1. Nov/2021/Paper_13/No.24b
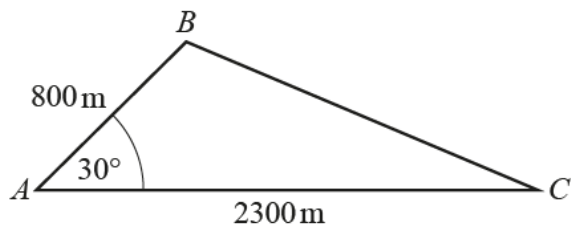
(b)
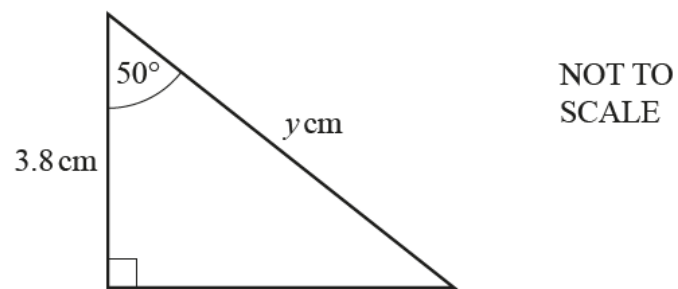
NOT TO SCALE

Show that the value of *y* is 5.9, correct to 2 significant figures.
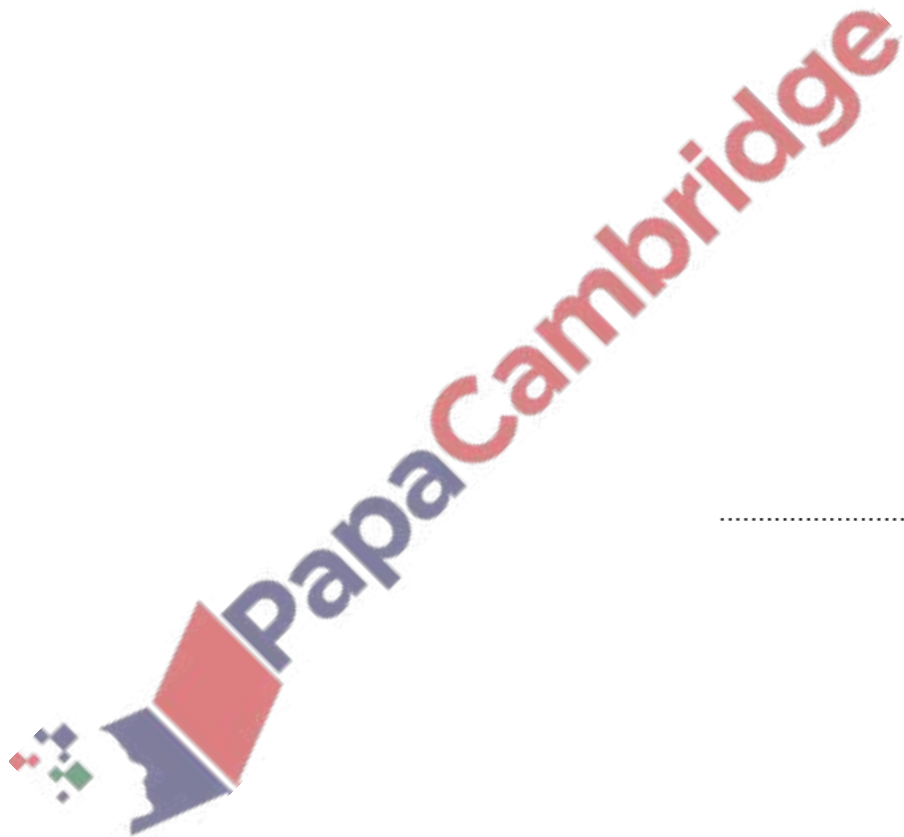
[3]

B

800 m

NOT TO
SCALE

30°

A

2300 m

C
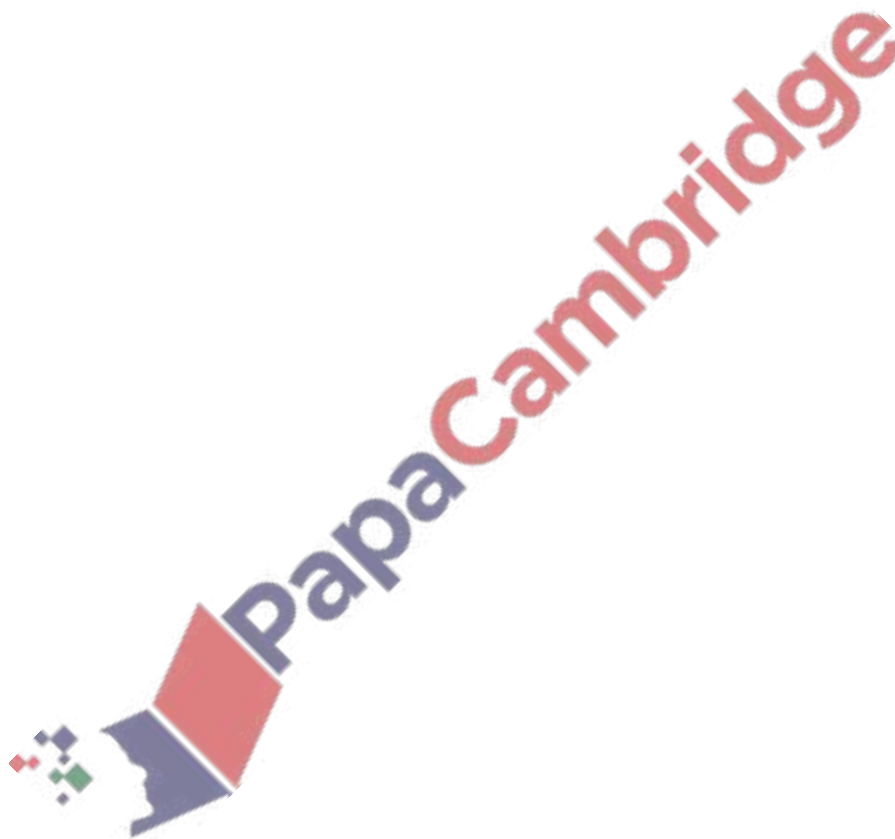
The diagram shows some land in the shape of a triangle ABC.
Houses are built on this land.
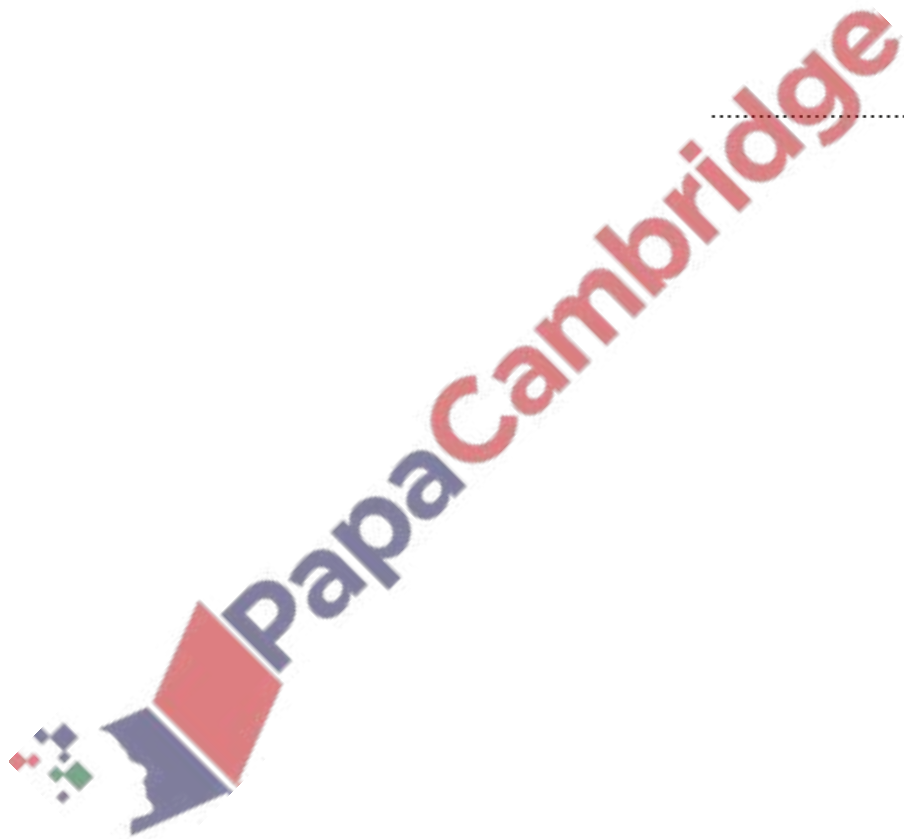Each house requires $400\,\text{m}^2$ of land.

