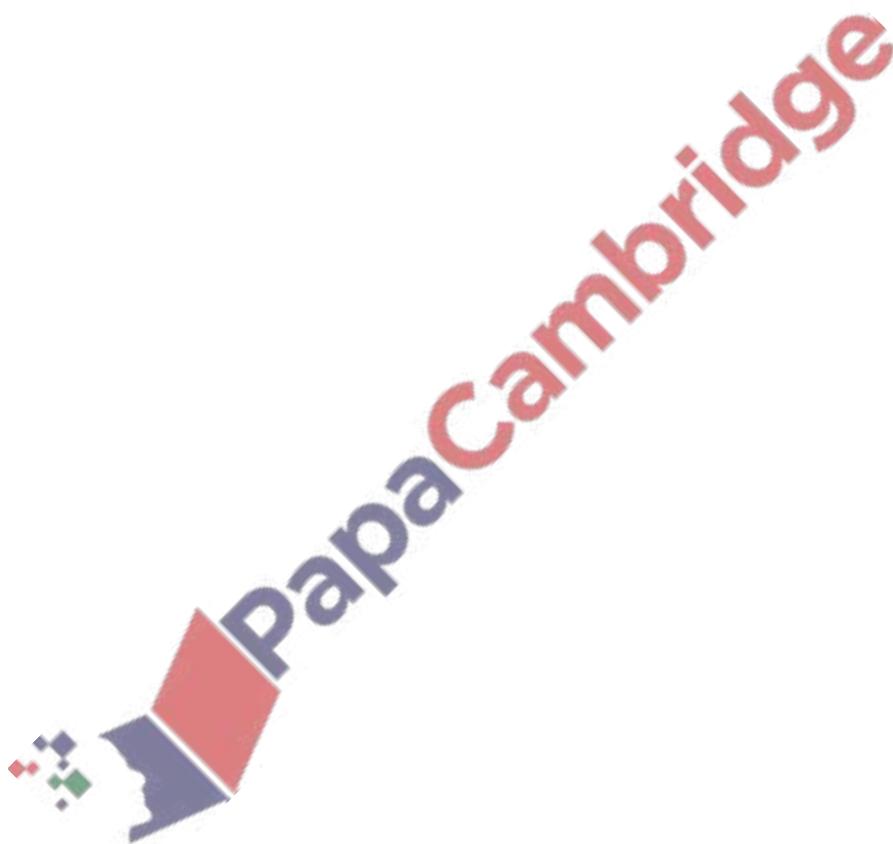


1. Nov/2023/Paper\_0580/11/No.1

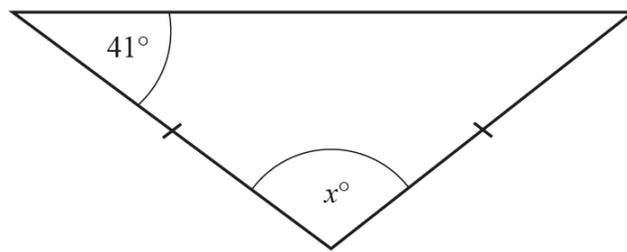


Write down the mathematical name for this type of angle.

..... [1]



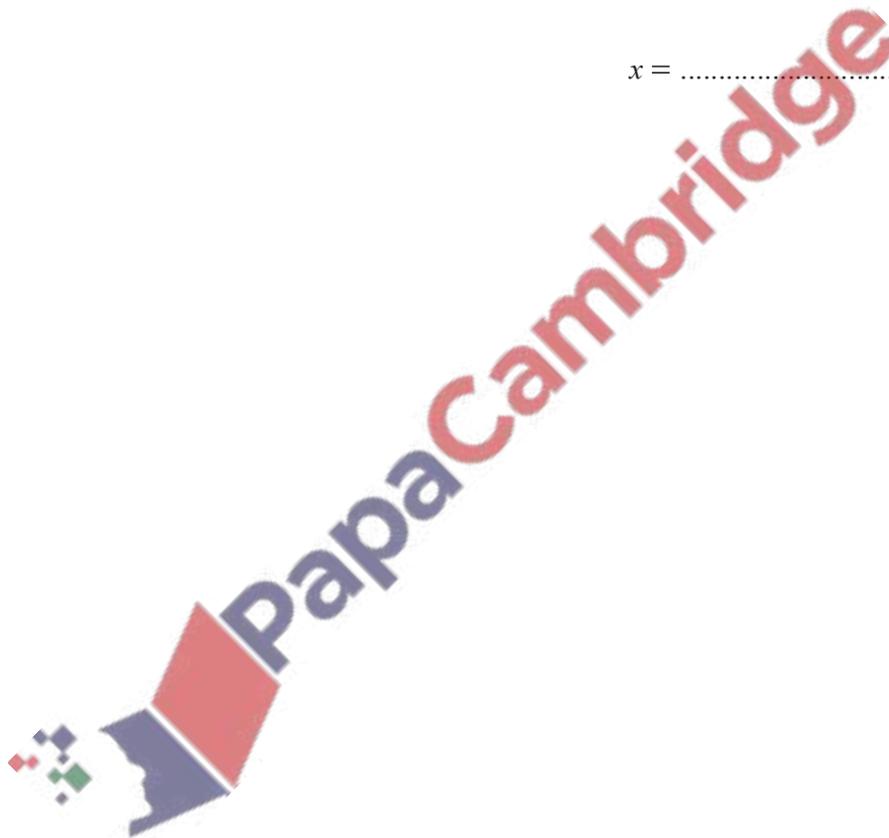
The diagram shows an isosceles triangle.

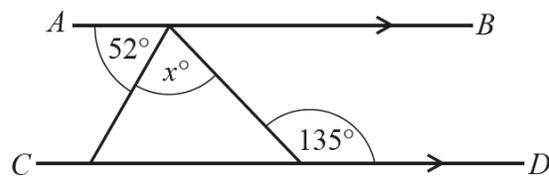


NOT TO  
SCALE

Find the value of  $x$ .

$x = \dots\dots\dots$  [2]



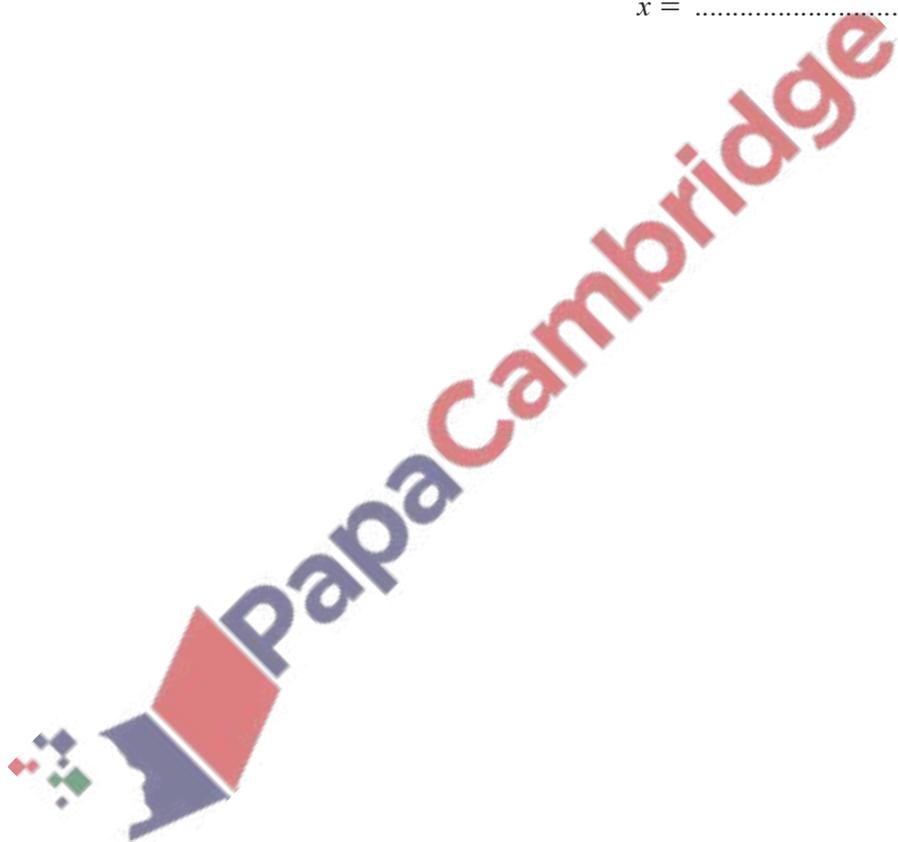


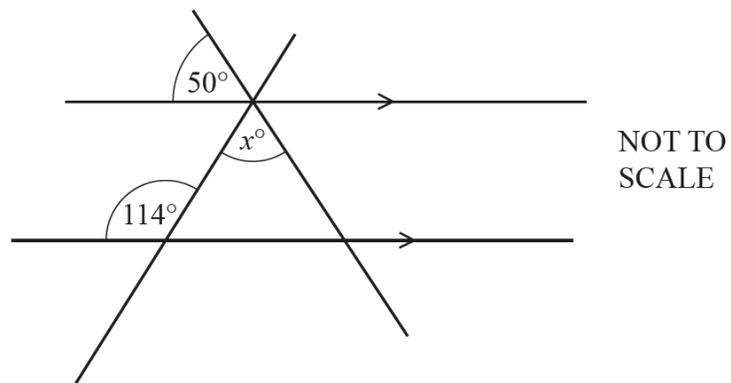
NOT TO  
SCALE

$AB$  and  $CD$  are parallel lines.

Find the value of  $x$ .

