1

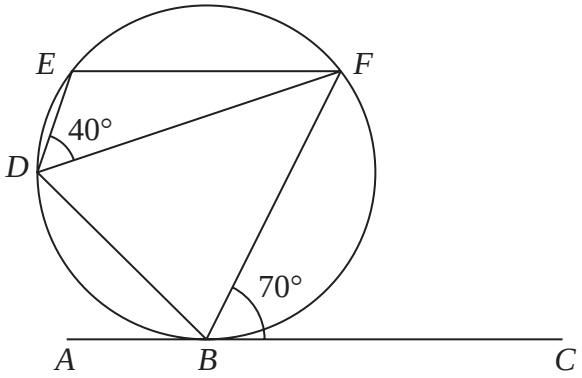


Diagram **NOT** accurately drawn

B, *D*, *E* and *F* are points on a circle.
ABC is the tangent to the circle at *B*.

Angle *EDF* = 40°
Angle *FBC* = 70°

Prove that the tangent *ABC* is parallel to *EF*.
Give a reason for each stage of your working.

(Total for Question 1 is 4 marks)

2

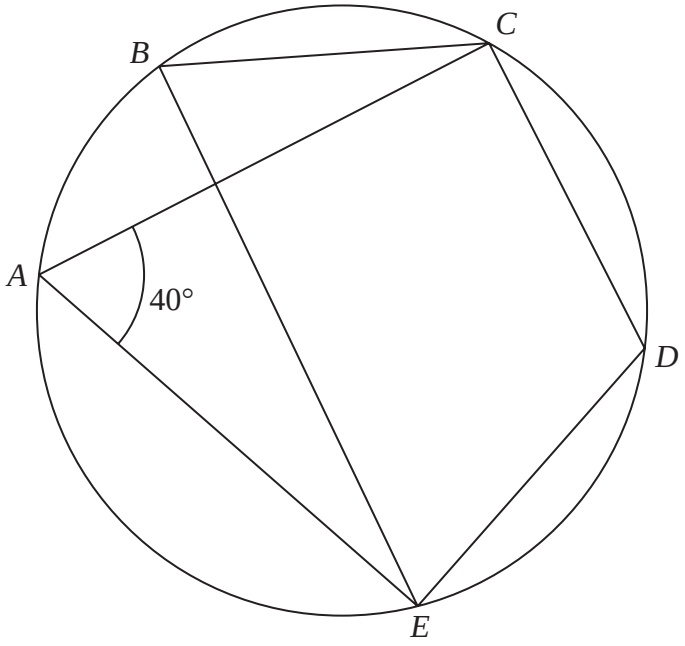


Diagram **NOT** accurately drawn

A, *B*, *C*, *D* and *E* are points on a circle.

Angle *EAC* = 40°

(a) (i) Write down the size of angle *EBC*.

..... °

(1)

(ii) Give a reason for your answer.

.....

(1)

(b) Find the size of angle *EDC*.

..... °

(1)

(Total for Question 2 is 3 marks)

3

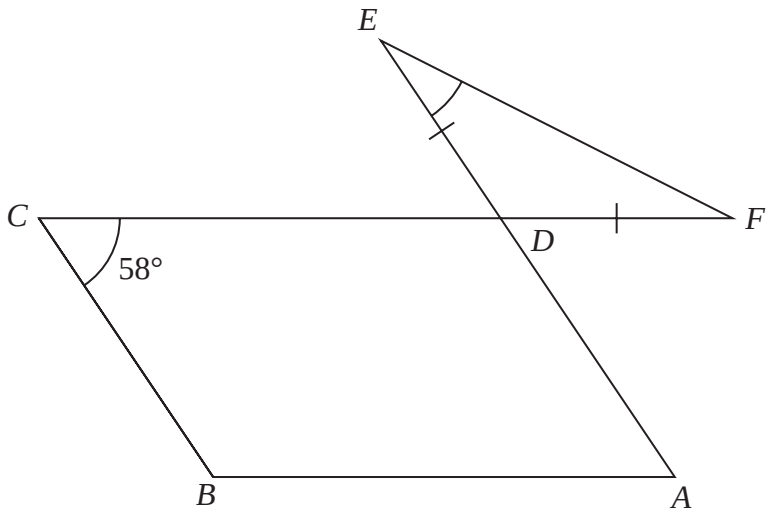


Diagram **NOT** accurately drawn

The diagram shows a parallelogram *ABCD* and an isosceles triangle *DEF* in which *DE* = *DF*