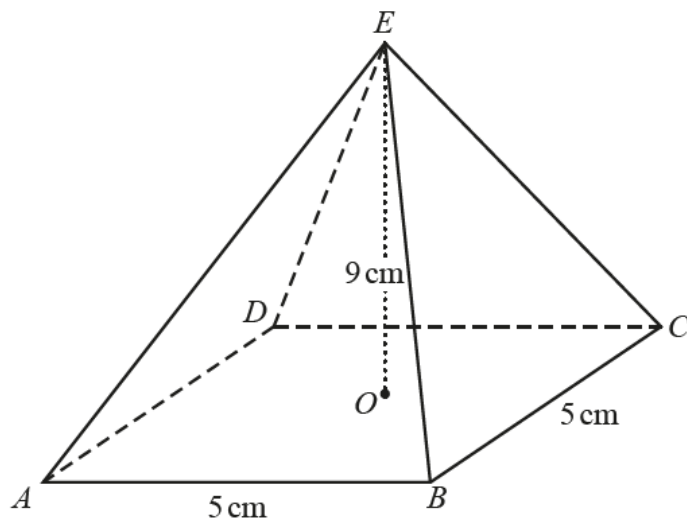Find the greatest number of houses that can be built on this land.

.... [3]

3.

Solve $3(2 + \cos x) = 5$ for $0° \leqslant x \leqslant 360°$.

.... [3]
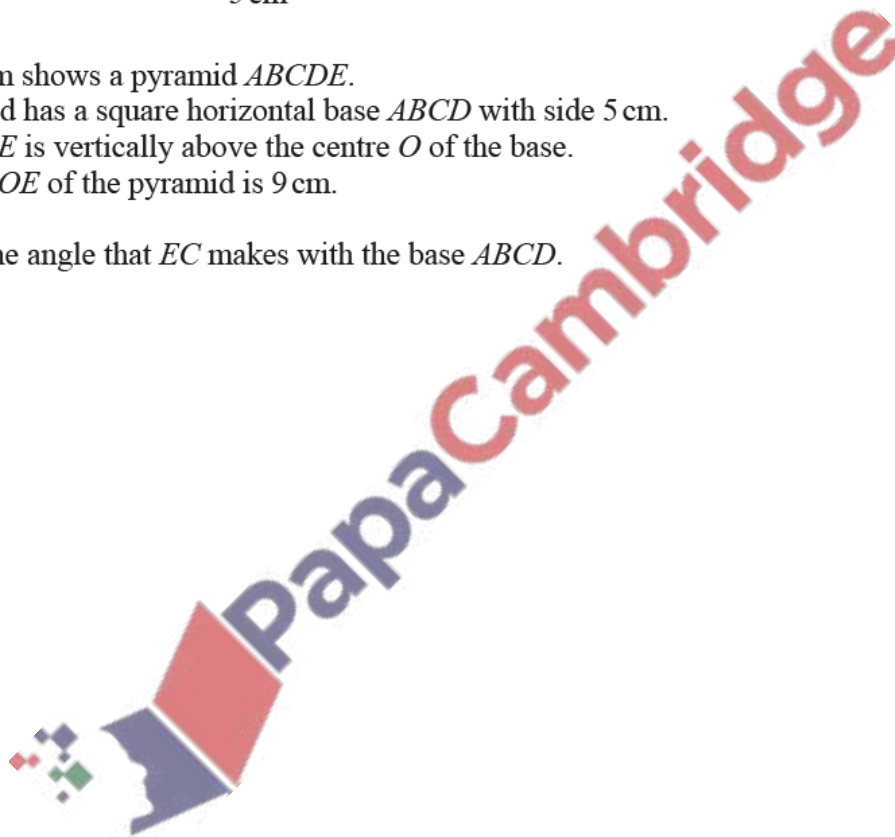
The diagram shows a pyramid $ABCDE$.
The pyramid has a square horizontal base $ABCD$ with side $5\,\text{cm}$.
The vertex E is vertically above the centre O of the base.
The height OE of the pyramid is $9\,\text{cm}$.
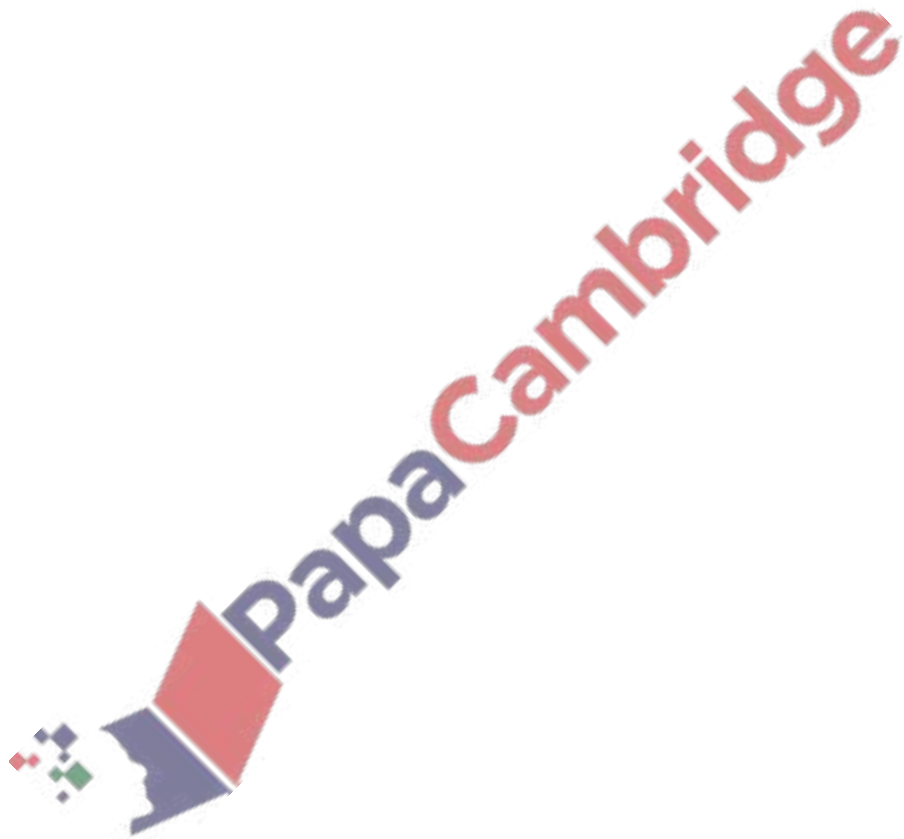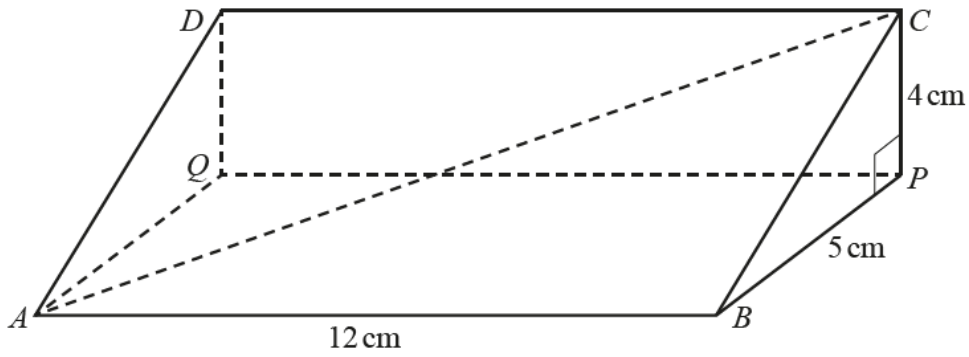
Calculate the angle that EC makes with the base $ABCD$.

.... [4]

5.

Solve the equation $\ 7\sin x + 2 = 0\ $ for $0° \leqslant x \leqslant 360°$.

.... [3]

The diagram shows a triangular prism.
Angle $BPC = 90°$.

(a) Calculate AC.

$AC =$ .... cm [3]

(b) Calculate the angle between AC and the base $ABPQ$.

.... [3]

7.
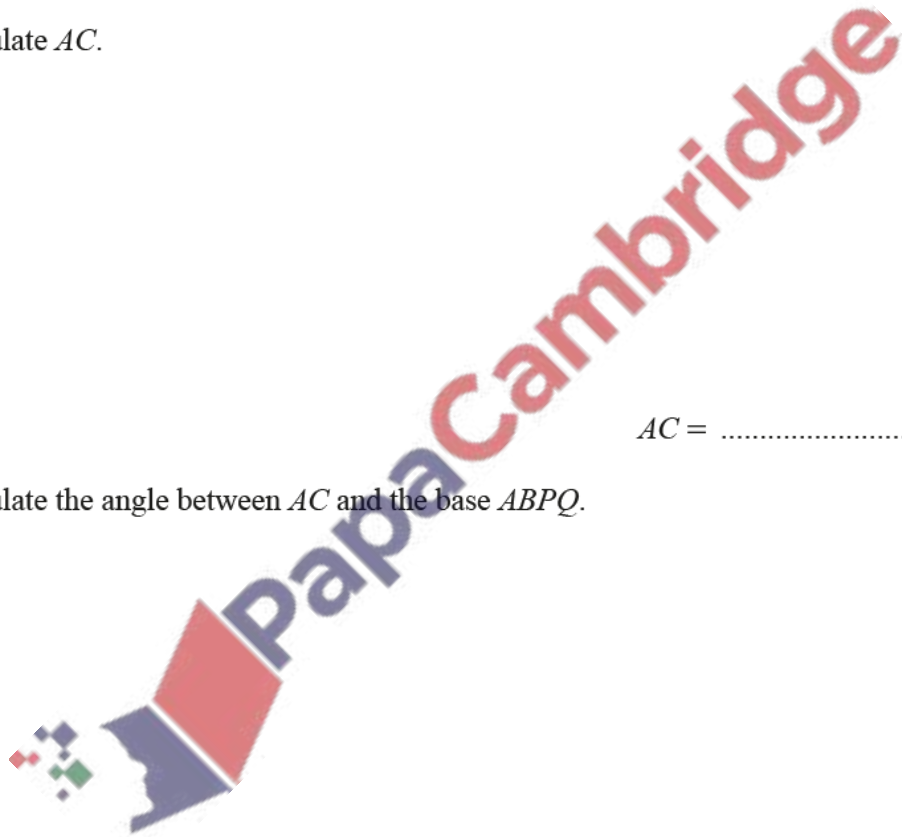
$\tan x = \sqrt{3}$ and $0° \leqslant x \leqslant 360°$.