$x = \dots\dots\dots$  [2]

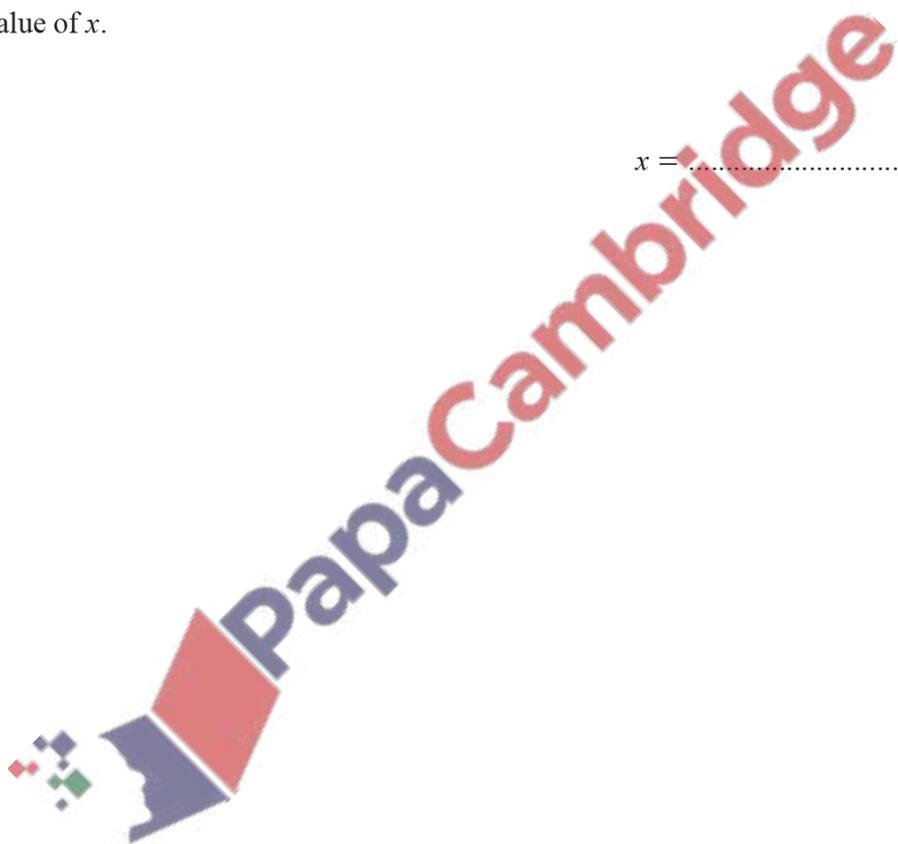




The diagram shows two straight lines crossing two parallel lines.

Find the value of  $x$ .

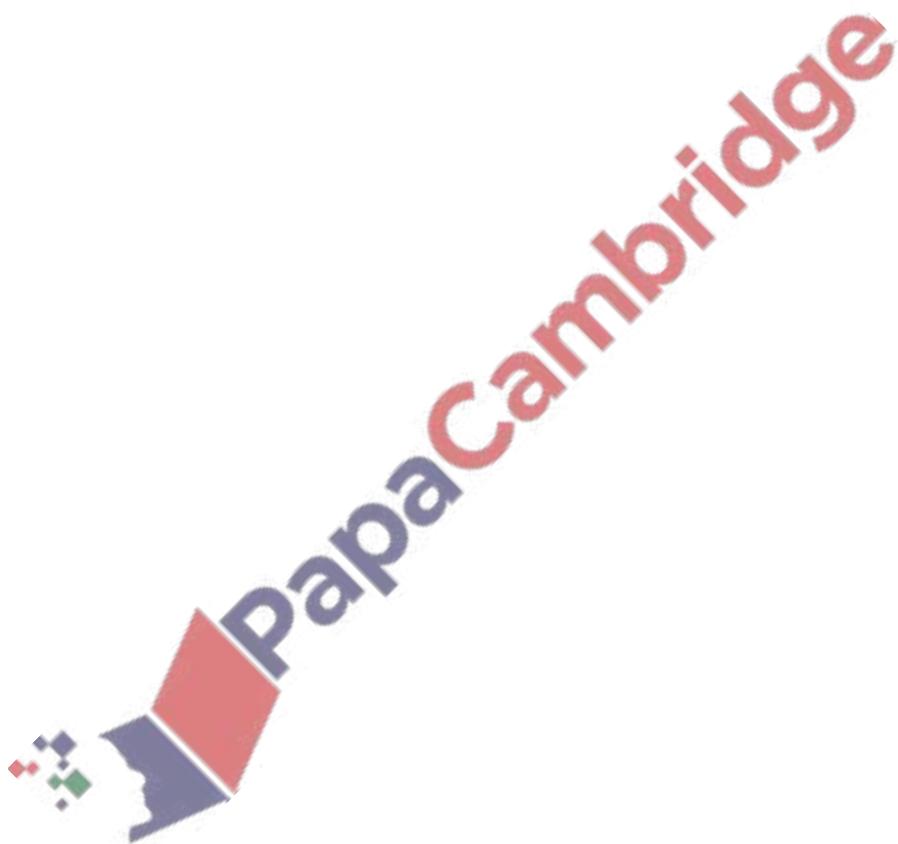
$x = \dots\dots\dots$  [2]

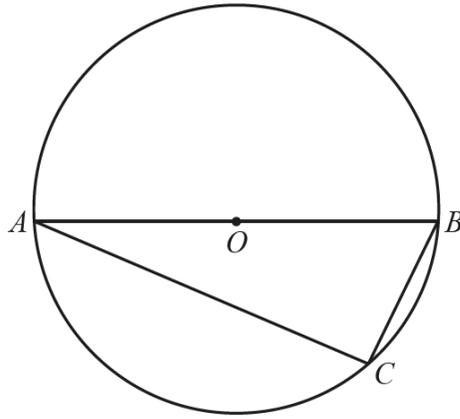


5. Nov/2023/Paper\_0580/12/No.15

Calculate the interior angle of a regular 9-sided polygon.

..... [2]





NOT TO SCALE

$A$ ,  $B$  and  $C$  are points on a circle, centre  $O$ .

(a) Draw a tangent to the circle at point  $A$ .

[1]

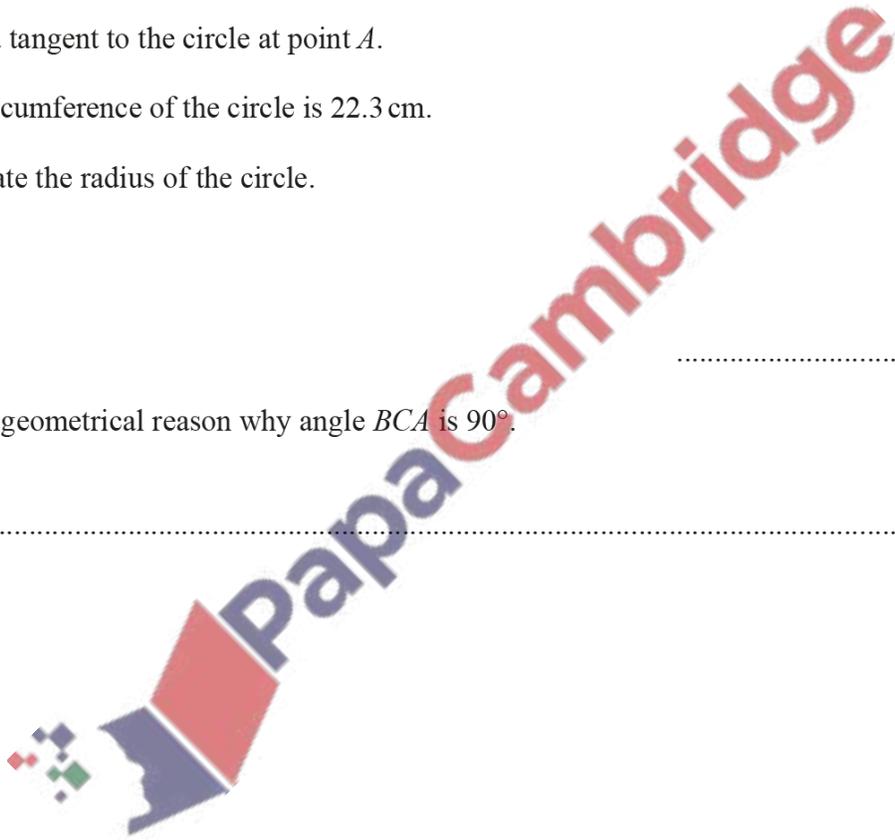
(b) The circumference of the circle is 22.3 cm.

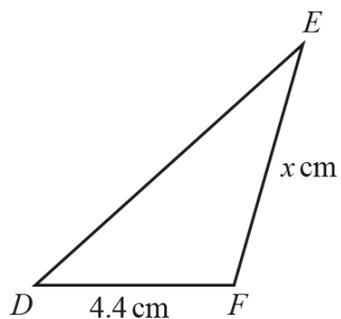
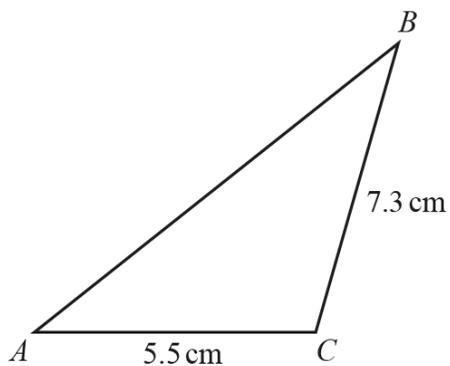
Calculate the radius of the circle.

..... cm [2]

(c) Give a geometrical reason why angle  $BCA$  is  $90^\circ$ .

..... [1]



