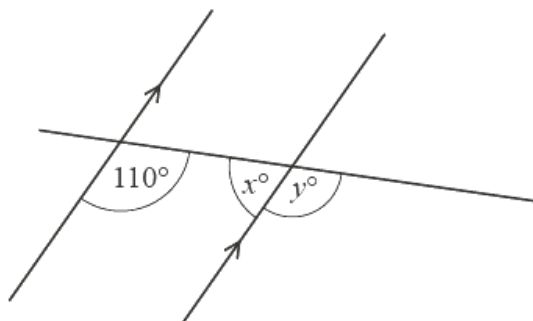


Geometry – 2023 O Level Math D 4024

1. Nov/2023/Paper_4024/11/No.6

NOT TO
SCALE

The diagram shows a straight line crossing two parallel lines.

(a) Work out the value of x .

$$x = \dots\dots\dots [1]$$

(b) Work out the value of y .

$$y = \dots\dots\dots [1]$$

2. Nov/2023/Paper_4024/11/No.10

- (a) Four exterior angles of a pentagon are 150° , 100° , 45° and 35° .

Calculate the size of the remaining exterior angle.

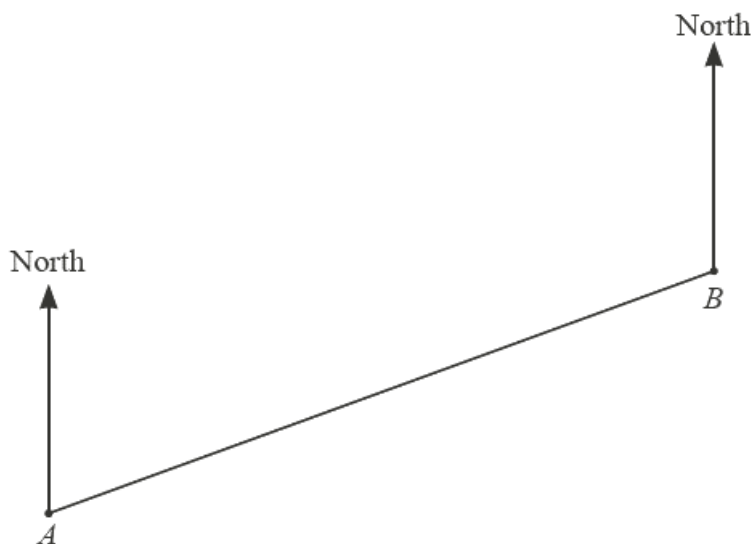
..... [2]

- (b) Calculate the interior angle of a regular decagon.

..... [2]

3. Nov/2023/Paper_4024/11/No.12

The scale drawing shows the positions of two boats *A* and *B*.
The scale is 1 : 20 000.



Scale 1 : 20 000

(a) Find the actual distance of boat *A* from boat *B* in kilometres.

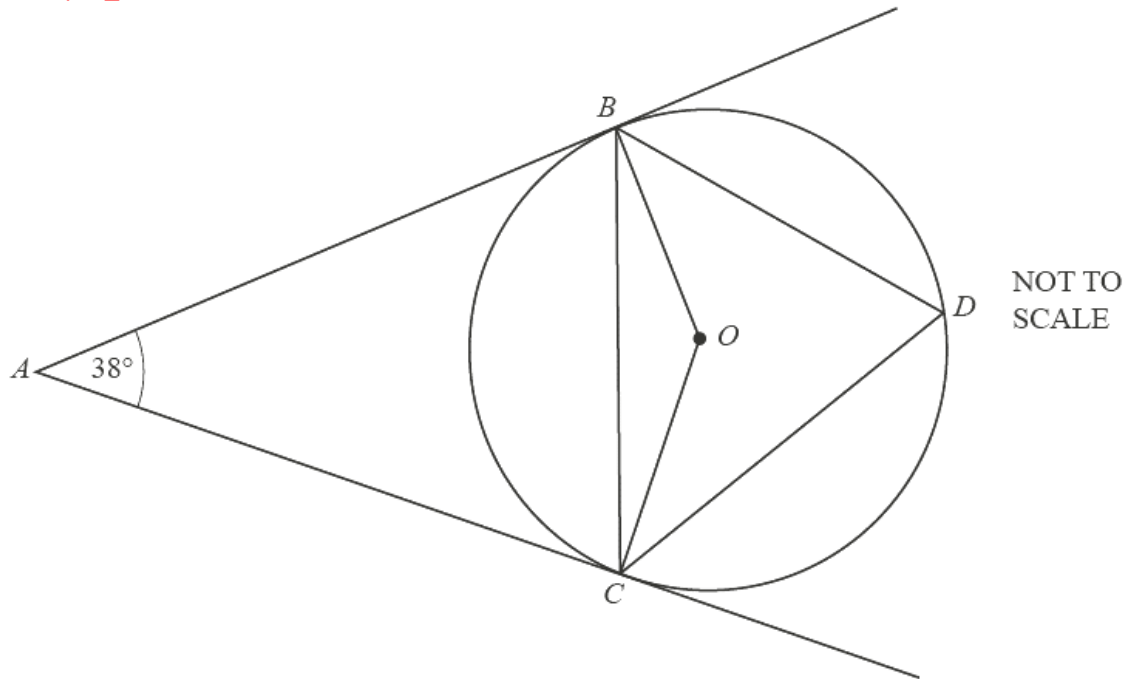
..... km [2]