Find all the possible values of x.

.... [2]

8. Nov/2021/Paper_31/No.8ii

(a)
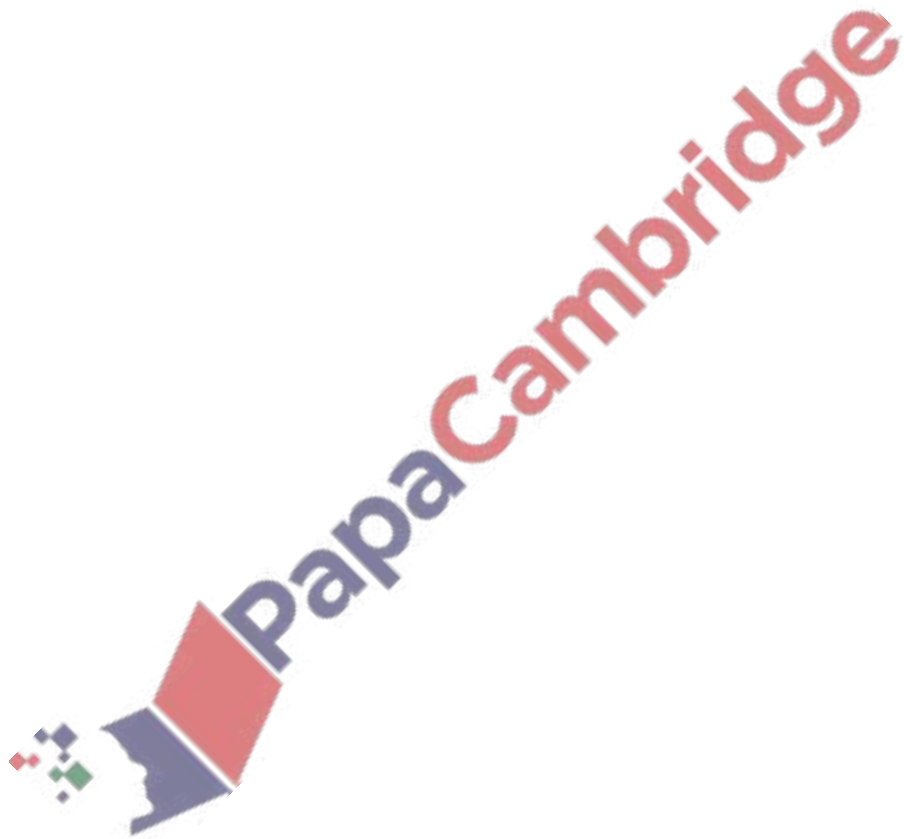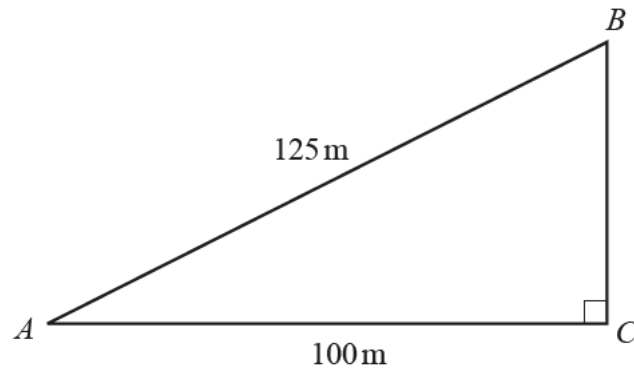
The diagram shows a right-angled triangle, ABC.

(i) Show that $BC = 75\,\text{m}$.

[2]

(ii) Calculate angle BAC.

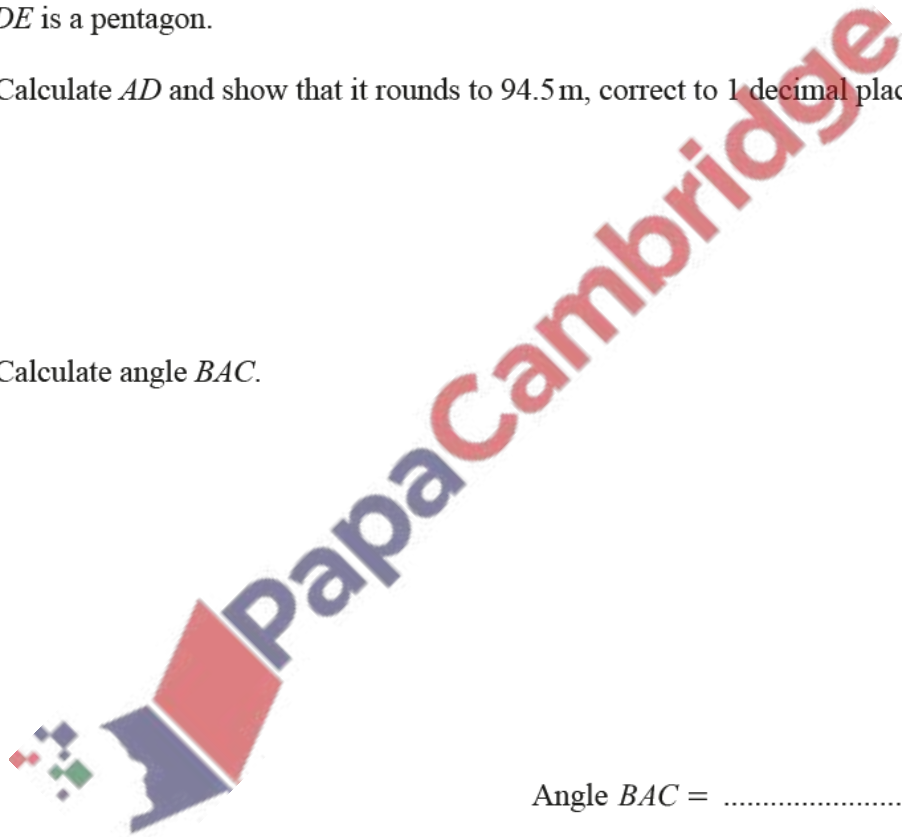Angle $BAC =$ .... [2]

(a)
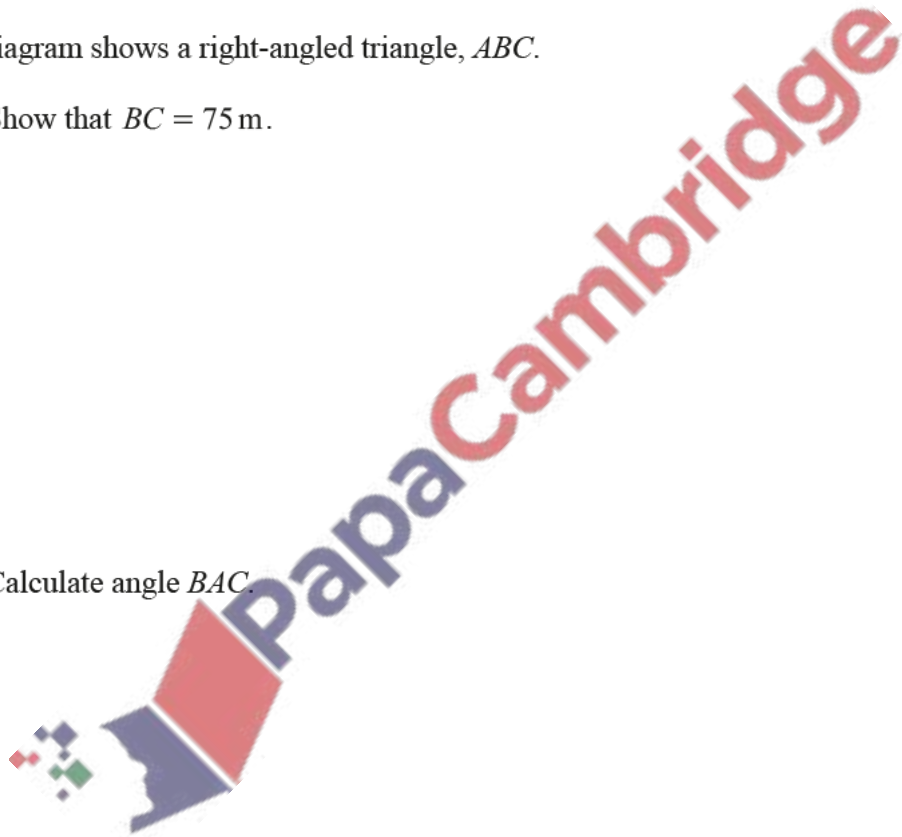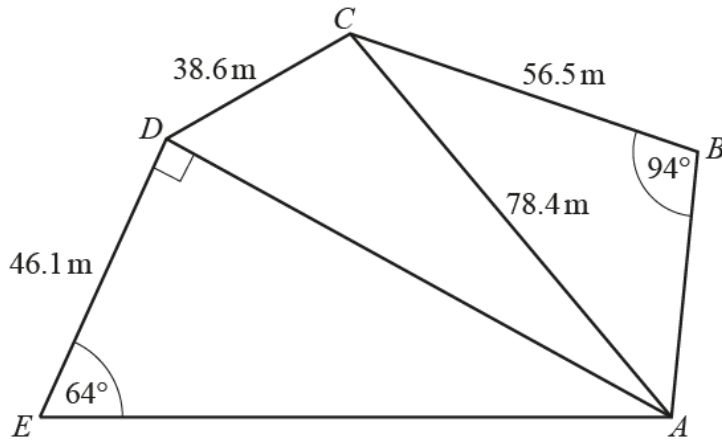
ABCDE is a pentagon.