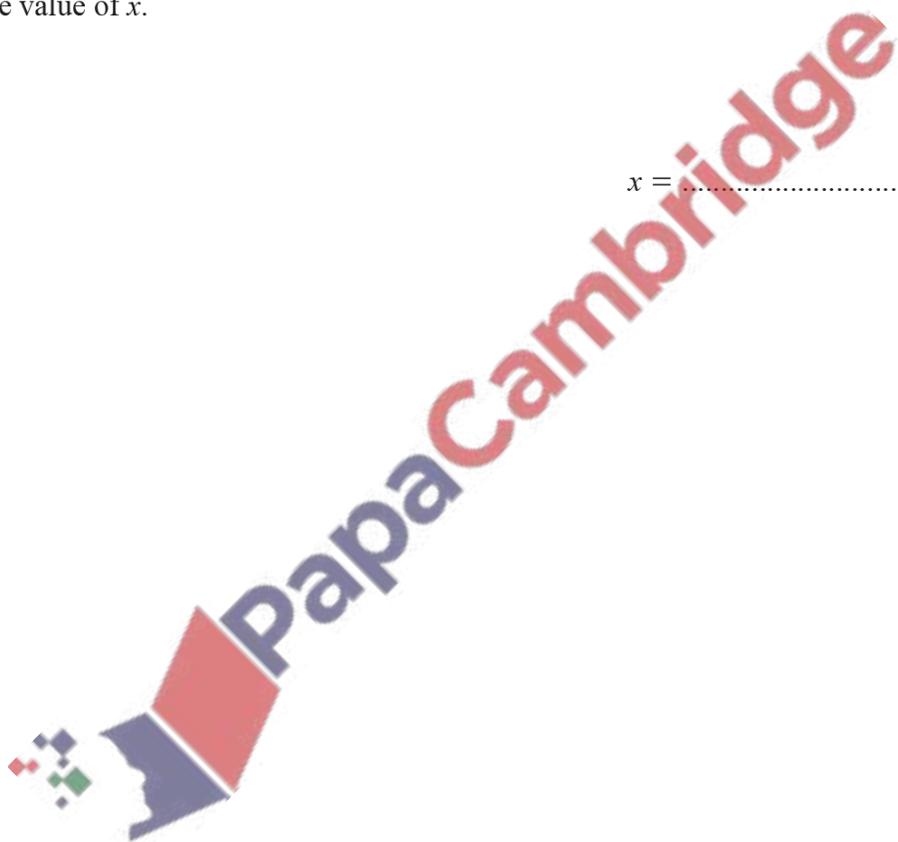


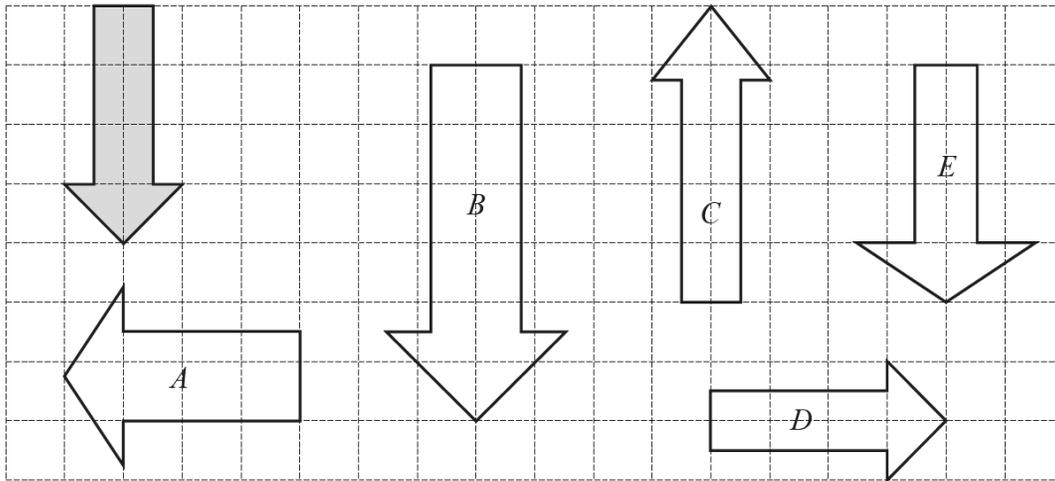
NOT TO  
SCALE

Triangle  $ABC$  is mathematically similar to triangle  $DEF$ .

Calculate the value of  $x$ .

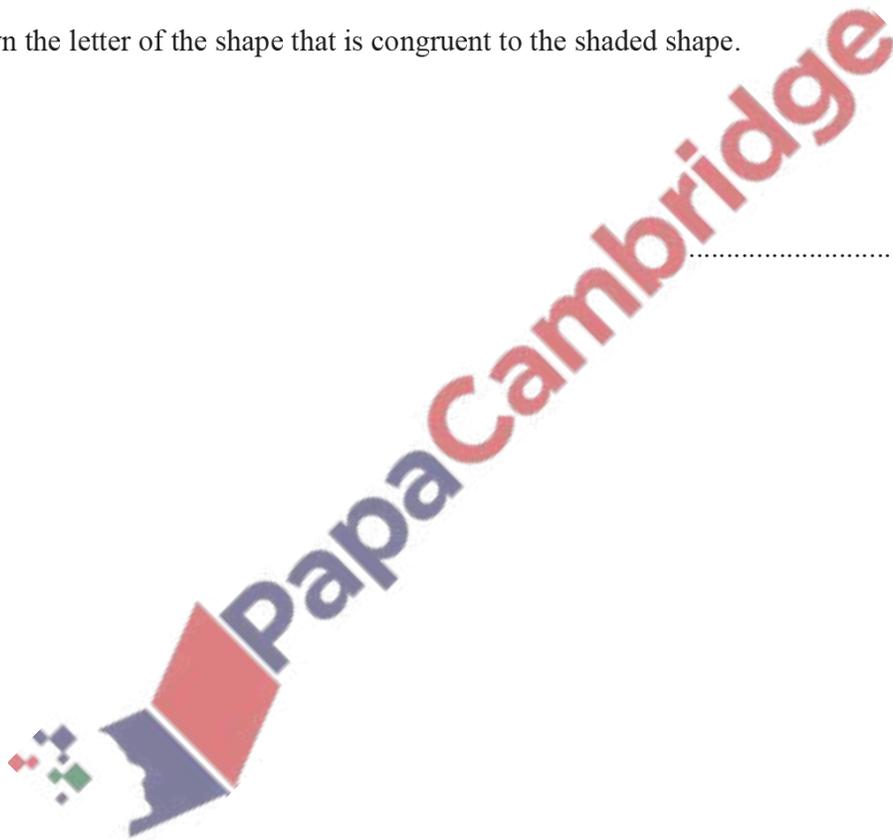
$x = \dots\dots\dots$  [2]

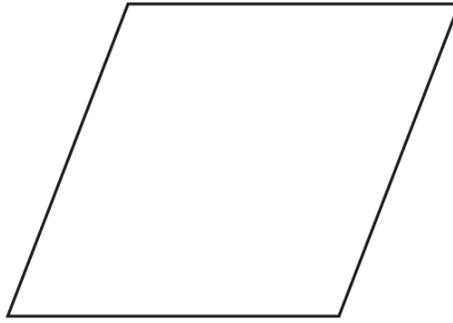




Write down the letter of the shape that is congruent to the shaded shape.

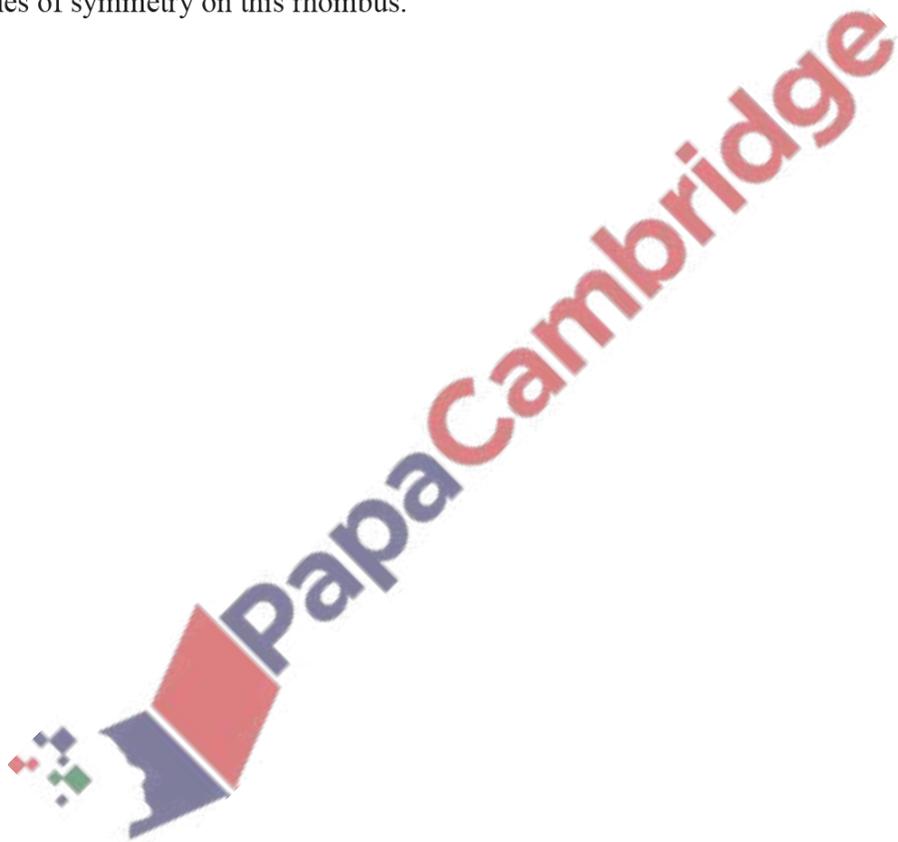
..... [1]





Draw the lines of symmetry on this rhombus.

[2]



In triangle  $LMN$ ,  $LN = 7.5$  cm and  $MN = 8$  cm.

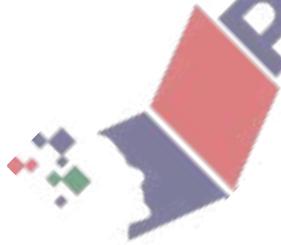
- (a) Using a ruler and compasses only, construct triangle  $LMN$ .  
Leave in your construction arcs.  
The line  $LM$  has been drawn for you.

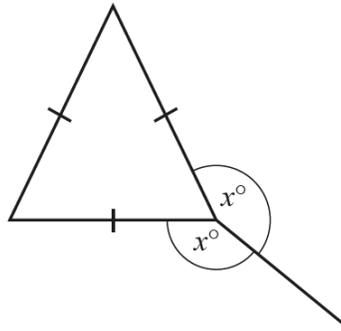


[2]

- (b) Write down the mathematical name for this type of triangle.

..... [1]

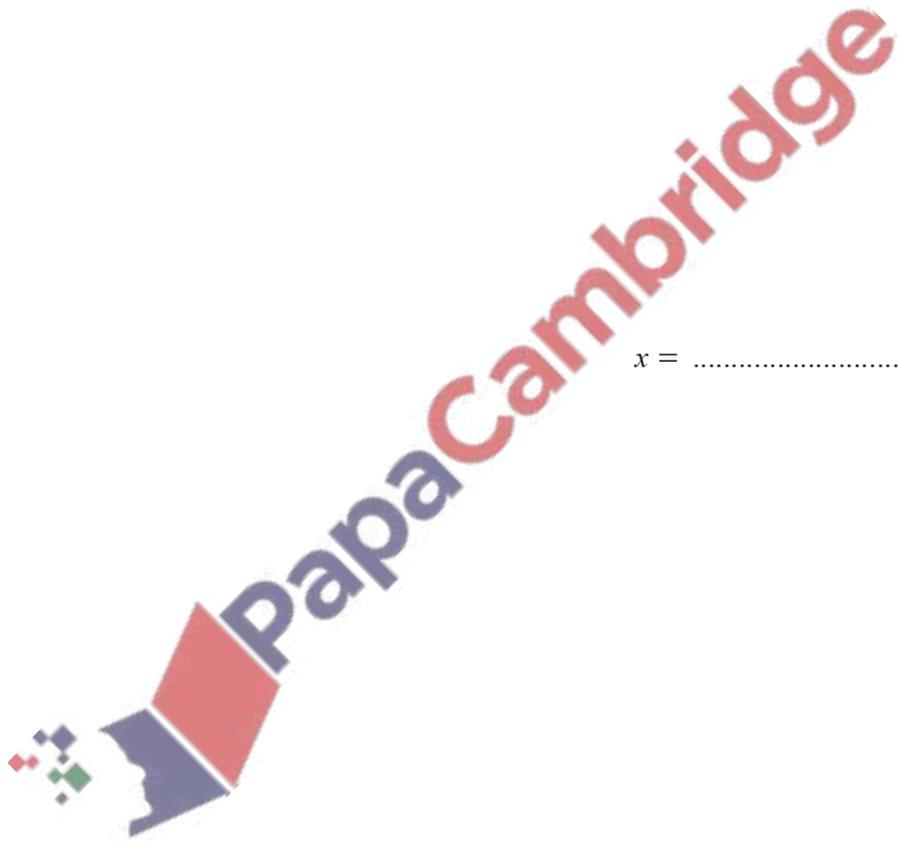




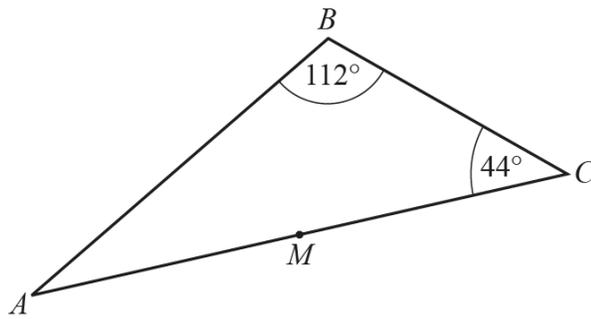
NOT TO  
SCALE

The diagram shows an equilateral triangle.