CDF and *ADE* are straight lines.
Angle *BCD* = 58°

Work out the size of angle *DEF*.
Give a reason for each stage of your working.

..... °

(Total for Question 3 is 5 marks)

4 The diagram shows the prism *ABCDEF* with cross section triangle *ABC*.

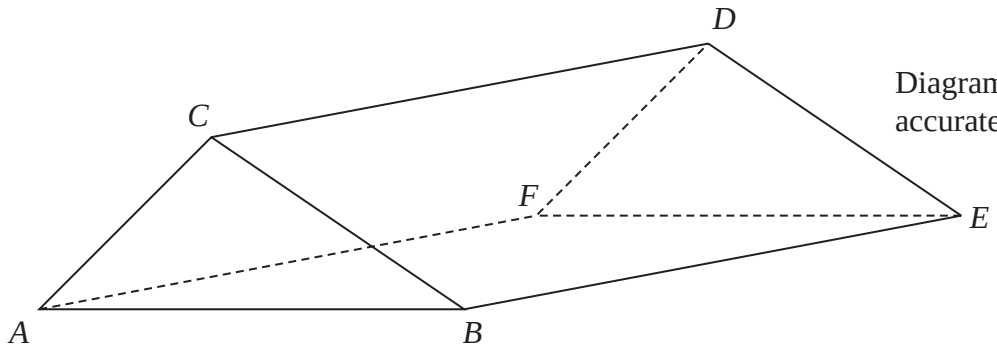


Diagram **NOT** accurately drawn

Angle *BEC* = 40° and angle *ACB* is obtuse.
AC = 6 cm and *CE* = 13 cm

The area of triangle *ABC* is 22 cm^2

Calculate the length of *AB*.
Give your answer correct to one decimal place.

..... cm

(Total for Question 4 is 6 marks)

5 *P*, *Q* and *R* are points on a circle, centre *O*.
TRV is the tangent to the circle at *R*.

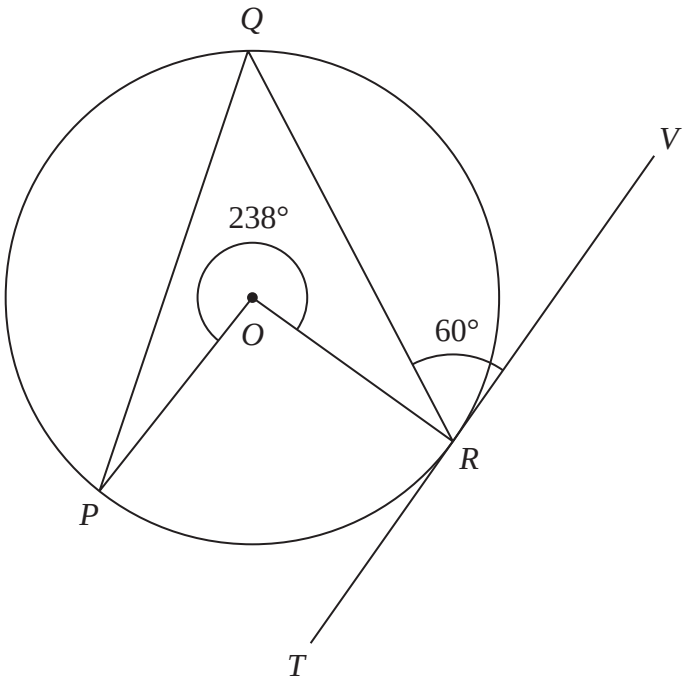


Diagram **NOT** accurately drawn

Reflex angle *POR* = 238°
Angle *QRV* = 60°

Calculate the size of angle *OPQ*.
Give a reason for each stage of your working.