(b) Using compasses and a straight edge only, construct the locus of points that are equidistant from *A* and *B*. [2]

(c) A ship, *S*, is equidistant from *A* and *B*.
S is on a bearing of 105° from *A*.

Mark and label the position of *S* on the scale drawing. [1]

4. Nov/2023/Paper_4024/11/No.15



B , C and D are points on the circle, centre O .
 AB and AC are tangents to the circle.
 Angle $BAC = 38^\circ$.

Work out

(a) angle ABC

Angle $ABC = \dots\dots\dots$ [1]

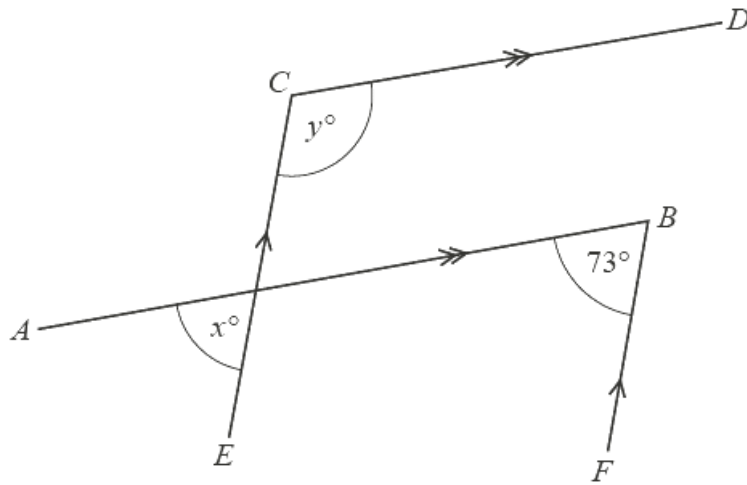
(b) angle BOC

Angle $BOC = \dots\dots\dots$ [2]

(c) angle BDC .

Angle $BDC = \dots\dots\dots$ [1]

5. Nov/2023/Paper_4024/12/No.6

NOT TO
SCALE

AB and CD are parallel lines.
 EC and FB are parallel lines.
 Angle $ABF = 73^\circ$.

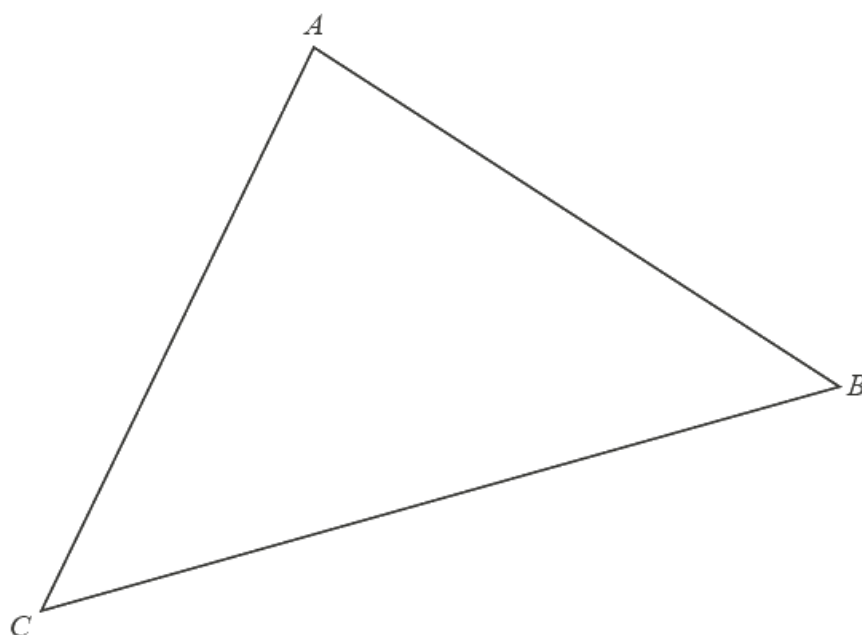
(a) Find the value of x .