Find the value of  $x$ .



$x = \dots\dots\dots$  [2]



NOT TO  
SCALE

The diagram shows triangle  $ABC$ .  
 $M$  is the midpoint of  $AC$ .

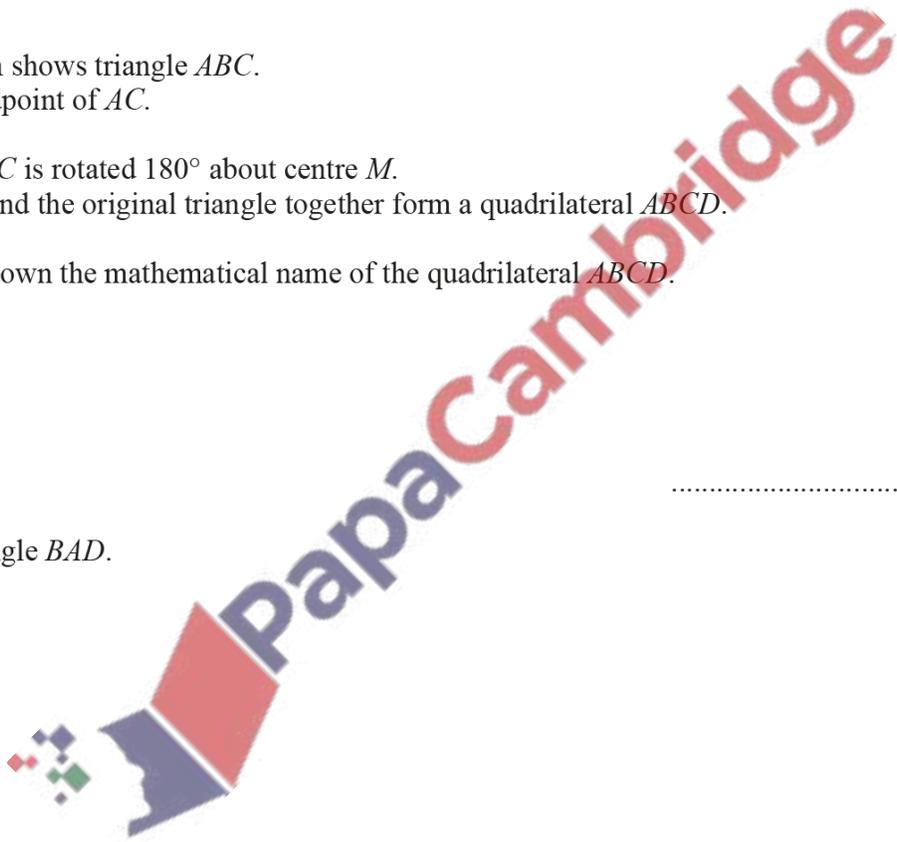
Triangle  $ABC$  is rotated  $180^\circ$  about centre  $M$ .  
The image and the original triangle together form a quadrilateral  $ABCD$ .

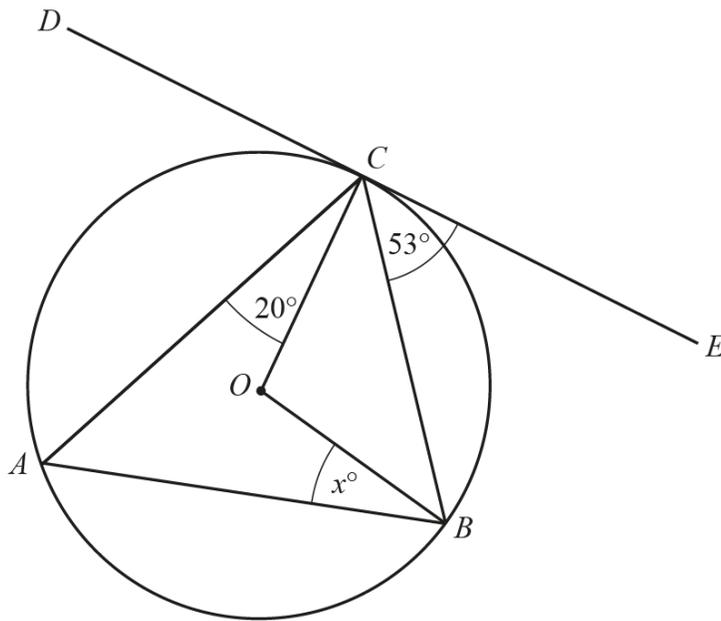
(a) Write down the mathematical name of the quadrilateral  $ABCD$ .

..... [1]

(b) Find angle  $BAD$ .

Angle  $BAD =$  ..... [2]



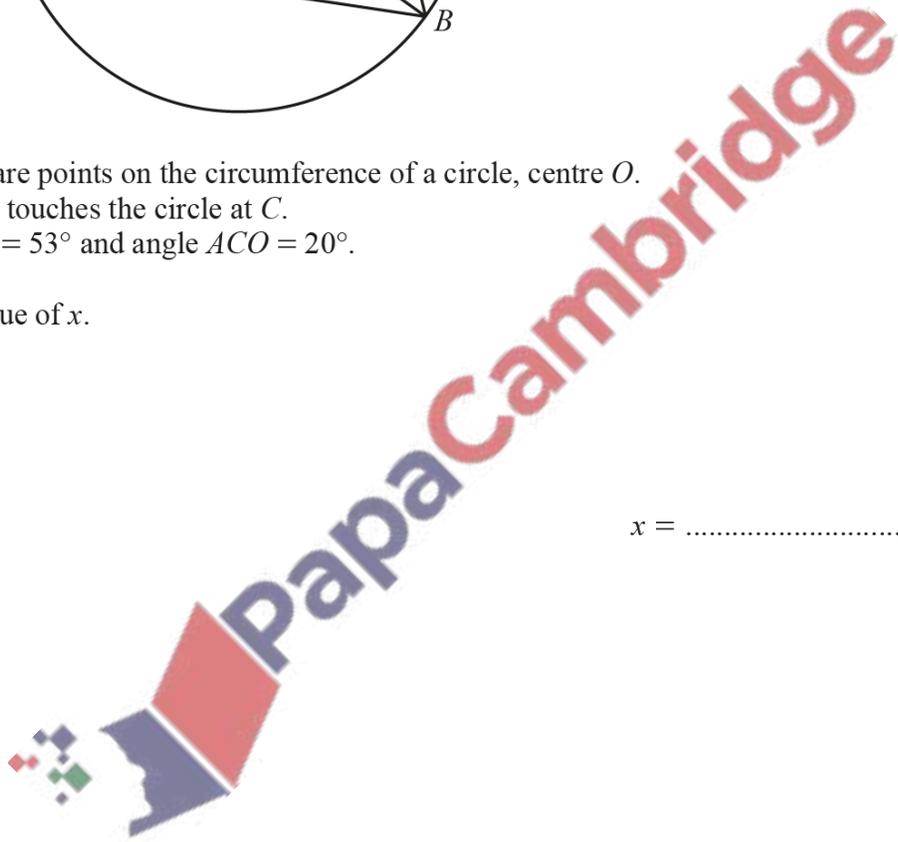


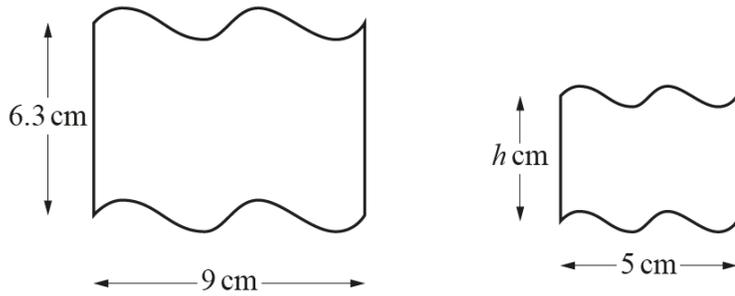
NOT TO SCALE

$A$ ,  $B$  and  $C$  are points on the circumference of a circle, centre  $O$ .  
Tangent  $DE$  touches the circle at  $C$ .  
Angle  $BCE = 53^\circ$  and angle  $ACO = 20^\circ$ .

Find the value of  $x$ .

$x = \dots\dots\dots$  [3]





NOT TO SCALE

The two shapes are mathematically similar.

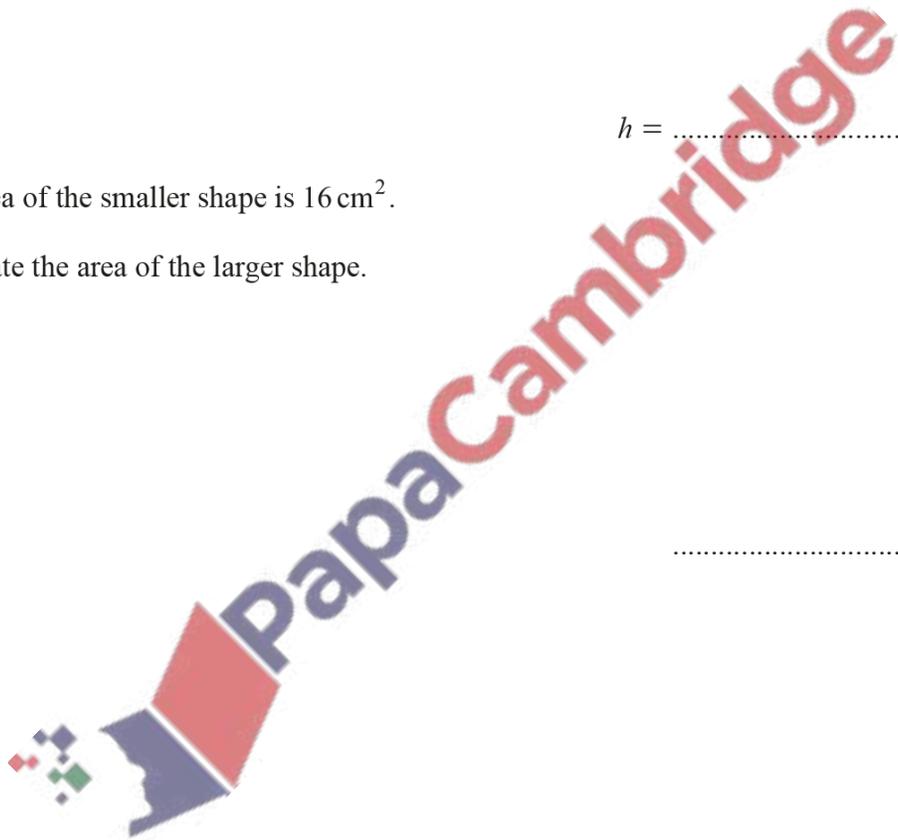
(a) Find the value of  $h$ .