.....°

(Total for Question 5 is 4 marks)

6

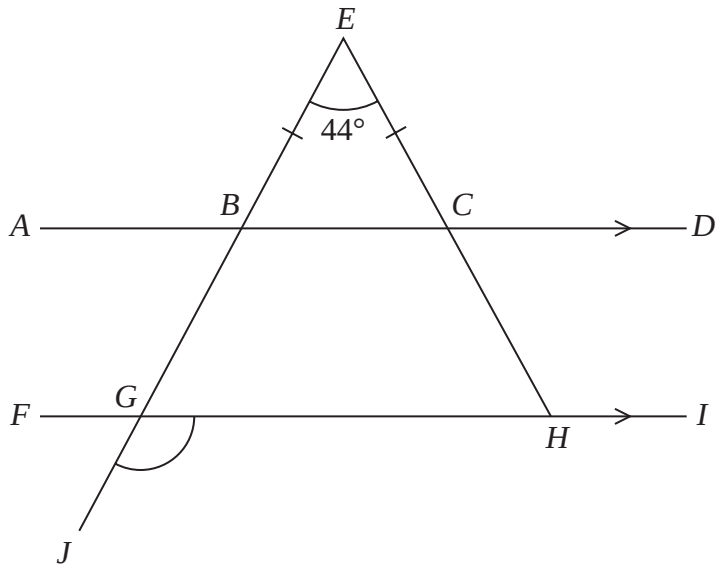


Diagram **NOT** accurately drawn

ABCD and *FGHI* are parallel straight lines.
EBGJ and *ECH* are straight lines.

BE = *CE*
Angle *BEC* = 44°

Work out the size of angle *JGH*.
Give a reason for each stage of your working.

.....°

(Total for Question 6 is 5 marks)

7

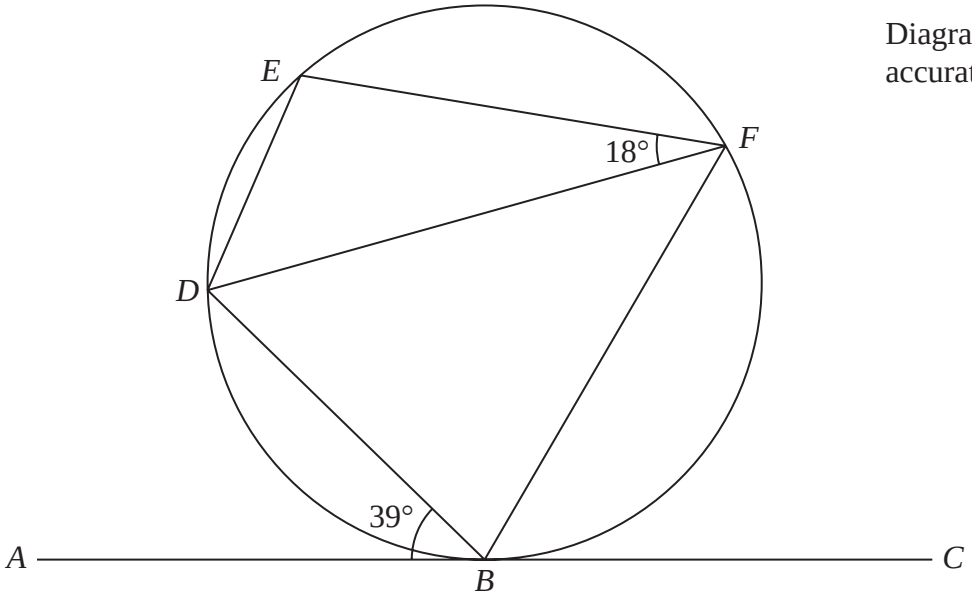


Diagram **NOT** accurately drawn

B, *D*, *E* and *F* are points on a circle.