$$x = \dots\dots\dots [1]$$

(b) Find the value of y .

$$y = \dots\dots\dots [1]$$

6. Nov/2023/Paper_4024/12/No.14



(a) Measure angle ABC .

Angle $ABC = \dots\dots\dots$ [1]

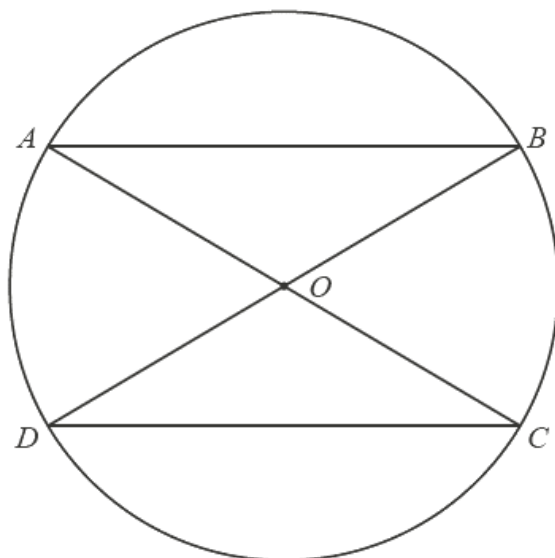
(b) Using compasses and a straight edge only, construct the perpendicular bisector of AC . [2]

(c) On the diagram, shade the region inside triangle ABC that is

- nearer to A than to C
- and
- more than 6 cm from B .

[2]

7. Nov/2023/Paper_4024/21/No.10

NOT TO
SCALE

The diagram shows a circle, centre O , with diameters AC and BD .

- (a) Show that triangle OAB is congruent to triangle ODC .
Give a reason for each statement you make.

.....

.....

.....

..... [3]

- (b) The diameter of the circle is 10 cm and $AB = 9$ cm.

Calculate the difference between the circumference of the circle and the perimeter of the shaded shape.

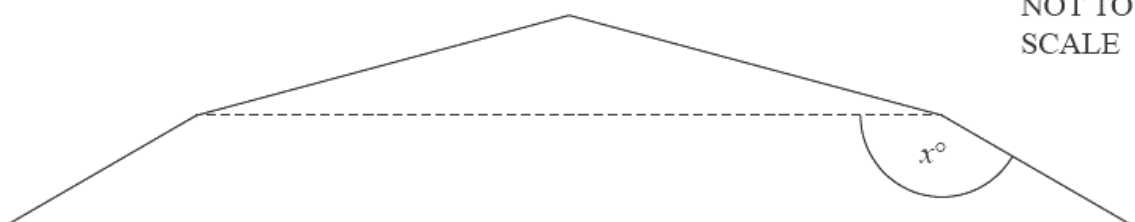
..... cm [5]

8. Nov/2023/Paper_4024/22/No.2

(a) (i) Find the size of one interior angle of a regular 15-sided polygon.

..... [2]

(ii)

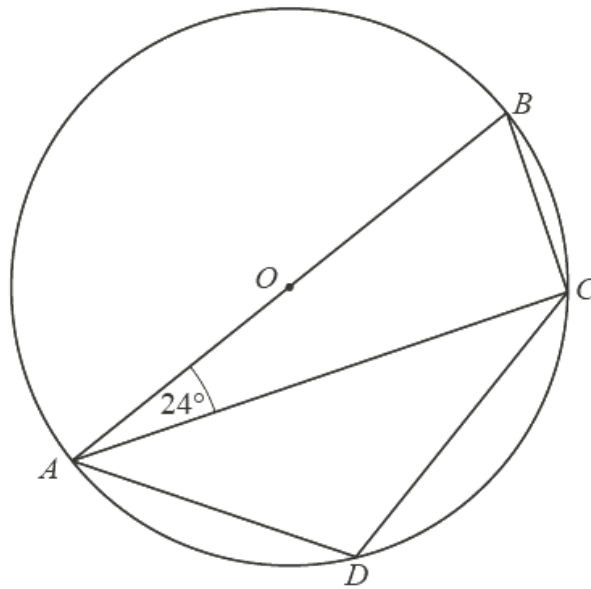


The diagram shows part of a regular 15-sided polygon.