$h = \dots\dots\dots$  [2]

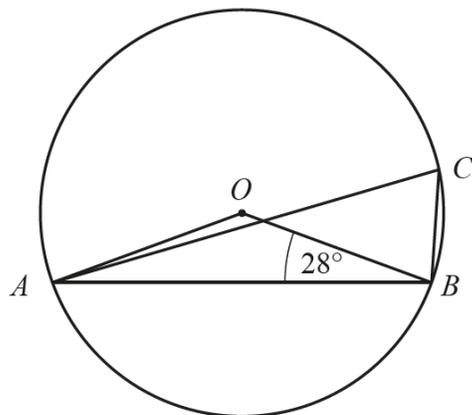
(b) The area of the smaller shape is  $16 \text{ cm}^2$ .

Calculate the area of the larger shape.

$\dots\dots\dots \text{ cm}^2$  [2]



(a)



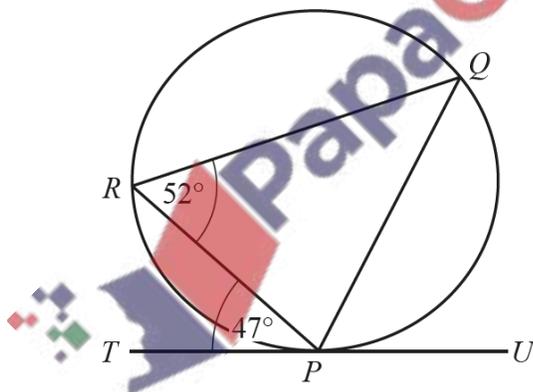
NOT TO SCALE

$A, B$  and  $C$  are points on a circle, centre  $O$ .  
 Angle  $OBA = 28^\circ$ .

Find angle  $ACB$ .

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

(b)

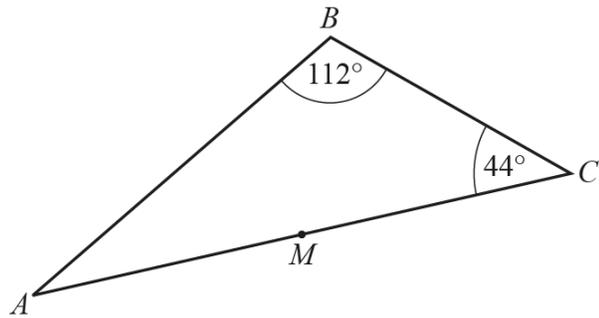


NOT TO SCALE

$P, Q$  and  $R$  are points on a circle.  
 $TU$  is a tangent to the circle at  $P$ .  
 Angle  $TPR = 47^\circ$  and angle  $PRQ = 52^\circ$ .

Find angle  $RPQ$ .

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



NOT TO SCALE

The diagram shows triangle  $ABC$ .  
 $M$  is the midpoint of  $AC$ .

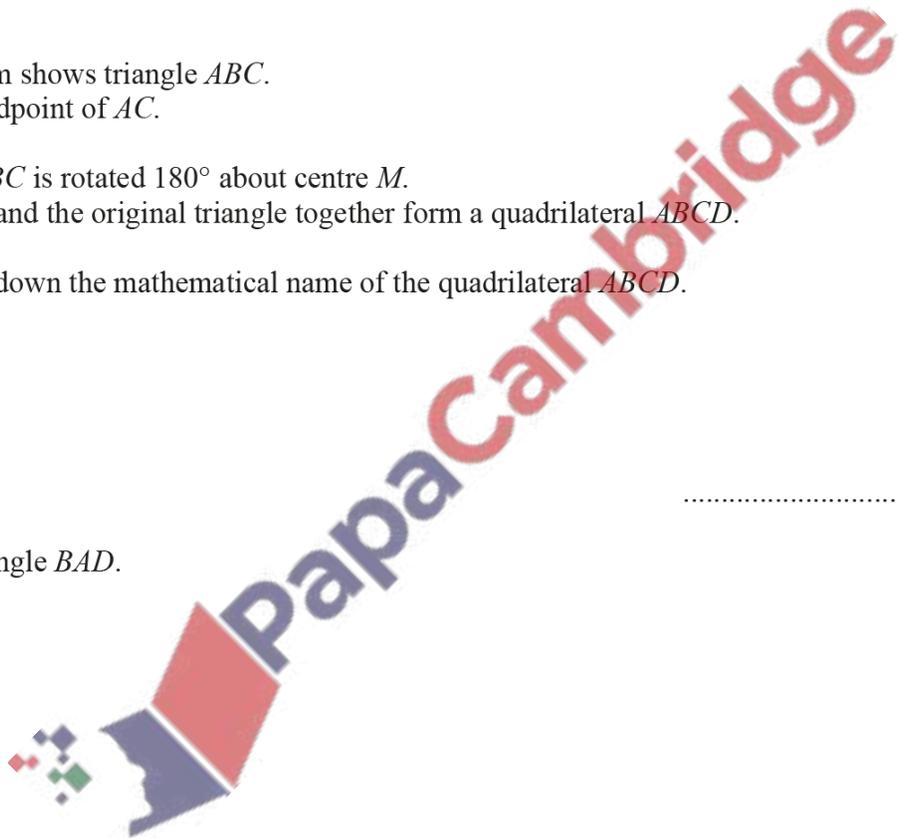
Triangle  $ABC$  is rotated  $180^\circ$  about centre  $M$ .  
 The image and the original triangle together form a quadrilateral  $ABCD$ .

(a) Write down the mathematical name of the quadrilateral  $ABCD$ .

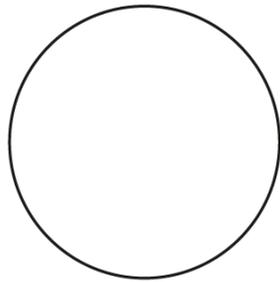
..... [1]

(b) Find angle  $BAD$ .

Angle  $BAD =$  ..... [2]



(a) The diagram shows a circle.



NOT TO  
SCALE

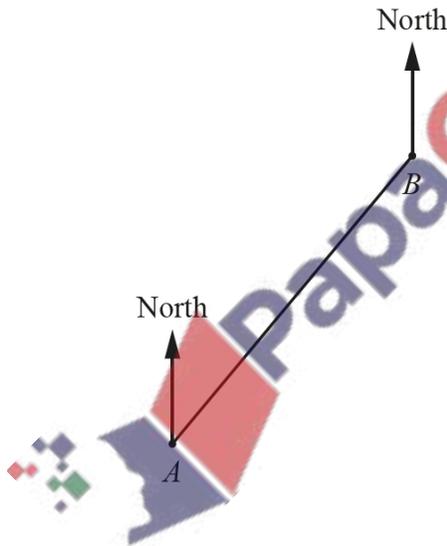
(i) The diameter of this circle is 168 mm.

Write down the radius of this circle.

..... mm [1]

(ii) On the diagram, draw a chord of this circle. [1]

(b) The scale drawing shows the position of ship *A* and the position of ship *B*.  
The scale is 1 cm represents 6 km.



Scale : 1 cm to 6 km

Another ship, *C*, is 45 km from ship *B* on a bearing of  $124^\circ$ .

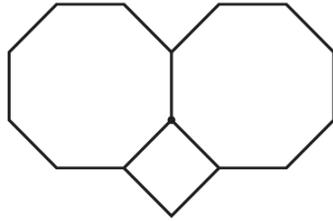
(i) On the scale drawing, mark the position of ship *C*. [2]

(ii) Find the actual distance of ship *C* from ship *A*.

(c) (i) Show that the interior angle of a regular octagon is  $135^\circ$ .

[1]

(ii)

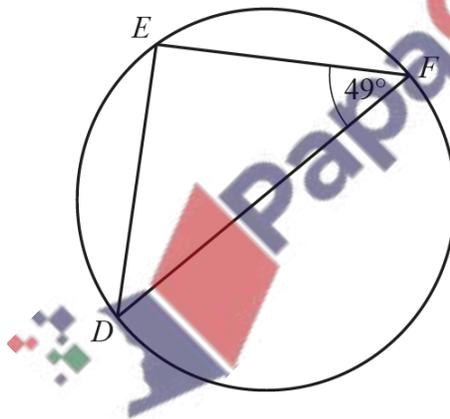


NOT TO  
SCALE

Show that two regular octagons and a square meet at a point without any gaps.

[1]

(d)



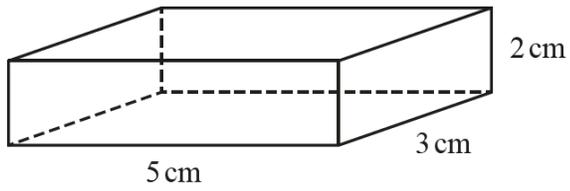
NOT TO  
SCALE

The diagram shows points  $D$ ,  $E$  and  $F$  on the circumference of a circle.  
 $DF$  is a diameter of the circle.

Find angle  $EDF$ .