ABC is the tangent at *B* to the circle.
Angle *ABD* = 39°
Angle *EFD* = 18°

Work out the size of angle *BDE*.
Give reasons for your working.

.....°

(Total for Question 7 is 4 marks)

8 *P*, *Q*, *R*, *S* and *T* are points on a circle with centre *O*.

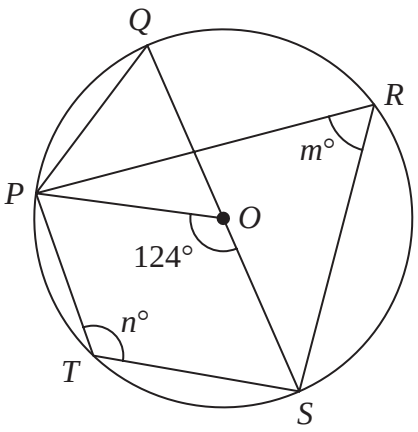


Diagram **NOT** accurately drawn

QOS is a diameter of the circle.

angle *POS* = 124° angle *PRS* = *m*° angle *PTS* = *n*°

(a) Find the value of

(i) *m*

.....

(ii) *n*

.....

(2)

(b) Find the size of angle *QPO*.

..... °

(1)

(Total for Question 8 is 3 marks)

9

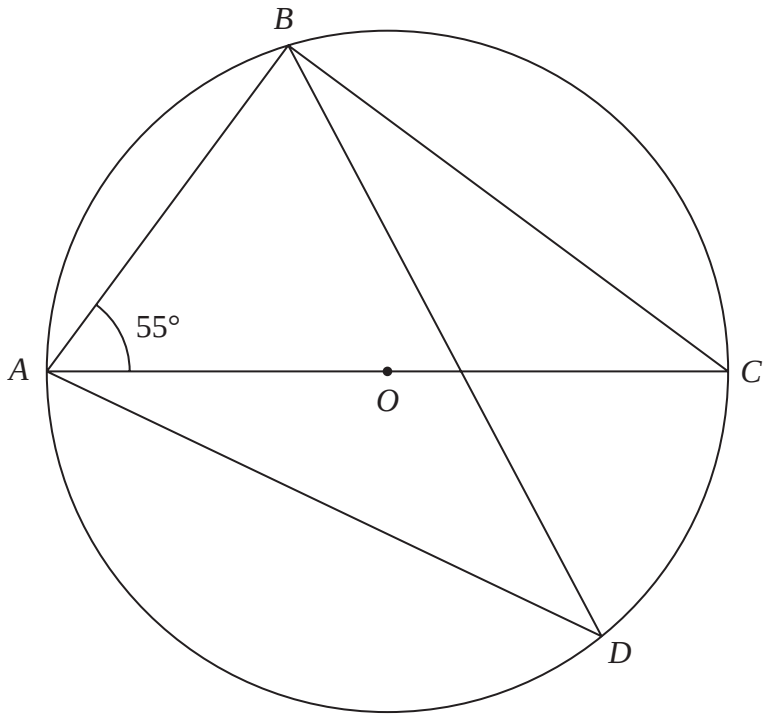


Diagram **NOT** accurately drawn

A, *B*, *C* and *D* are points on a circle, centre *O*
AOC is a diameter of the circle.

Angle *BAC* = 55°

Work out the size of angle *ADB*
Give a reason for each stage of your working.

