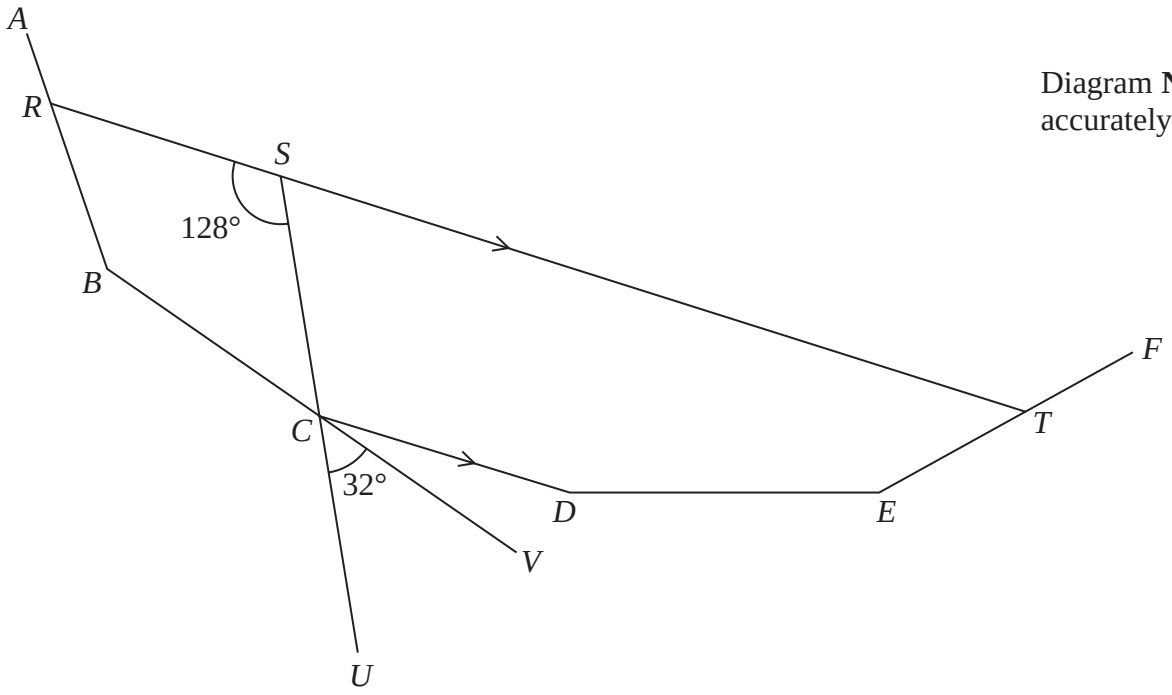

Diagram **NOT** accurately drawn

AB, *BC*, *CD*, *DE* and *EF* are five sides of a regular polygon.

RST, *SCU* and *BCV* are straight lines.
RST is parallel to *CD*
Angle *RSC* = 128°
Angle *UCV* = 32°

Work out how many sides the polygon has.
Show your working clearly.

.....

(Total for Question 10 is 4 marks)

11 The diagram shows a pentagon.

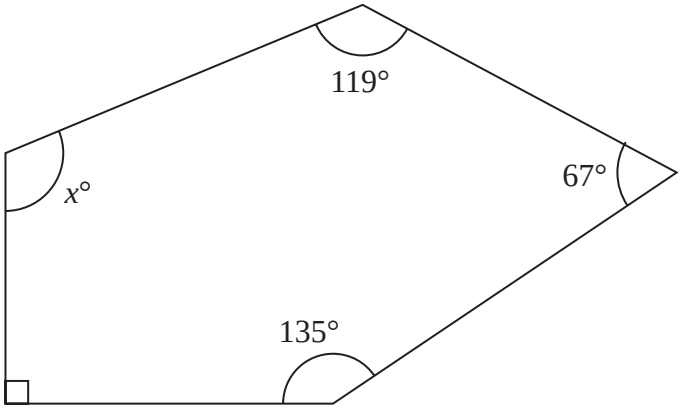

Diagram **NOT** accurately drawn

Work out the value of x

$x =$ .....