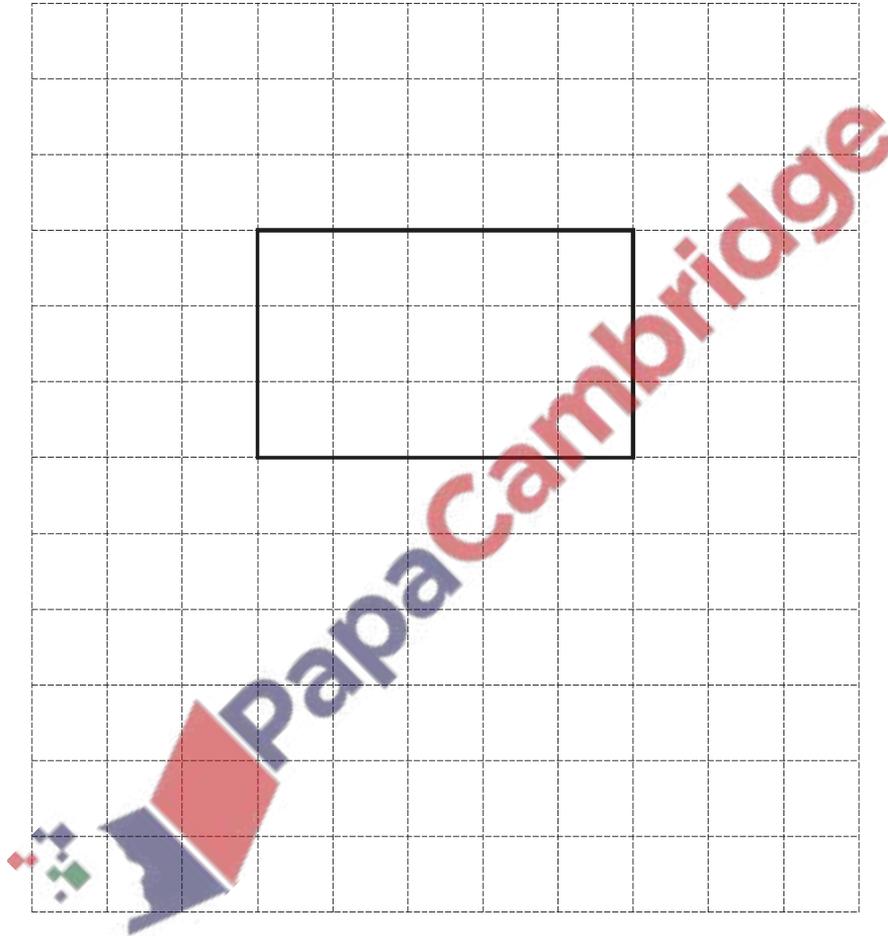
Angle  $EDF = \dots\dots\dots$  [2]

(a) The diagram shows a cuboid.



NOT TO SCALE

(i) On the  $1\text{cm}^2$  grid, complete the net of the cuboid. One face has been drawn for you.

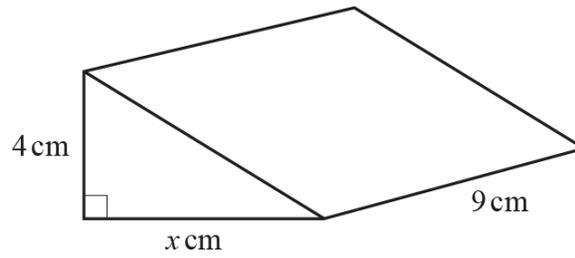
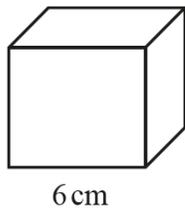


[3]

(ii) Calculate the surface area of the cuboid.

.....  $\text{cm}^2$  [2]

(b) The diagram shows two solids: a cube and a right-angled triangular prism.

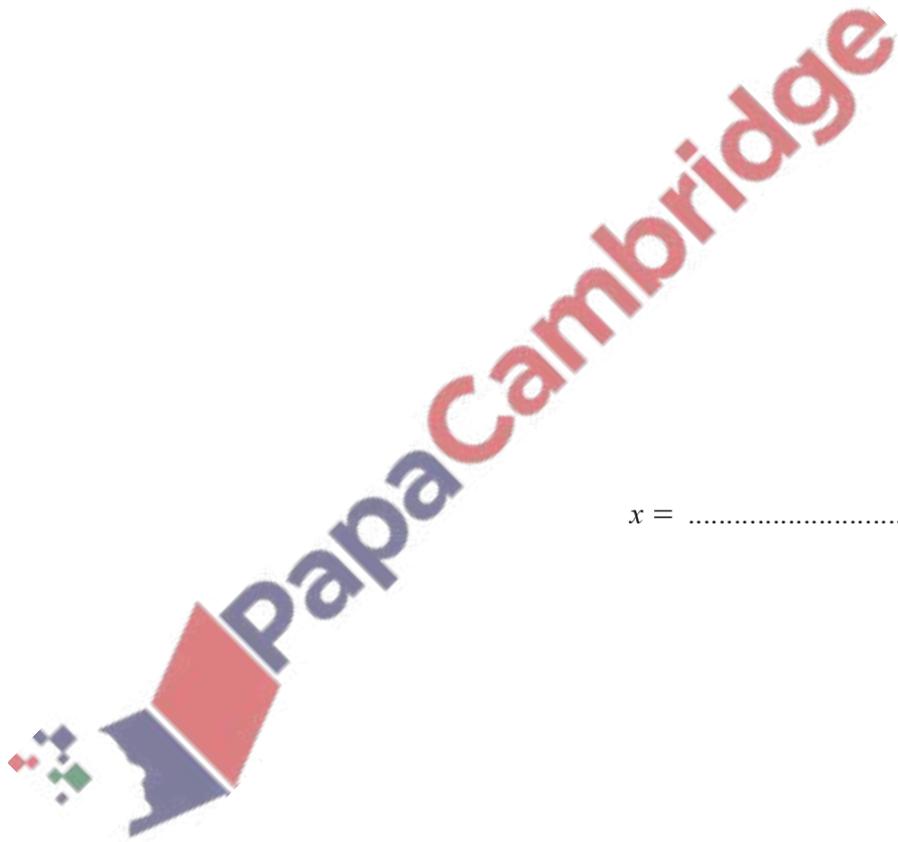


NOT TO  
SCALE

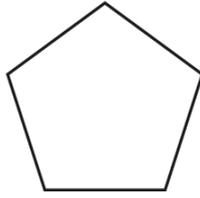
Both solids have the same volume.

Calculate the value of  $x$ .

$x = \dots\dots\dots$  [4]



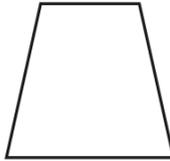
(a) (i)



Write down the mathematical name for this polygon.

..... [1]

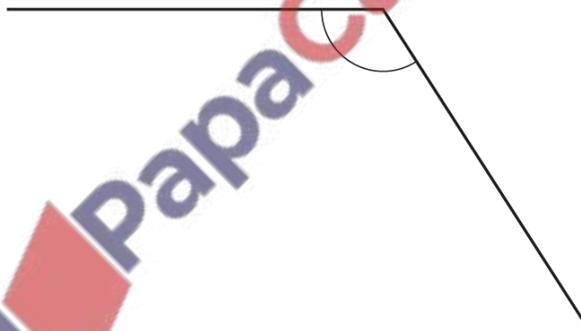
(ii)



Write down the mathematical name for this quadrilateral.

..... [1]

(iii)



(a) Write down the mathematical name for this type of angle.

..... [1]

(b) Measure the size of this angle.

..... [1]

(b)



Draw the lines of symmetry on this rectangle.

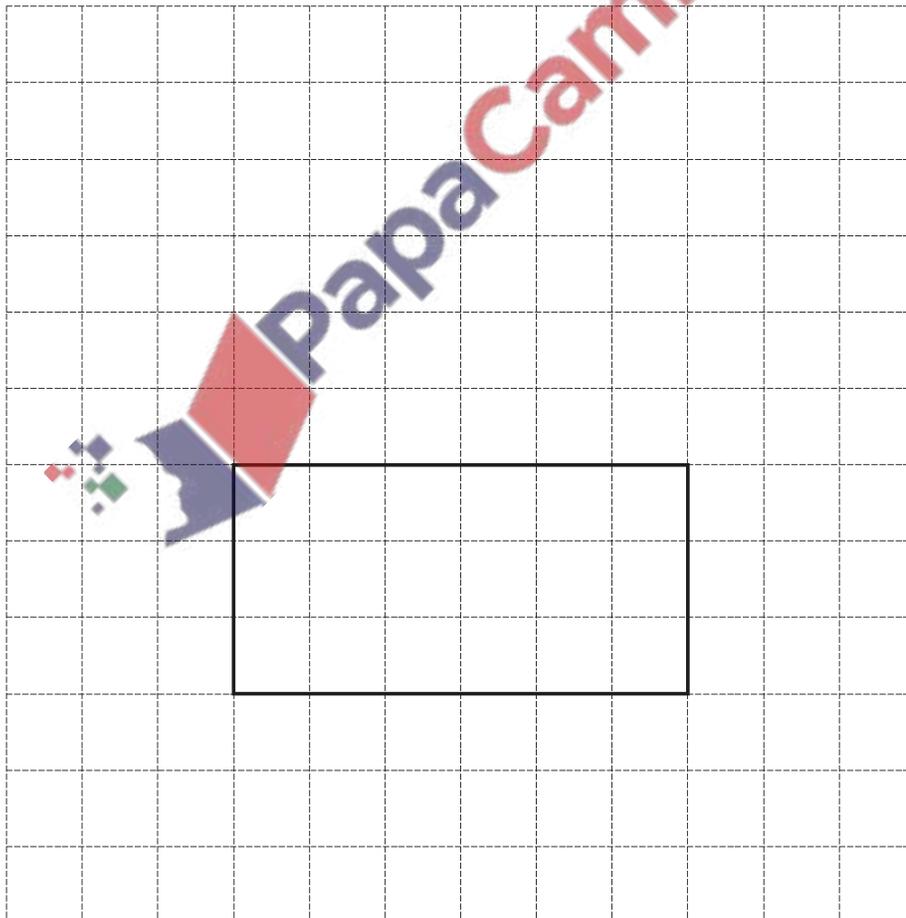
[2]

(c) A cuboid measures 6 cm by 3 cm by 2 cm.

(i) Work out the volume of the cuboid.

..... cm<sup>3</sup> [1]

(ii) Draw a net of the cuboid on the 1 cm<sup>2</sup> grid.  
One face has been drawn for you.



[3]

(a) In triangle  $RST$ ,  $RT = 7$  cm and  $ST = 4$  cm.

(i) **Using a ruler and compasses only**, construct triangle  $RST$ .

Leave in your construction arcs.

The line  $RS$  has been drawn for you.



[2]

(ii) Measure the distance from  $S$  to the midpoint of  $RT$ .

Give your answer in millimetres.

..... mm [1]

(b) Town  $A$  is 8.5 cm from town  $B$  on a map.

The scale of the map is 1 : 50 000.

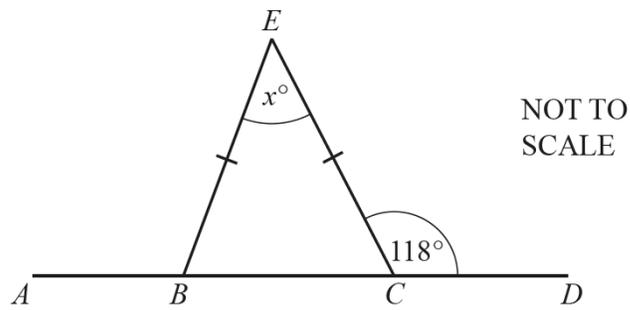
Calculate the actual distance from town  $A$  to town  $B$ .