.....°

(Total for Question 9 is 4 marks)

10 The diagram shows triangle *PQR*

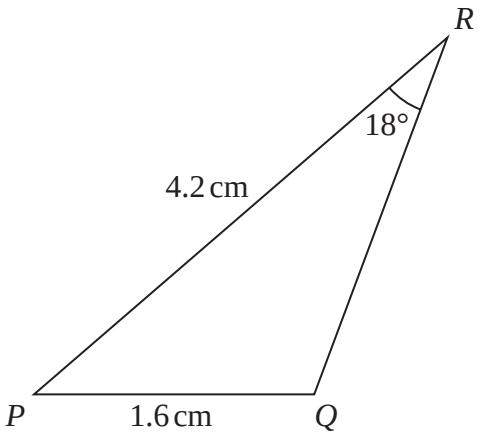


Diagram **NOT** accurately drawn

PQ = 1.6 cm *PR* = 4.2 cm Angle *PRQ* = 18°

Given that angle *PQR* is obtuse,

work out the area of triangle *PQR*
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 10 is 6 marks)

11

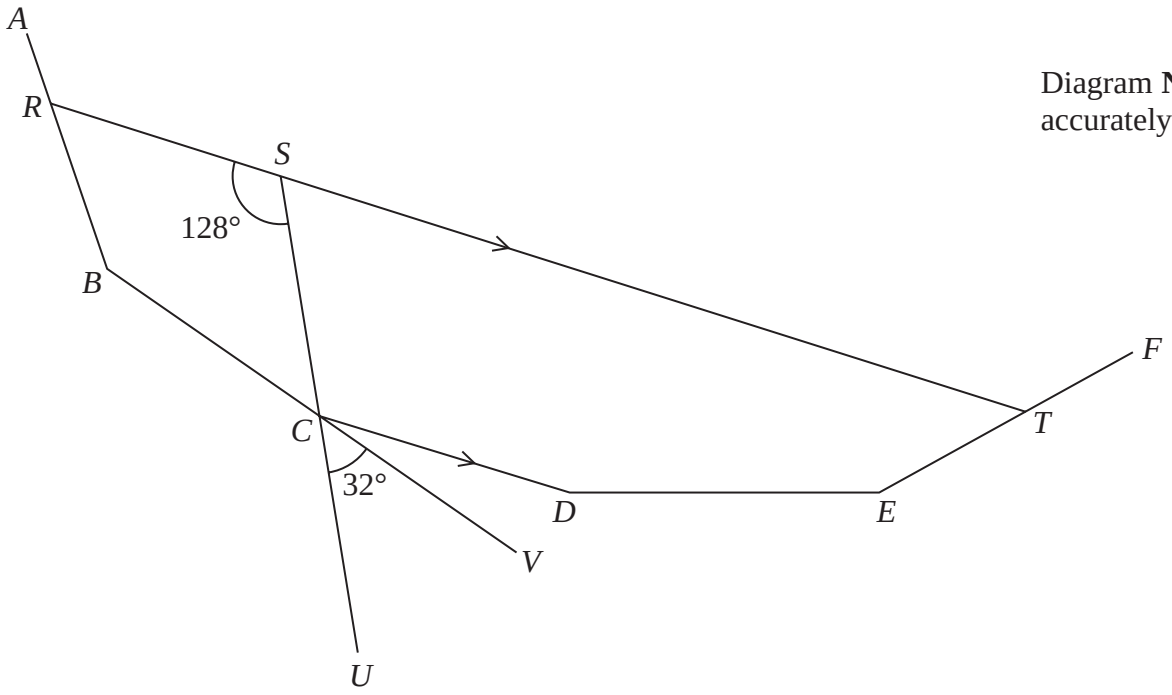


Diagram **NOT** accurately drawn

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 11 is 4 marks)