(i) Calculate *AD* and show that it rounds to 94.5 m, correct to 1 decimal place.

[2]

(ii) Calculate angle *BAC*.

Angle *BAC* = ... [3]

(iii) Calculate the largest angle in triangle *CAD*.

.... [4]

(b)

NOT TO SCALE

34.3 cm

21.5 cm

111°

27.6 cm
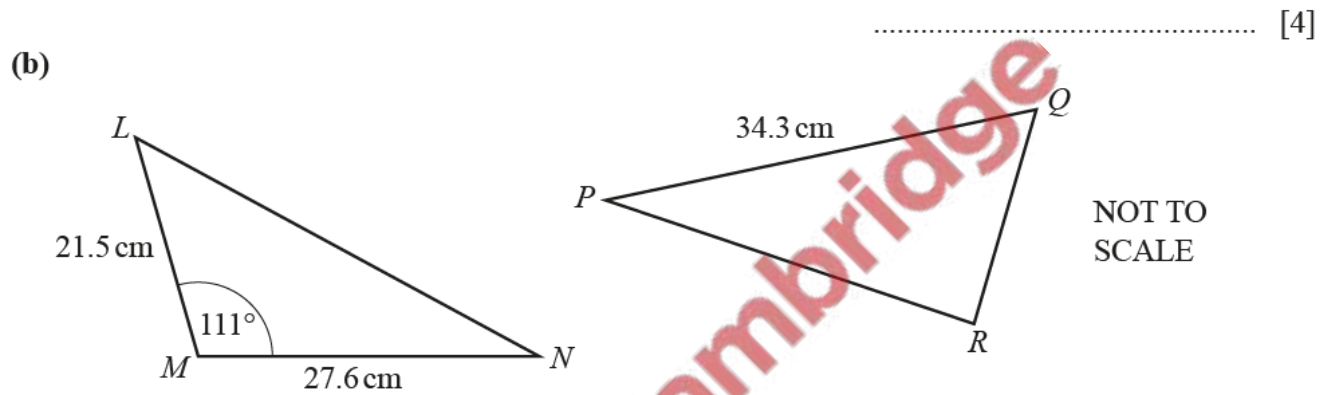
Triangle *PQR* has the same area as triangle *LMN*.

Calculate the shortest distance from *R* to the line *PQ*.

.... cm [3]
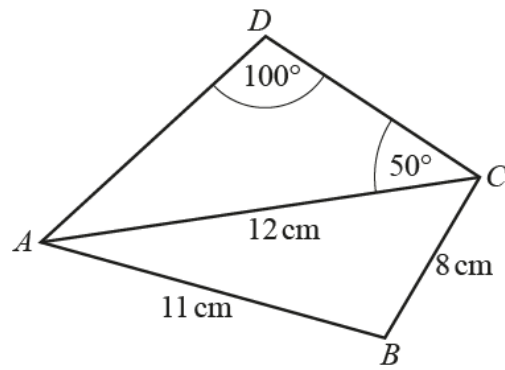
(a) Calculate AD.

$AD =$ .... cm [3]

(b) Calculate angle BAC and show that it rounds to $40.42°$, correct to 2 decimal places.

[4]

(c) Calculate the area of the quadrilateral $ABCD$.

.... cm^2 [3]

(d) Calculate the shortest distance from B to AC.

.... cm [3]
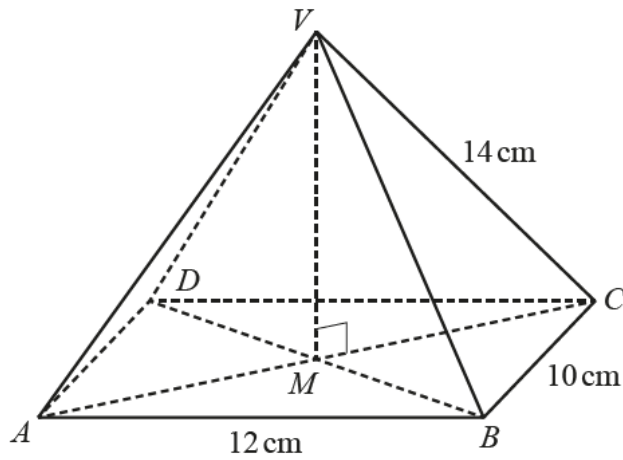
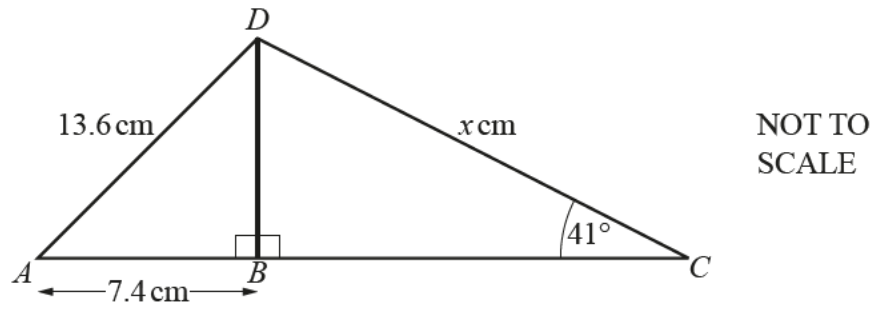The diagram shows a pyramid *VABCD* with a rectangular base.
V is vertically above *M*, the intersection of the diagonals *AC* and *BD*.
AB = 12 cm, *BC* = 10 cm and *VC* = 14 cm.