Give your answer in kilometres.



..... km [2]

(c)

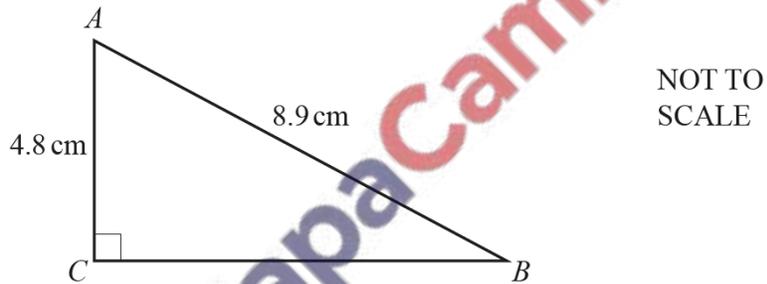


The diagram shows triangle  $BCE$  and a straight line  $ABCD$ .  
 $BE = CE$  and angle  $DCE = 118^\circ$ .

Find the value of  $x$ .

$x = \dots\dots\dots$  [2]

(d)

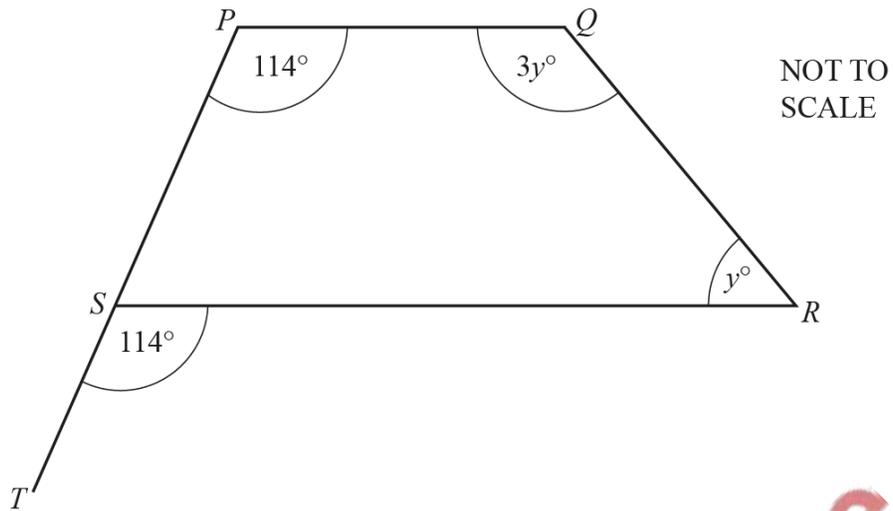


The diagram shows a right-angled triangle  $ABC$ .

Show that  $BC$  is 7.5 cm, correct to 2 significant figures.

[3]

(a)



In the diagram,  $PST$  is a straight line.

(i) Give the geometrical reason why the lines  $PQ$  and  $SR$  are parallel.

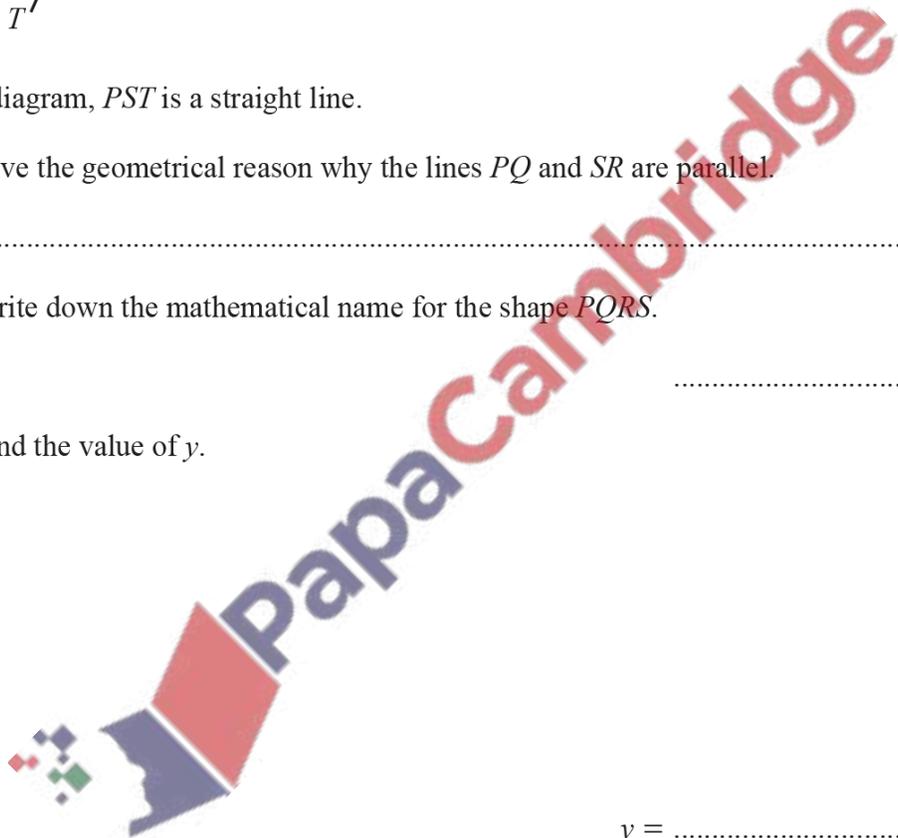
..... [1]

(ii) Write down the mathematical name for the shape  $PQRS$ .

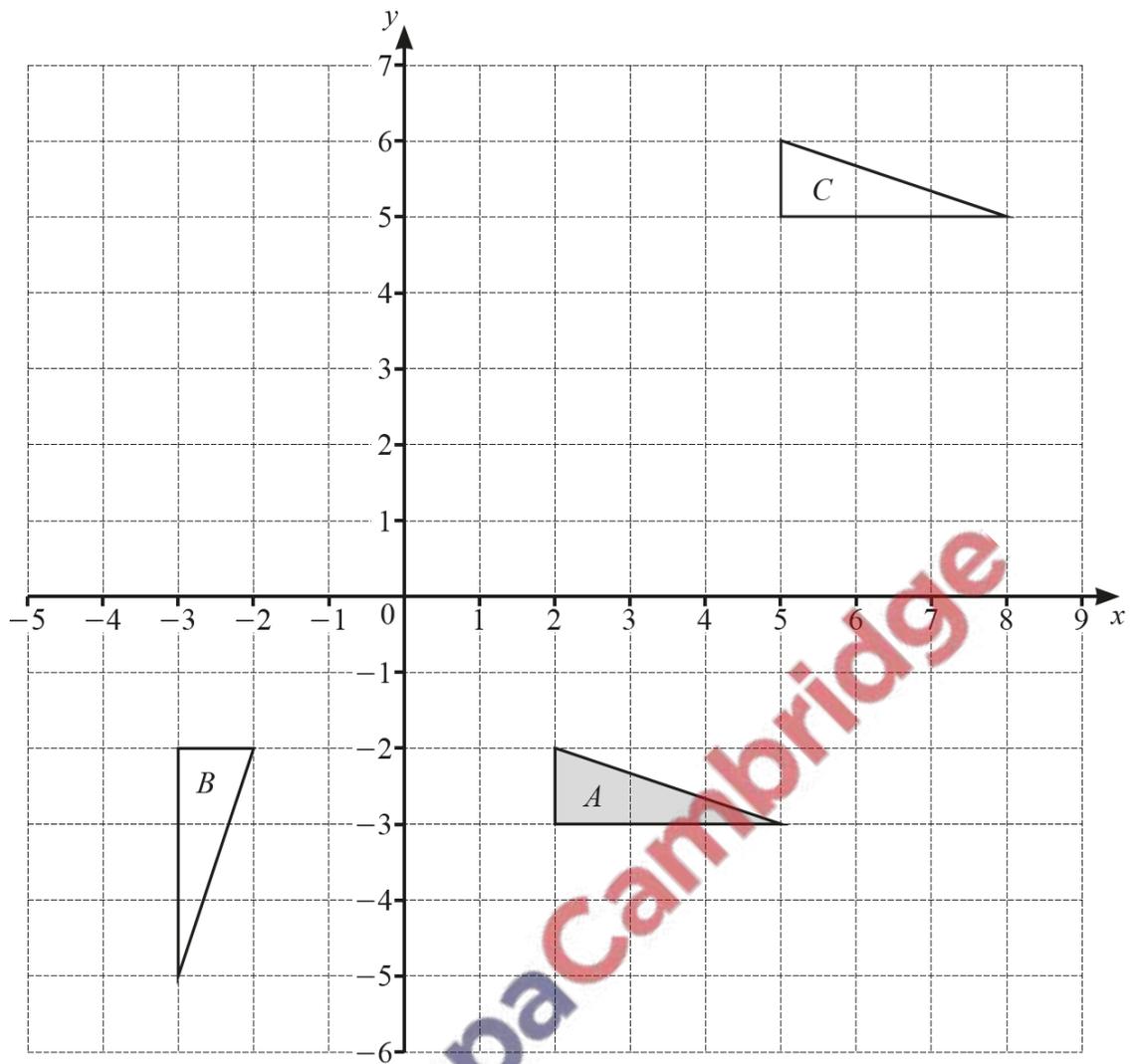
..... [1]

(iii) Find the value of  $y$ .

$y =$  ..... [2]



(b)



(i) Describe fully the **single** transformation that maps triangle  $A$  onto triangle  $B$ .

.....  
.....

[3]

(ii) Describe fully the **single** transformation that maps triangle  $A$  onto triangle  $C$ .

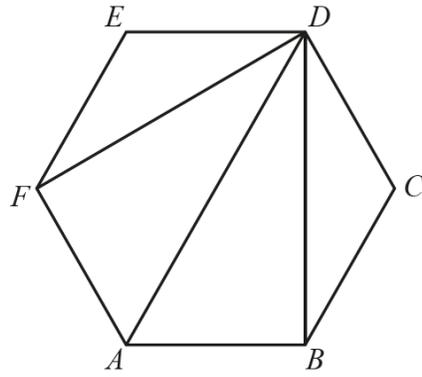
.....  
.....

[2]

(iii) On the grid, enlarge triangle  $A$  by scale factor 3, centre  $(4, -5)$ .