12 The diagram shows a pentagon.

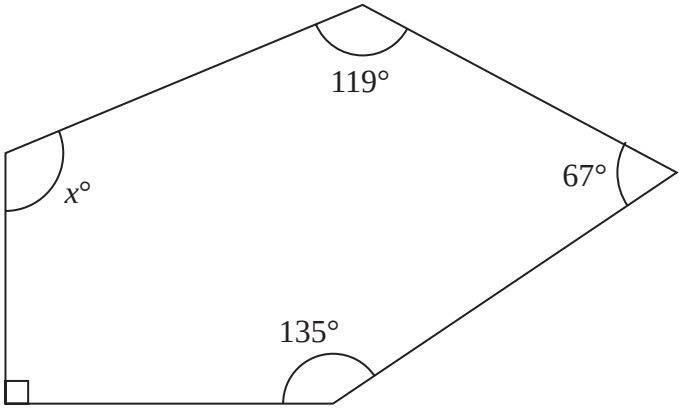


Diagram **NOT** accurately drawn

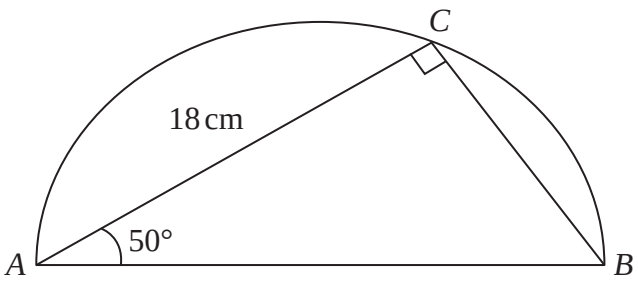
Work out the value of x

x = ...

(Total for Question 12 is 3 marks)

13 The diagram shows a triangle *ABC* inside a semicircle.

Diagram **NOT** accurately drawn



A, *B* and *C* are points on the semicircle.

AB is the diameter of the semicircle.

Angle *ACB* = 90°
Angle *BAC* = 50°
AC = 18 cm

Work out the perimeter of the semicircle.
Give your answer correct to 2 significant figures.

..... cm

(Total for Question 13 is 5 marks)

14 Here is a shape formed from two triangles *ABC* and *CDE*
ACD and *BCE* are straight lines.

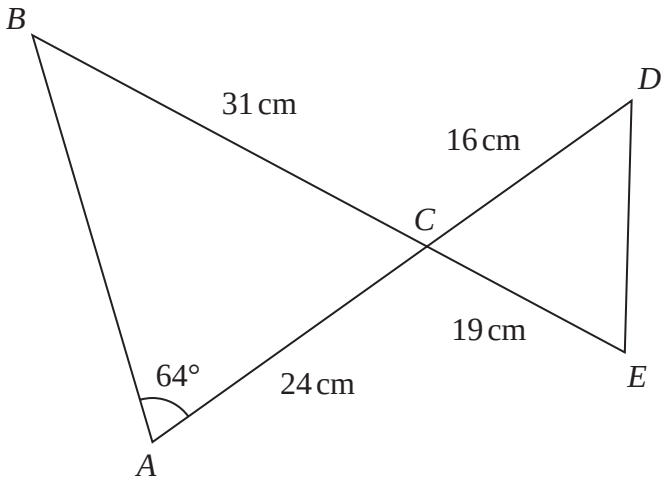


Diagram **NOT** accurately drawn

AC = 24 cm *BC* = 31 cm *CE* = 19 cm *CD* = 16 cm

Angle *BAC* = 64°

Work out the length of *DE*
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 14 is 5 marks)