Find the value of x .

$x =$ [2]

(b)

NOT TO
SCALE

A , B , C and D are points on the circle, centre O .
 AB is a diameter of the circle.
 Angle $BAC = 24^\circ$.

Find angle ADC .
 Give a reason for each step of your working.

.....

.....

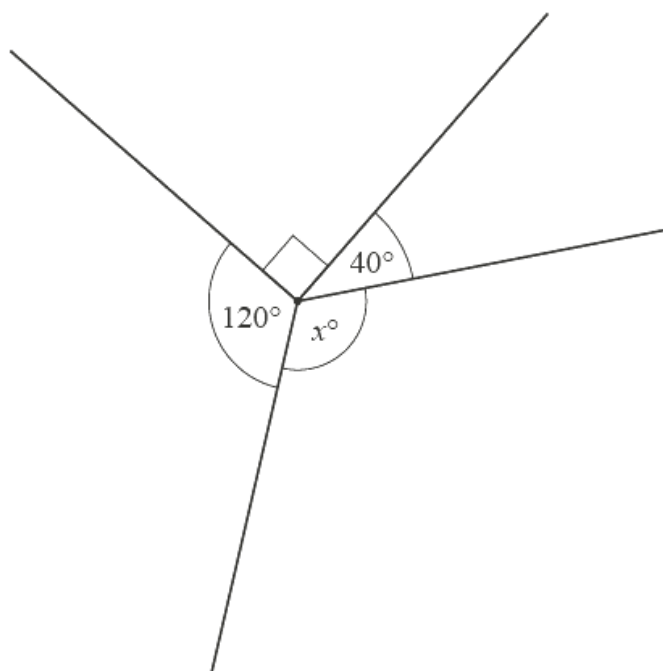
.....

.....

Angle $ADC = \dots\dots\dots [4]$

9. June/2023/Paper_4024/11/No.3

(a)



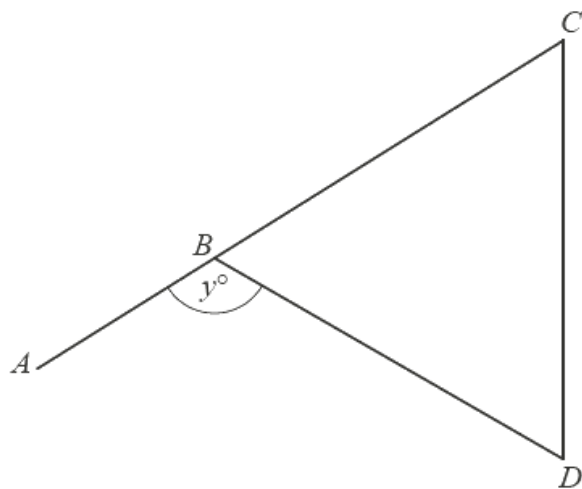
NOT TO
SCALE

The diagram shows four straight lines meeting at a point.

Work out the value of x .

$x = \dots\dots\dots [1]$

- (b) ABC is a straight line and BCD is an equilateral triangle.



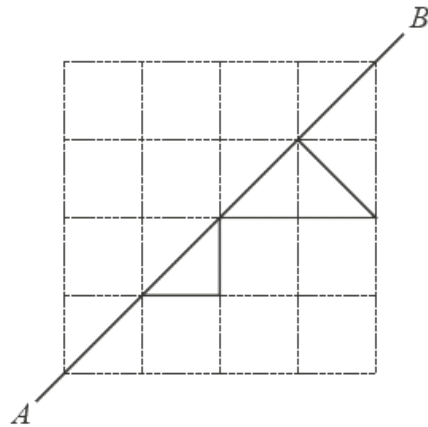
NOT TO
SCALE

Work out the value of y .

$y = \dots\dots\dots$ [1]

10. June/2023/Paper_4024/11/No.6

- (a) Complete the pattern so that AB is the only line of symmetry.