[2]

(a)



NOT TO  
SCALE

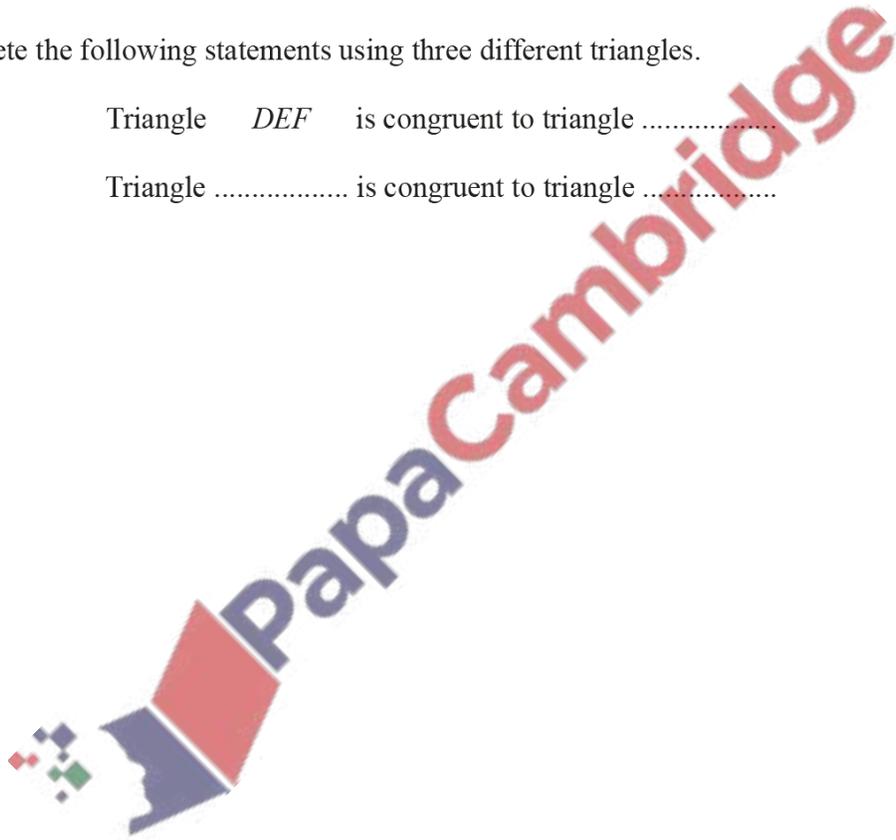
$ABCDEF$  is a regular hexagon.  
 $DF$ ,  $DA$  and  $DB$  are diagonals.

Complete the following statements using three different triangles.

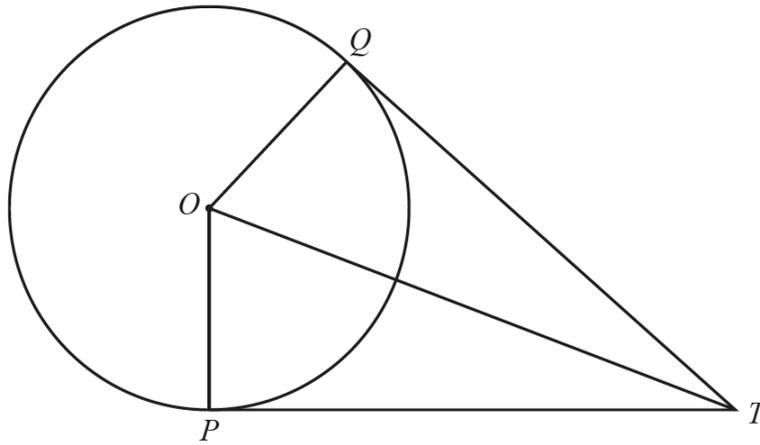
Triangle  $DEF$  is congruent to triangle .....

Triangle ..... is congruent to triangle .....

[2]



(b)



NOT TO  
SCALE

$P$  and  $Q$  are points on the circle with centre  $O$ .  
 $TP$  and  $TQ$  are tangents to the circle from the point  $T$ .

Complete the following statements and reasons.

In triangles  $OPT$  and  $OQT$

$OP = \dots\dots\dots$  because each is a radius of the circle

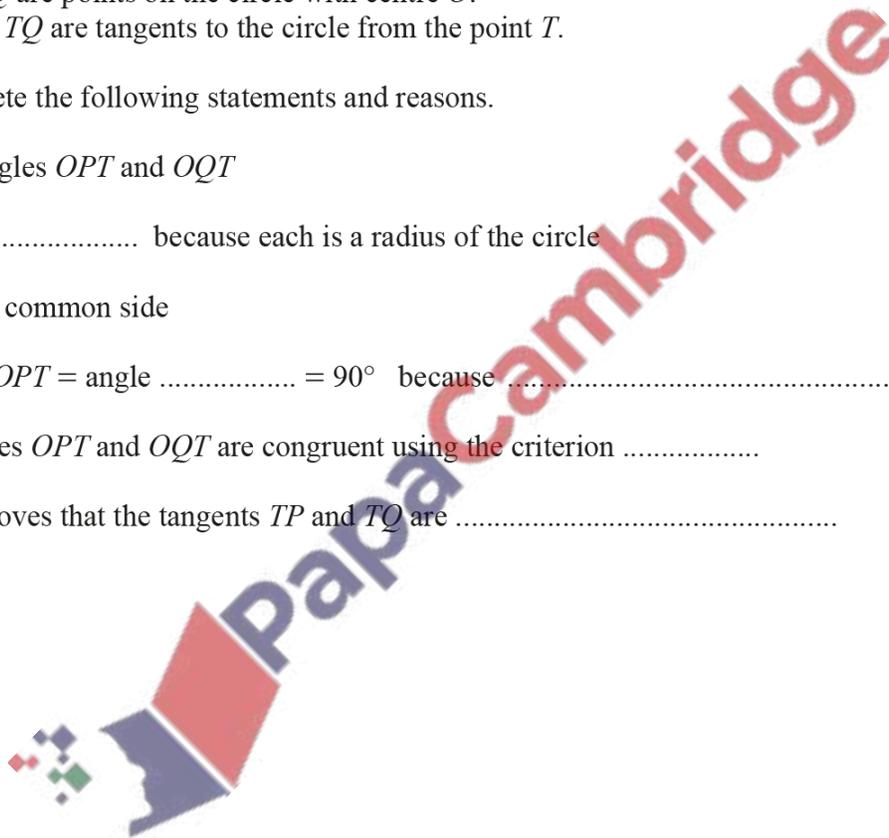
$OT$  is a common side

Angle  $OPT =$  angle  $\dots\dots\dots = 90^\circ$  because  $\dots\dots\dots$

Triangles  $OPT$  and  $OQT$  are congruent using the criterion  $\dots\dots\dots$

This proves that the tangents  $TP$  and  $TQ$  are  $\dots\dots\dots$

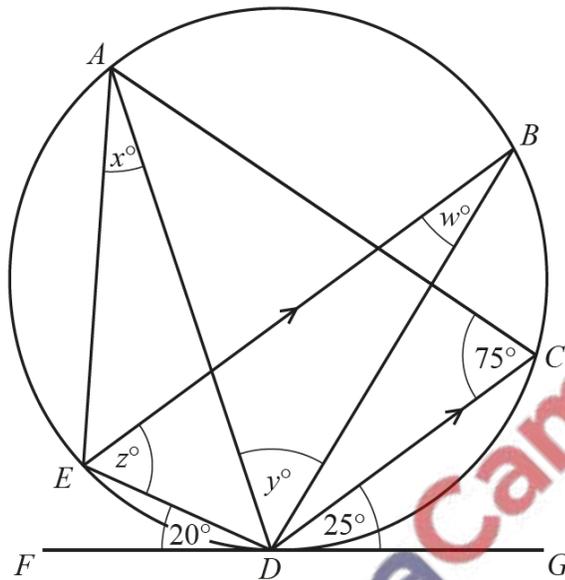
[5]



(a) Find the size of one interior angle of a regular 10-sided polygon.

..... [2]

(b)

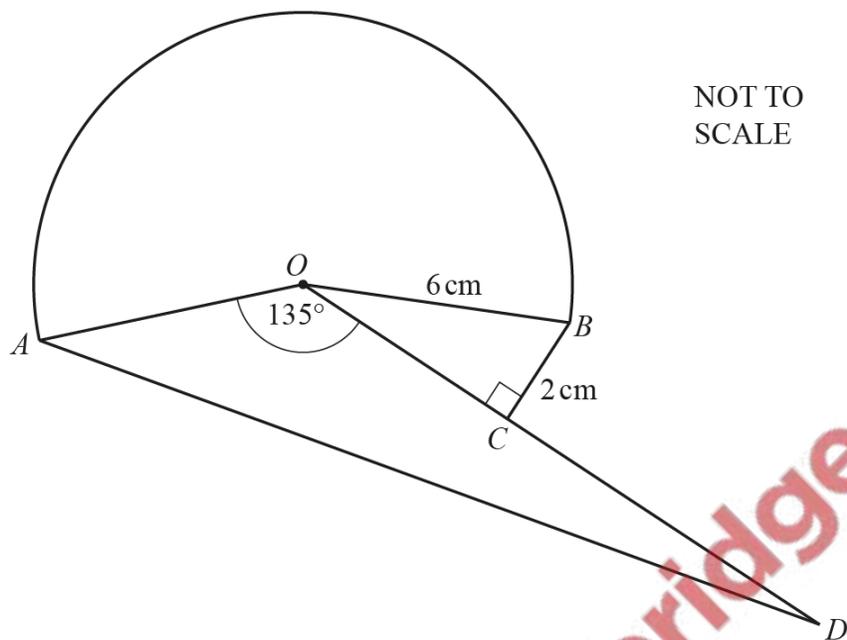


NOT TO SCALE

The points  $A, B, C, D$  and  $E$  lie on a circle.  
 $FG$  is a tangent to the circle at  $D$ .  
 $EB$  is parallel to  $DC$ .

Find the value of each of  $w, x, y$  and  $z$ .

(a)



The diagram shows a shape made from a major sector  $AOB$  and triangles  $OBC$  and  $AOD$ .  $OB = 6\text{ cm}$ ,  $BC = 2\text{ cm}$ , obtuse angle  $AOC = 135^\circ$  and angle  $BCO = 90^\circ$ .

(i) Show that angle  $BOC = 19.5^\circ$ , correct to 1 decimal place.

[2]

(ii) Calculate the area of the major sector  $AOB$ .

.....  $\text{cm}^2$  [3]

(iii)  $C$  is the midpoint of  $OD$ .

Calculate  $AD$ .

..... cm [5]

(iv) Calculate the total area of the shape.

.....  $\text{cm}^2$  [4]

(b) A sector of a circle has radius 8 cm and area  $160 \text{ cm}^2$ .  
A mathematically similar sector has radius 20 cm.

Calculate the area of the larger sector.

.....  $\text{cm}^2$  [3]