15

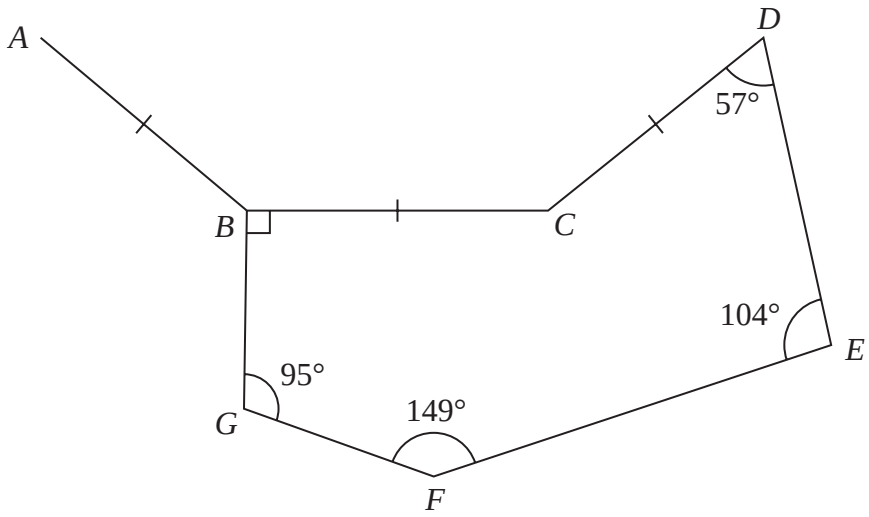


Diagram **NOT** accurately drawn

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 15 is 4 marks)

16 Here is a triangle *ABC*

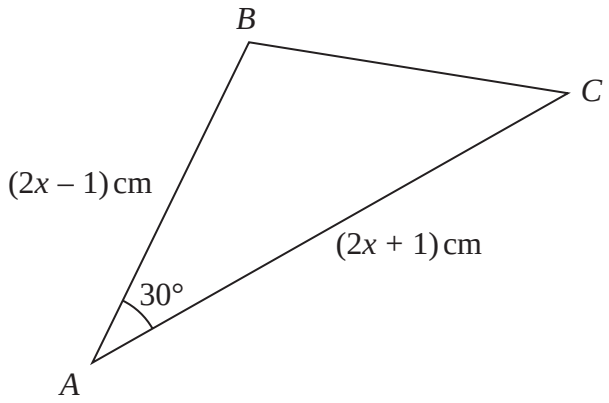


Diagram **NOT** accurately drawn

The area of the triangle is $(x^2 + x - 3.75)\,\text{cm}^2$

Find the size of the largest angle in triangle *ABC*
Give your answer correct to the nearest degree.

°

.....

(Total for Question 16 is 6 marks)

17 *A*, *B* and *C* are points on a circle.

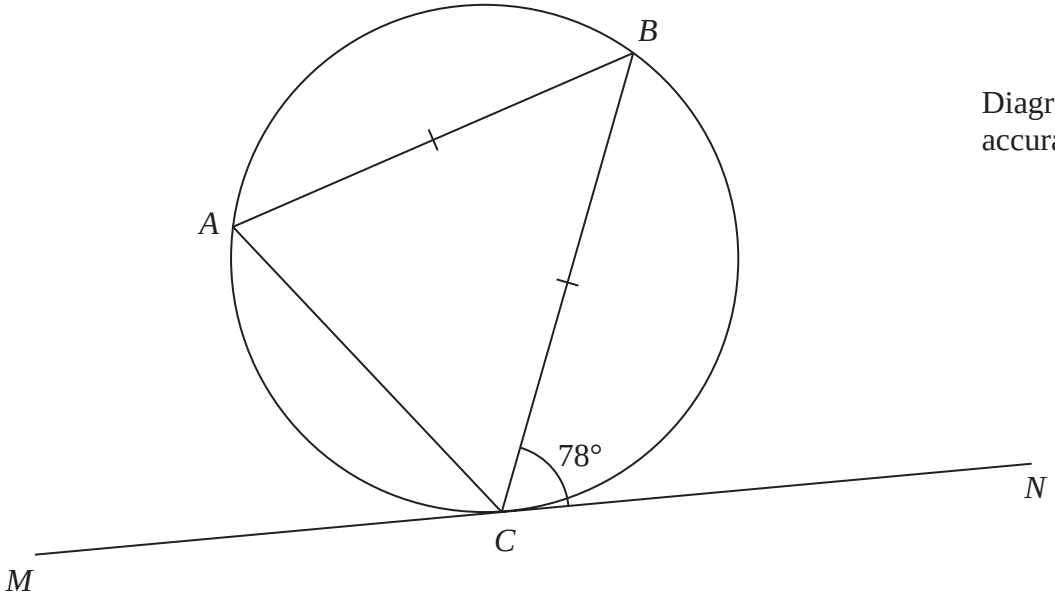


Diagram **NOT** accurately drawn

MN is the tangent to the circle at *C*

AB = *CB*

Angle *BCN* = 78°

Find the size of angle *ABC*

.....°

(Total for Question 17 is 2 marks)