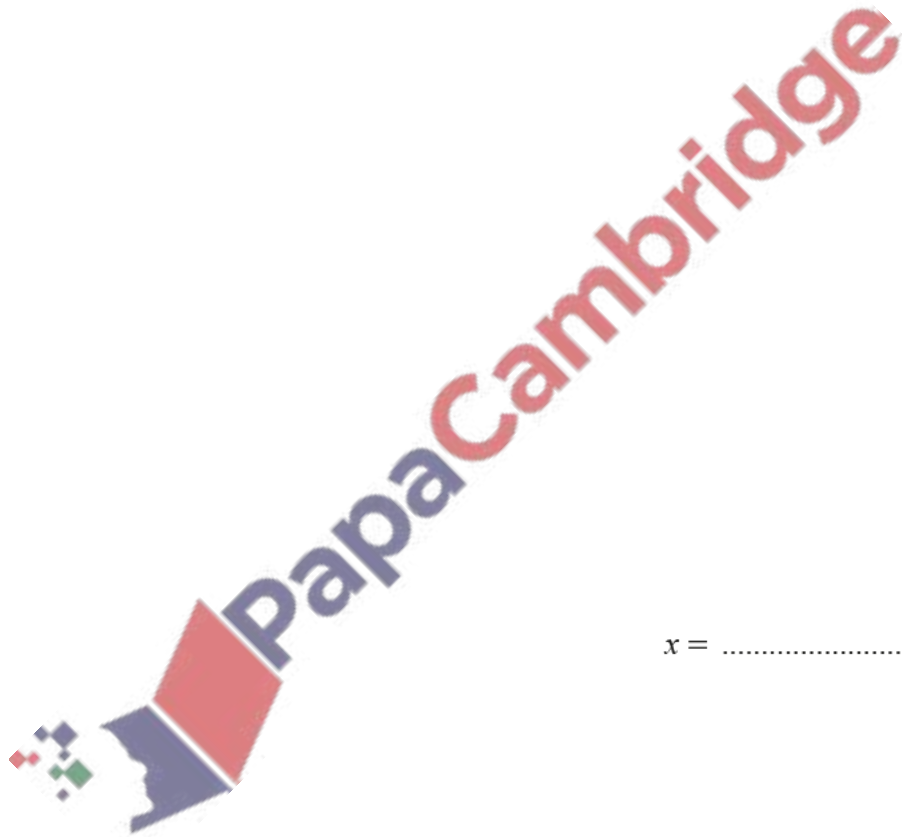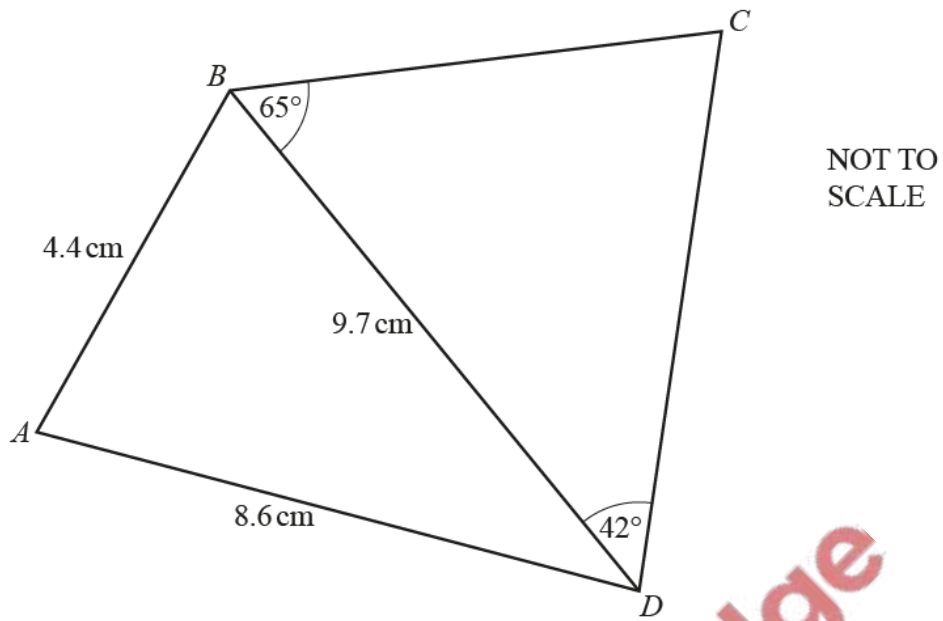Calculate the angle that *VC* makes with the base *ABCD*.
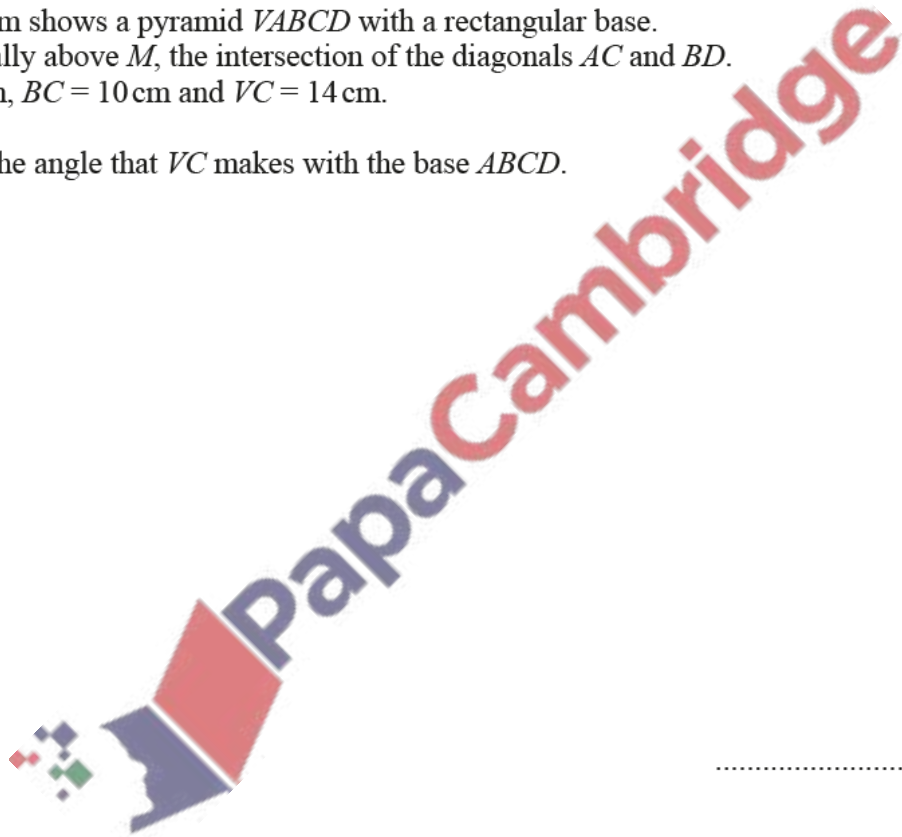
.... [4]

(e)

Calculate the value of x.

$x =$ .... [5]

(a) Calculate angle ADB.

Angle $ADB =$ .... [3]

(b) Calculate DC.

$DC =$ .... cm [4]
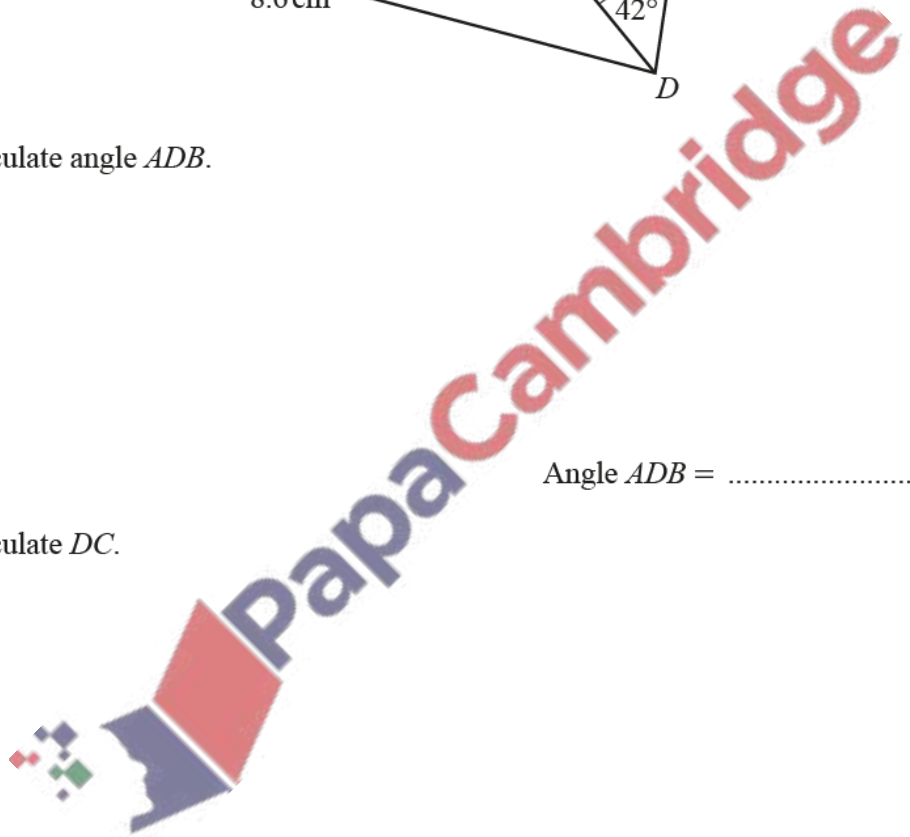
(c) Calculate the shortest distance from C to BD.
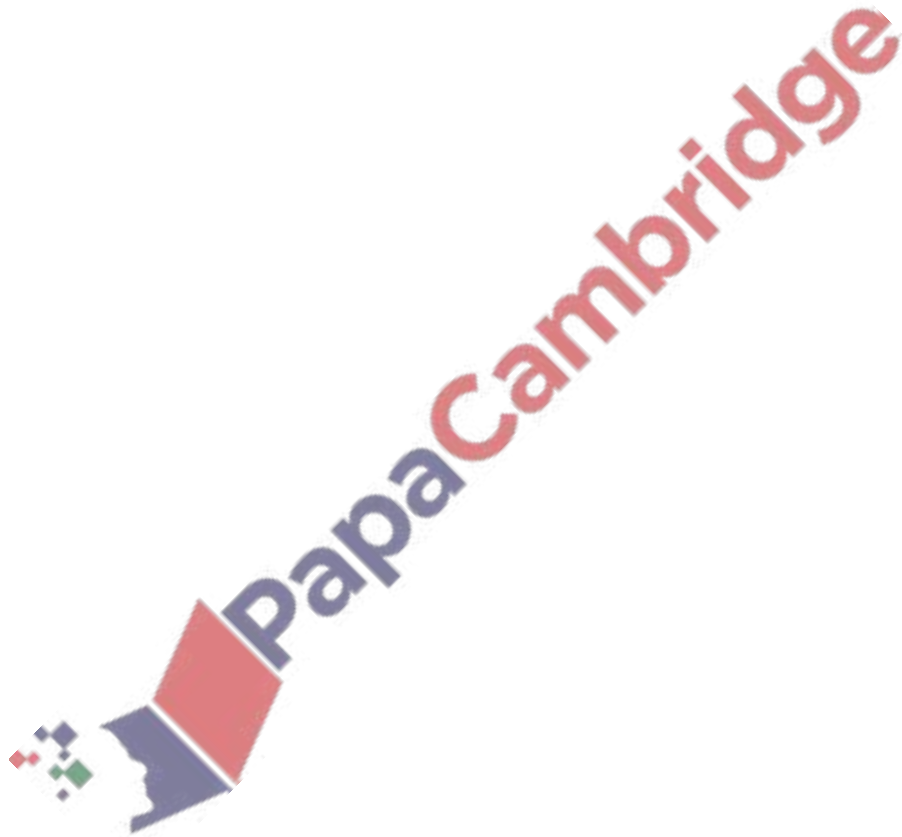
.... cm [3]
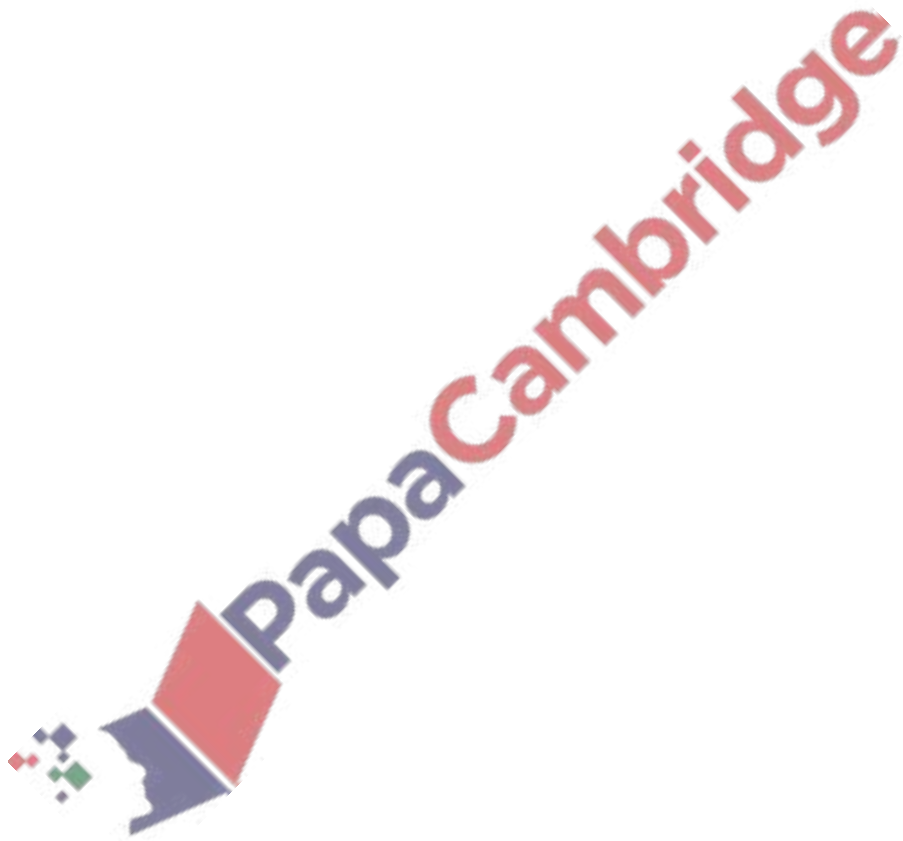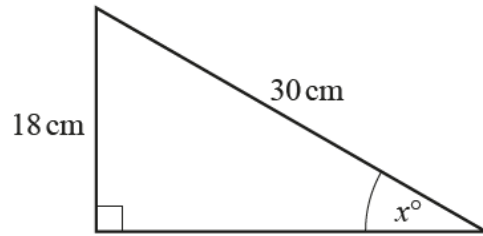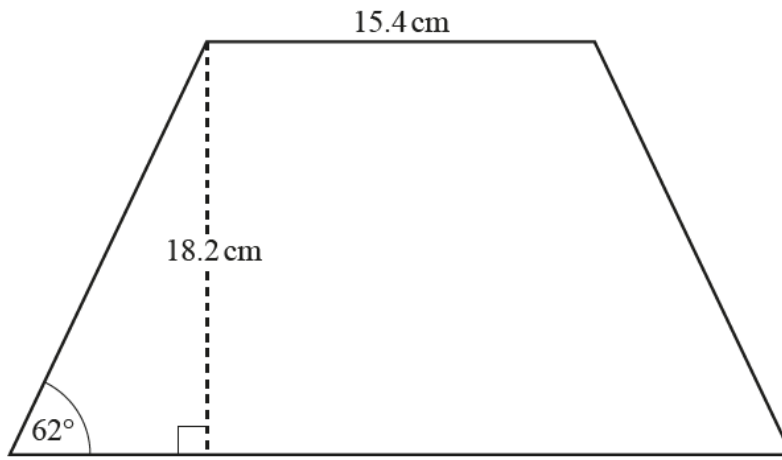
NOT TO
SCALE