[1]

- (b) A hexagon has rotational symmetry of order 6.
The perimeter of the hexagon is 30 cm.

Draw a sketch of the hexagon labelling the lengths of the sides.

[1]

11. June/2023/Paper_4024/11/No.13

- (a) The bearing of Mingfield from Lenton is 156° .

Calculate the bearing of Lenton from Mingfield.

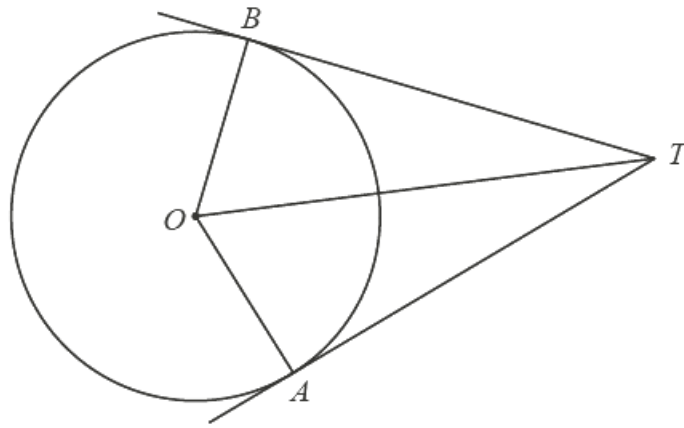
..... [1]

- (b) On a map, the distance between Lenton and Mingfield is 4.5 cm.
The actual distance between Lenton and Mingfield is 9 km.

Find the scale of the map in the form $1 : n$.

1 : [2]

12. June/2023/Paper_4024/11/No.19

NOT TO
SCALE

A and B are points on the circumference of a circle, centre O .
 TA and TB are tangents to the circle.

Show that triangles OBT and OAT are congruent.
Give a reason for each statement you make.

.....

.....

.....

.....

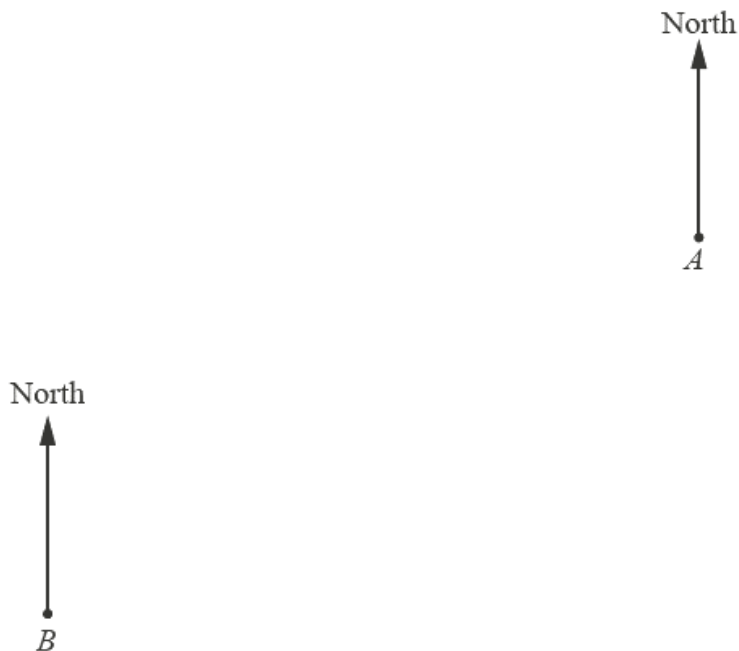
.....

.....

[3]

13. June/2023/Paper_4024/12/No.6

The scale drawing shows the positions of two villages, A and B .
The scale is 1 cm to 2 km.



Scale: 1 cm to 2 km

(a) (i) Find the actual distance AB .

..... km [2]

(ii) Find the bearing of B from A .

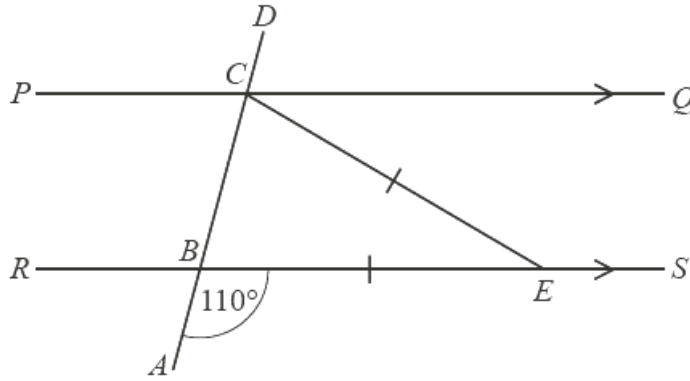
..... [1]

(b) A plane flies so that it is always equidistant from A and B .