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

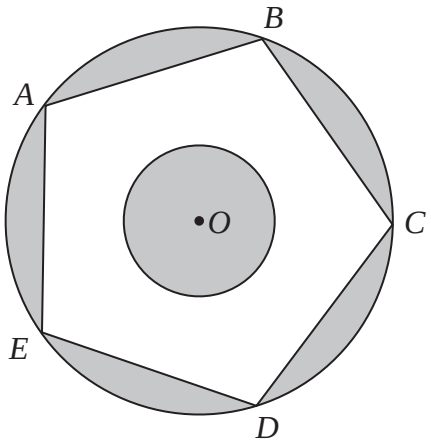


Diagram **NOT** accurately drawn

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 18 is 6 marks)

19 *ABCD* is a trapezium.

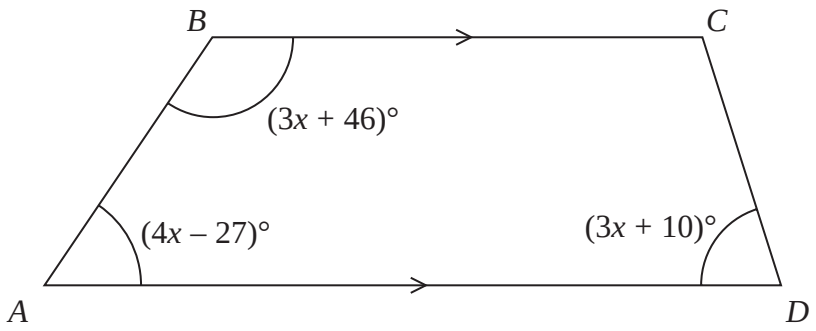


Diagram **NOT** accurately drawn

BC is parallel to *AD*

Find the size of the largest angle inside the trapezium.

.....°

(Total for Question 19 is 4 marks)

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

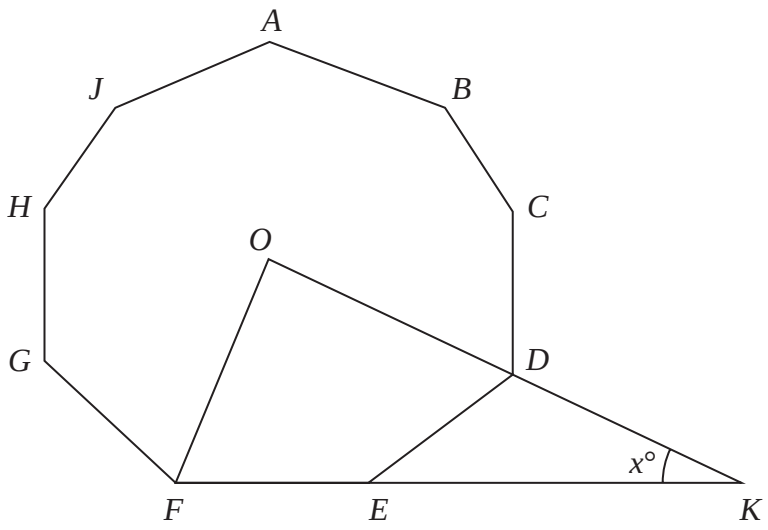


Diagram **NOT** accurately drawn

ODK and *FEK* are straight lines.

Work out the value of *x*

x = ...

(Total for Question 20 is 3 marks)