The diagram shows a right-angled triangle.

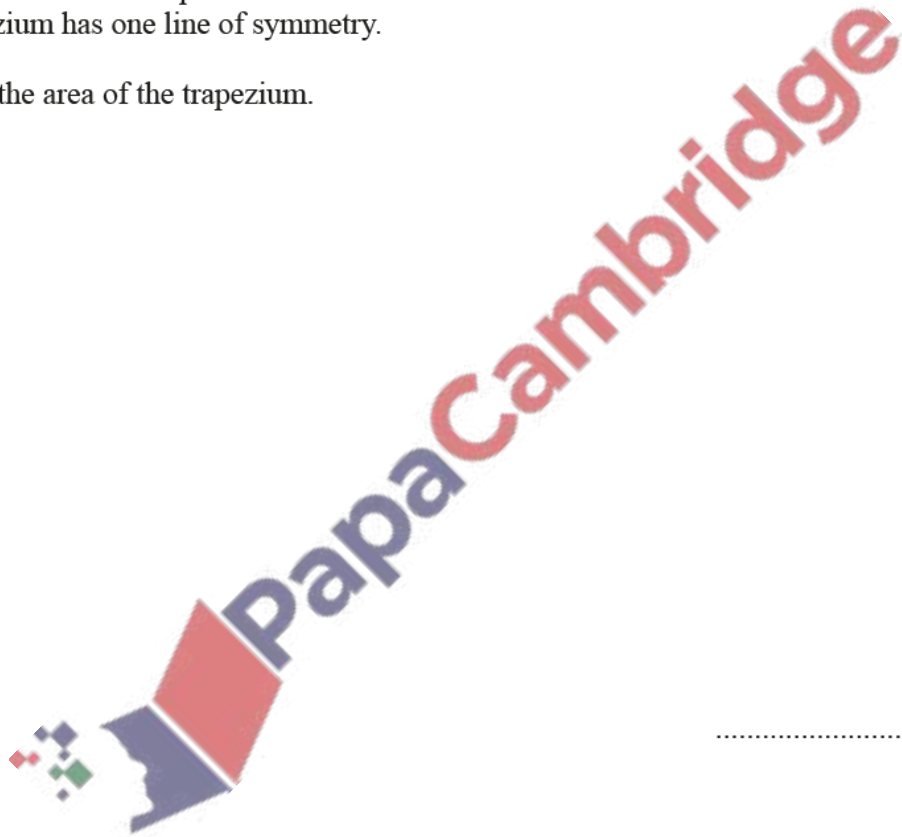Show that the value of x is 36.9, correct to 1 decimal place.

[2]

15.4 cm

NOT TO
SCALE

18.2 cm

62°

The diagram shows a trapezium.
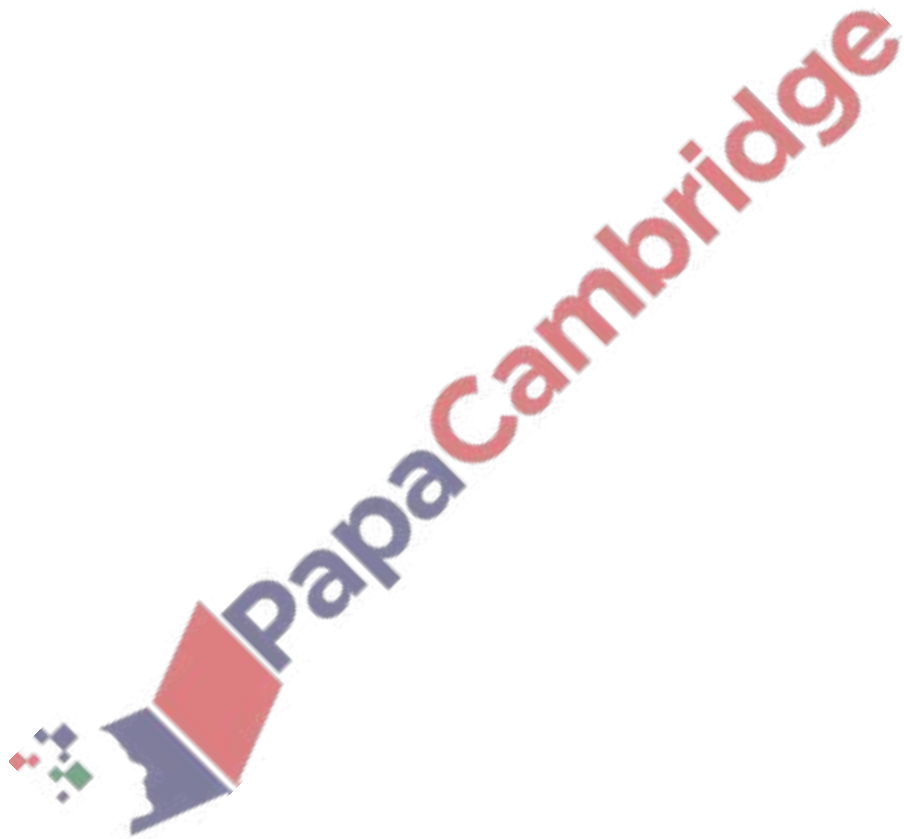The trapezium has one line of symmetry.