Using a straight edge and compasses only, construct the path of the plane. [2]

14. June/2023/Paper_4024/21/No.3

(a)



NOT TO SCALE

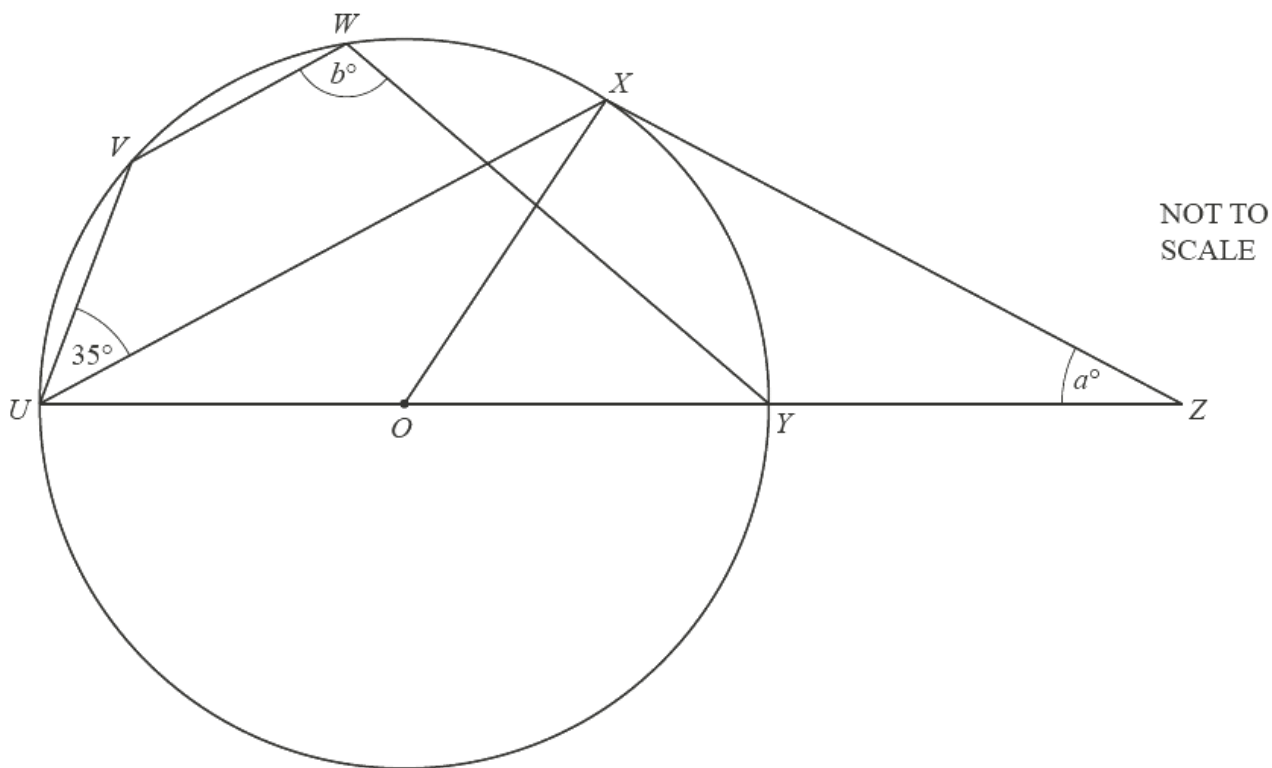
PQ is parallel to RS .
 $ABCD$ is a straight line.
 $BE = CE$ and $\hat{A}BE = 110^\circ$.

Calculate $\hat{EC}Q$, giving a reason for each step of your working.

$\hat{EC}Q = \dots\dots\dots$ because $\dots\dots\dots$
 $\dots\dots\dots$
 $\dots\dots\dots$
 $\dots\dots\dots$

[3]

(b)



U, V, W, X and Y are points on the circumference of a circle, centre O .
 UY is a diameter of the circle and ZX is a tangent to the circle at X .
 $\widehat{VUX} = 35^\circ$, $\widehat{XZY} = a^\circ$ and $\widehat{VWY} = b^\circ$.