(Total for Question 11 is 3 marks)

12

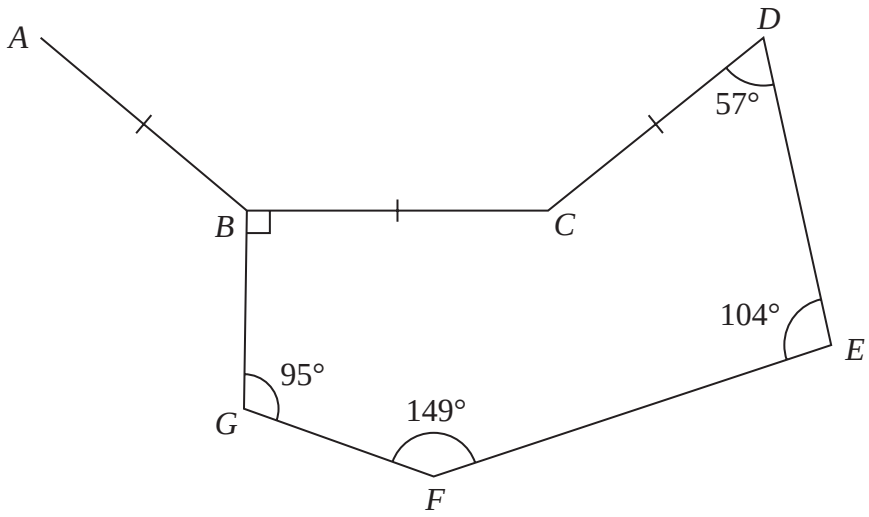

Diagram **NOT** accurately drawn

BCDEFG is a hexagon.
AB, *BC* and *CD* are three sides of a regular *n*-sided polygon.

Calculate the value of *n*
Show your working clearly.

n = ...

(Total for Question 12 is 4 marks)

13 The diagram shows two circles with centre O and a regular pentagon $ABCDE$

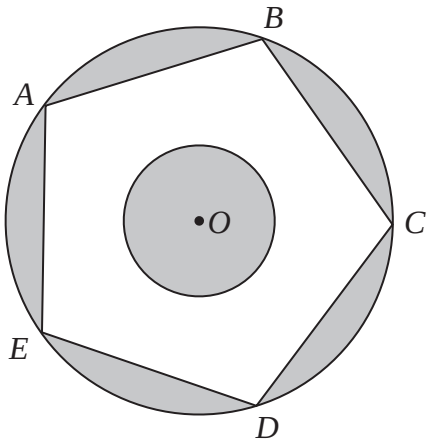

Diagram **NOT** accurately drawn

A, B, C, D and E are points on the larger circle.
The pentagon has sides of length 8 cm.

The diagram is shaded such that

shaded area = unshaded area

Work out the radius of the smaller circle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 13 is 6 marks)

14 Here is a 9-sided regular polygon *ABCDEFGHJ*, with centre *O*

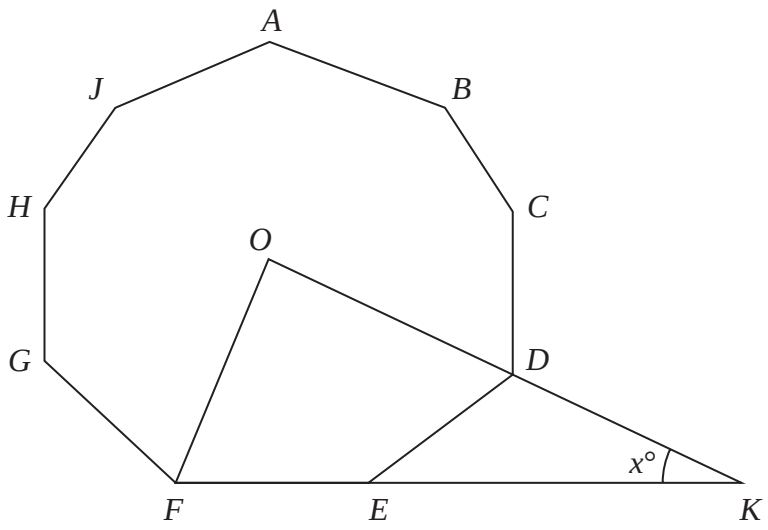

Diagram **NOT** accurately drawn

ODK and *FEK* are straight lines.

Work out the value of *x*

x = ...

(Total for Question 14 is 3 marks)