Work out the area of the trapezium.

.... cm^2 [4]

16.

Find all the solutions of $4\sin x = 3$ for $0° \leqslant x \leqslant 360°$.

.... [2]

17.

A triangle has sides of length 11 cm, 10 cm and 9 cm.

Calculate the largest angle in the triangle.

.... [4]
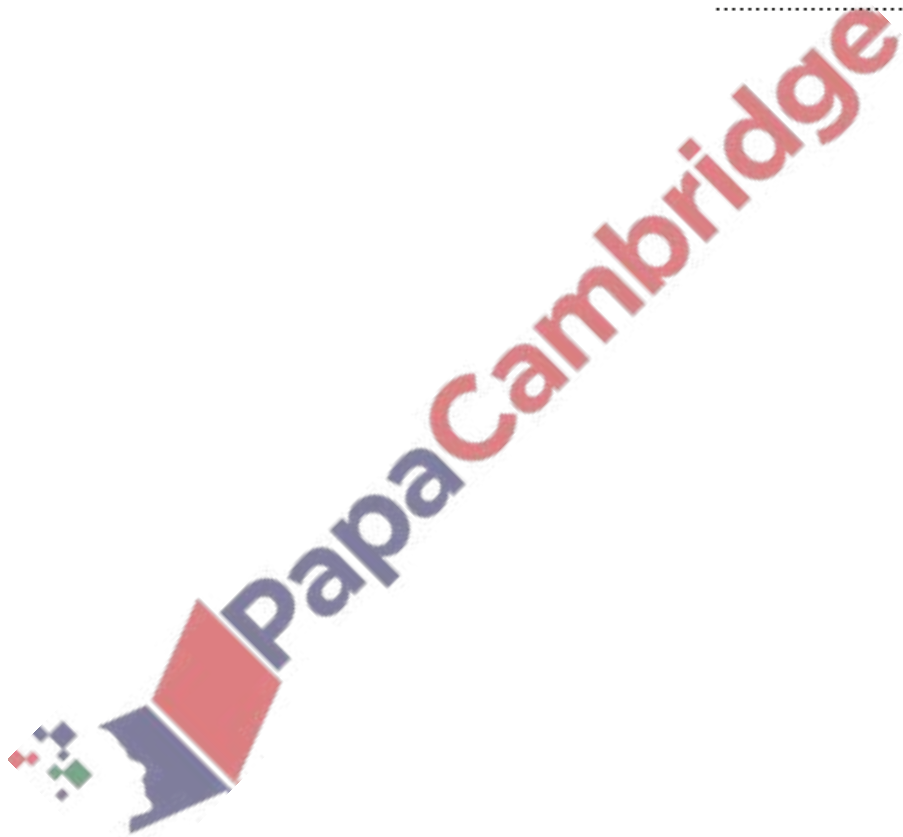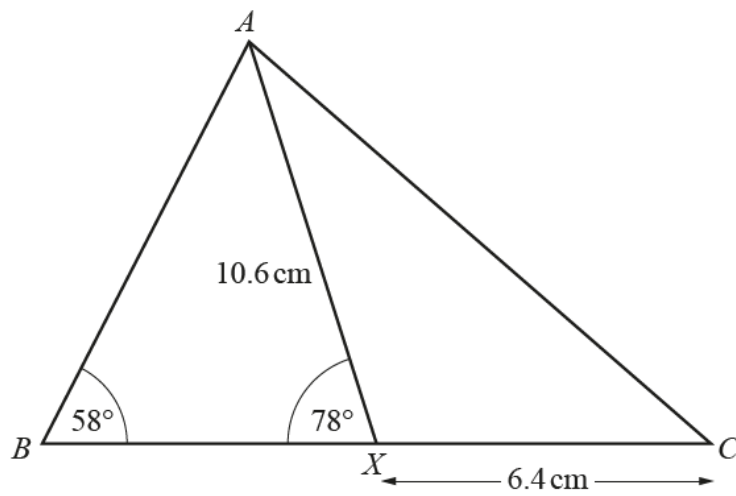
The diagram shows triangle ABC.
X is a point on BC.
$AX = 10.6\,cm$, $XC = 6.4\,cm$, angle $ABC = 58°$ and angle $AXB = 78°$.

(a) Calculate AC.

$AC =$ .... cm [4]

(b) Calculate BX.

$BX =$ .... cm [4]

20
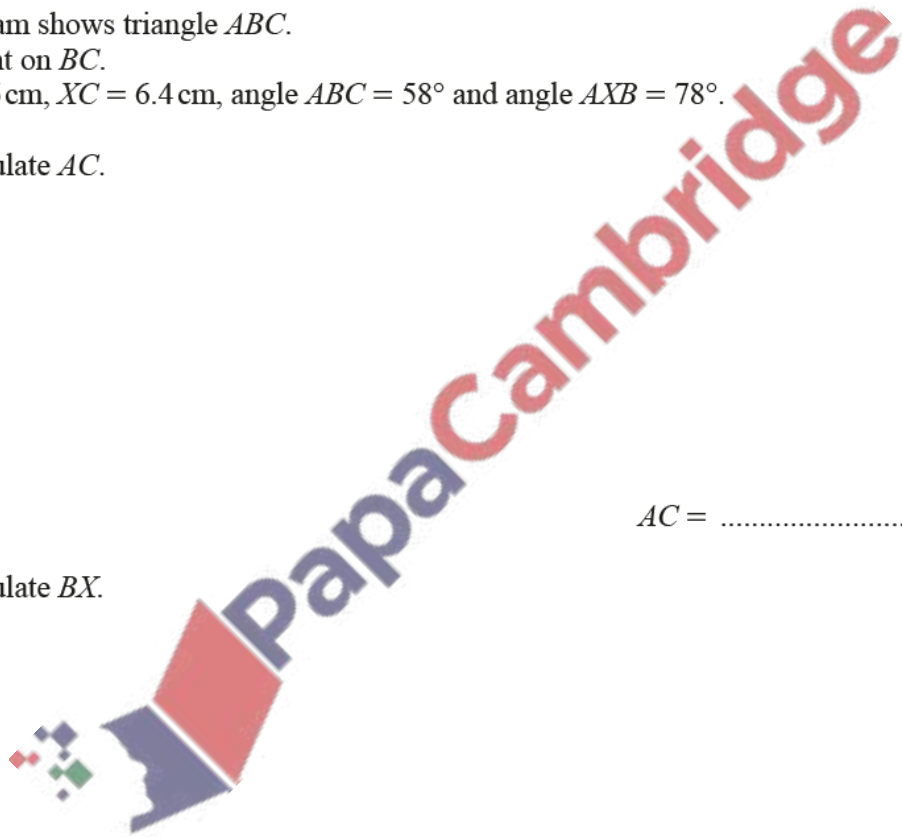
(c) Calculate the area of triangle ABC.

.... cm^2 [3]
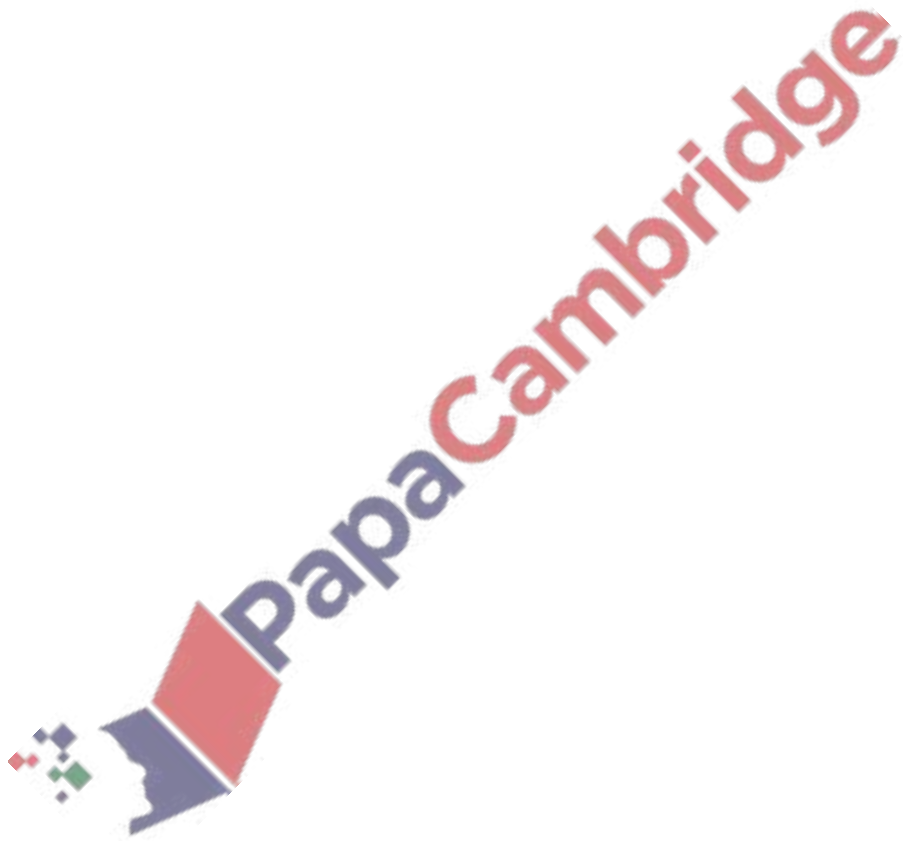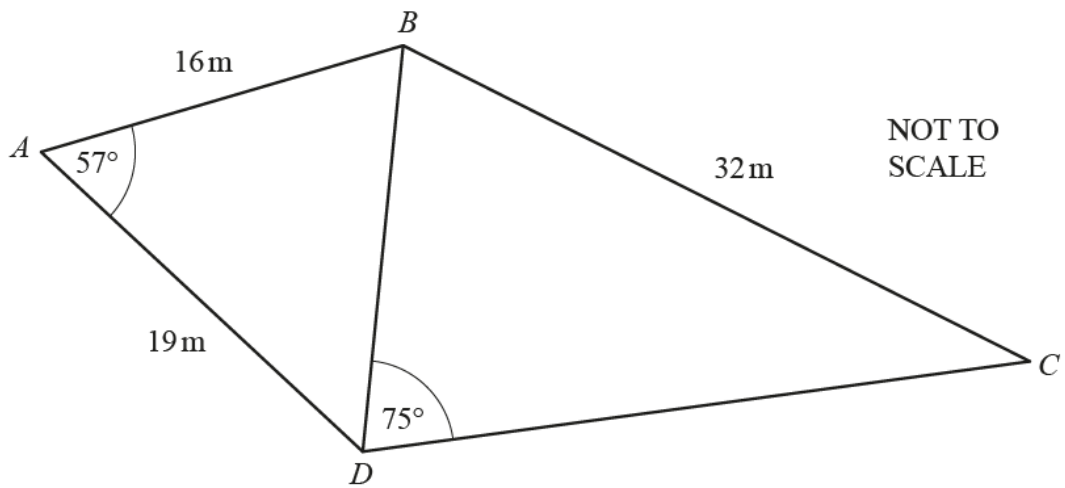
The diagram shows a quadrilateral $ABCD$ made from two triangles, ABD and BCD.