Find an expression for b in terms of a .
 Give your answer in its simplest form.

$b = \dots\dots\dots$ [4]

15. June/2023/Paper_4024/21/No.7

(a) ABC is a triangle with $AC = 8.3$ cm and $\hat{BAC} = 105^\circ$.

- (i) Construct triangle ABC .
Line AB has been drawn for you.

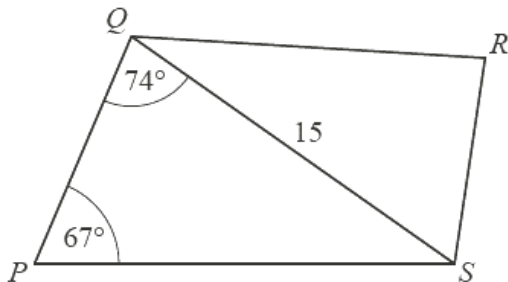


[2]

- (ii) By taking suitable measurements from your triangle, calculate the perimeter of triangle ABC .

..... cm [2]

(b)



NOT TO SCALE

The diagram shows quadrilateral $PQRS$.
 $SQ = 15$ cm, $\hat{SPQ} = 67^\circ$ and $\hat{PQS} = 74^\circ$.

(i) Calculate PS .

..... cm [3]

(ii) $\hat{PSR} = 96^\circ$ and the area of triangle QRS is 63 cm².

(a) Show that $SR = 10.0$ cm, correct to 1 decimal place.

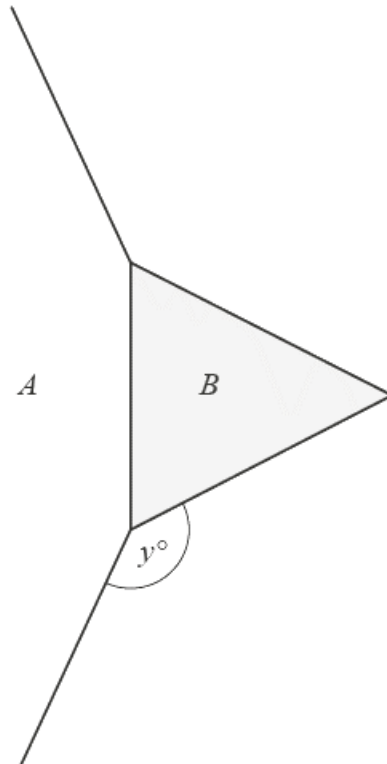
[3]

(b) Calculate QR .

..... cm [3]

16. June/2023/Paper_4024/22/No.3

(a)



NOT TO SCALE

The diagram shows the equilateral triangle B and part of the regular polygon A which have a common side.

The interior angle of polygon A is 165° .

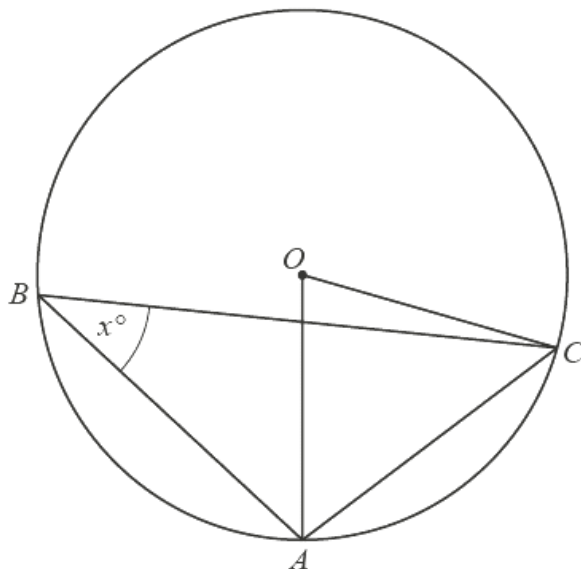
(i) Find the value of y .

$y = \dots\dots\dots$ [1]

(ii) Calculate the number of sides of polygon A .

$\dots\dots\dots$ [2]

(b)



NOT TO SCALE

A, B and C are points on the circumference of a circle, centre O .
 Angle $ABC = x^\circ$.

- (i) Show that angle $OAC = (90 - x)^\circ$.
 Give reasons for your answer.

.....

 [3]

- (ii) Angle $BAO = 54^\circ$ and angle $OCB = 11^\circ$.

Find the value of x .

$x =$ [2]