(a) Show that $BD = 16.9 \, \text{m}$, correct to 1 decimal place.
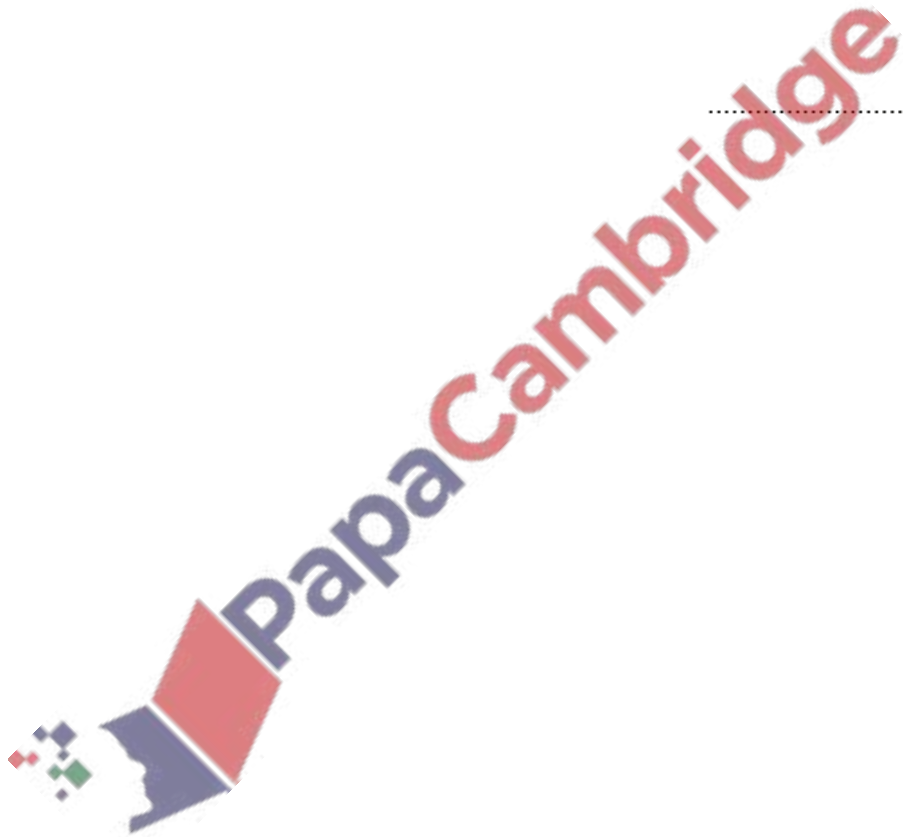
[3]

(b) Calculate angle CBD.

Angle $CBD = $ .... [4]

(c) Find the area of the quadrilateral $ABCD$.

.... m^2 [3]

(d) Find the shortest distance from B to AD.

.... m [3]

(a)
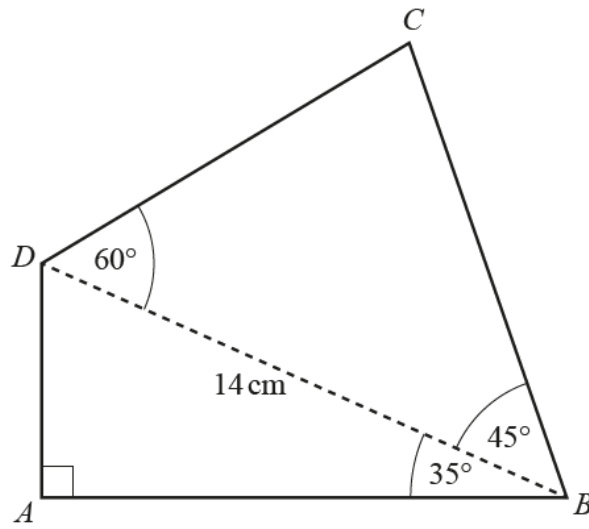
Calculate the perimeter of the quadrilateral $ABCD$.
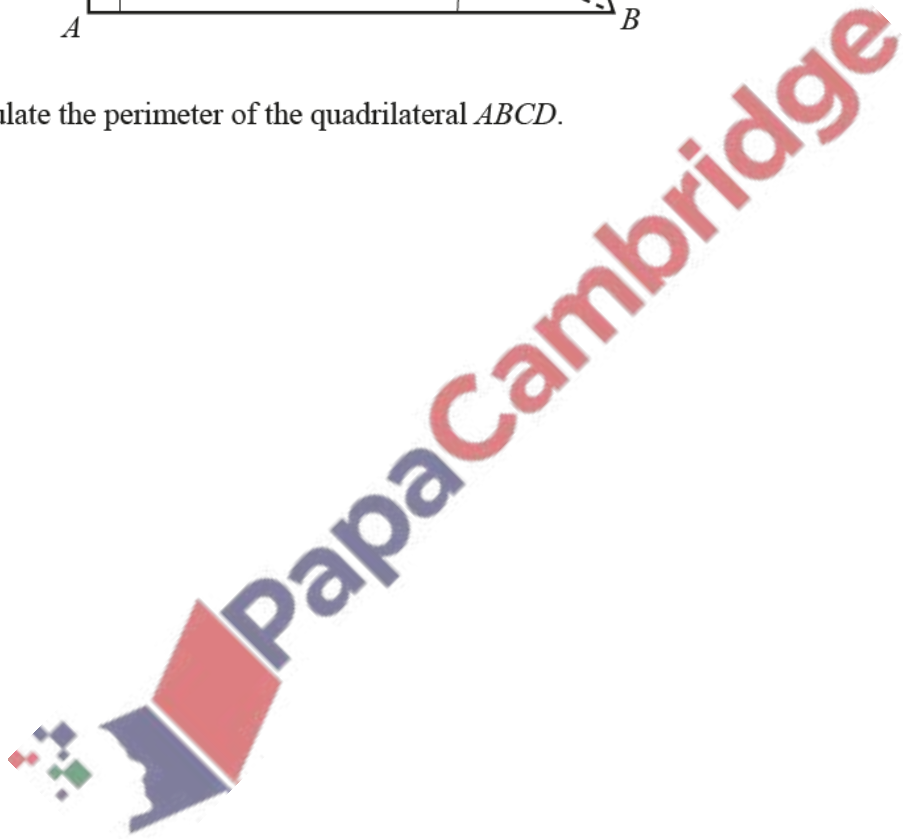
.... cm [7]

(b)
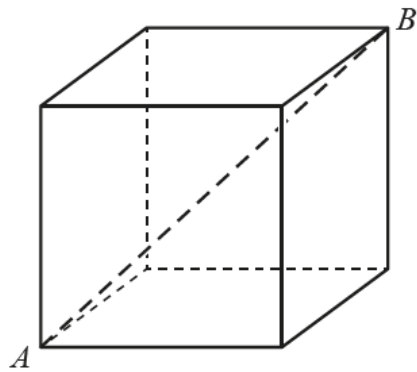
NOT TO
SCALE

The diagram shows a cube.
The length of the diagonal AB is 8.5 cm.

(i) Calculate the length of an edge of the cube.

.... cm [3]

(ii) Calculate the angle between AB and the base of the cube.

.... [3]