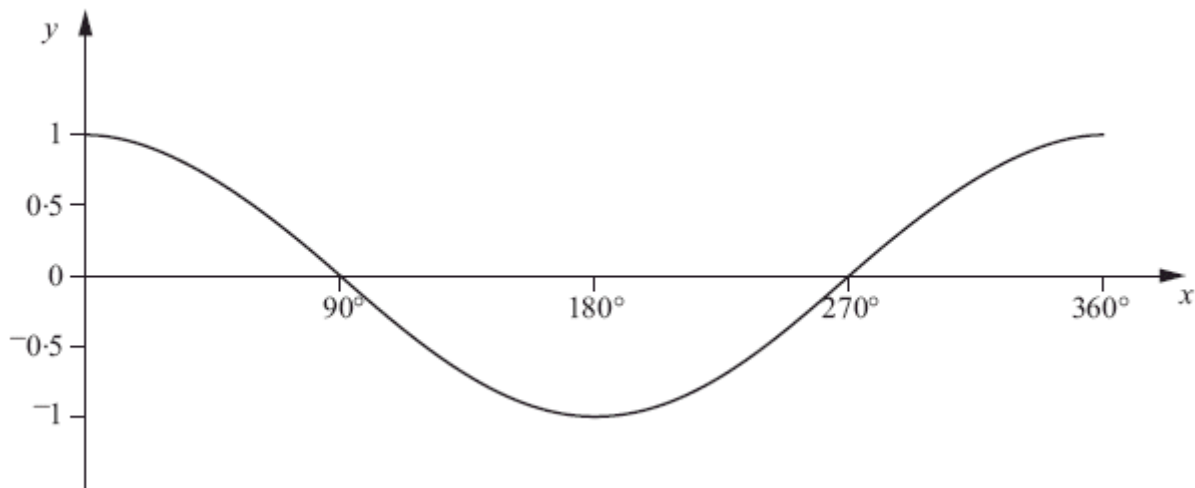


1. This is the graph of  $y = \cos x$  for  $0^\circ \leq x \leq 360^\circ$ .



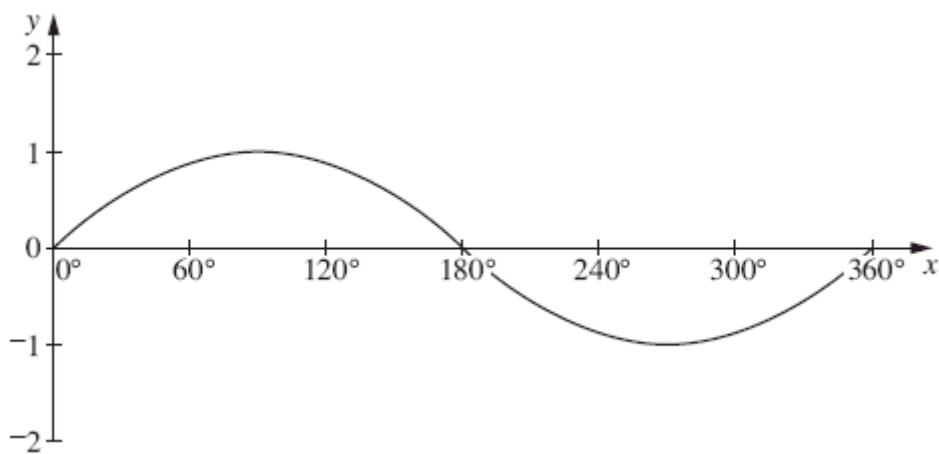
One of the solutions of the equation  $\cos x = -0.3$  is  $107^\circ$ , correct to the nearest degree.

Find the second solution for  $0^\circ \leq x \leq 360^\circ$ .

..... $^\circ$

[1]

2. The graph of  $y = \sin x$  for  $0^\circ \leq x \leq 360^\circ$  is drawn below.



One solution to the equation  $\sin x = 0.4$  is  $x = 24^\circ$ , correct to the nearest degree.

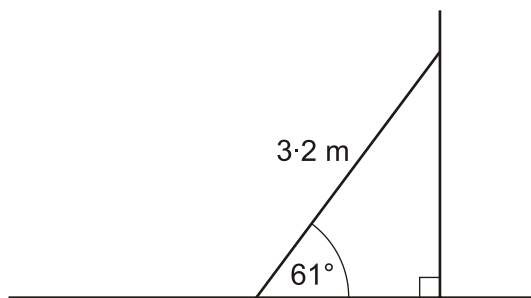
Use this information to solve  $\sin x = -0.4$  for  $0^\circ \leq x < 360^\circ$ .

..... $^\circ$  and ..... $^\circ$

[2]

3. A ladder, 3.2 m long, leans against a wall.  
The ladder makes an angle of  $61^\circ$  with the ground.

Calculate how far up the wall the ladder reaches.  
Give your answer to a suitable degree of accuracy.

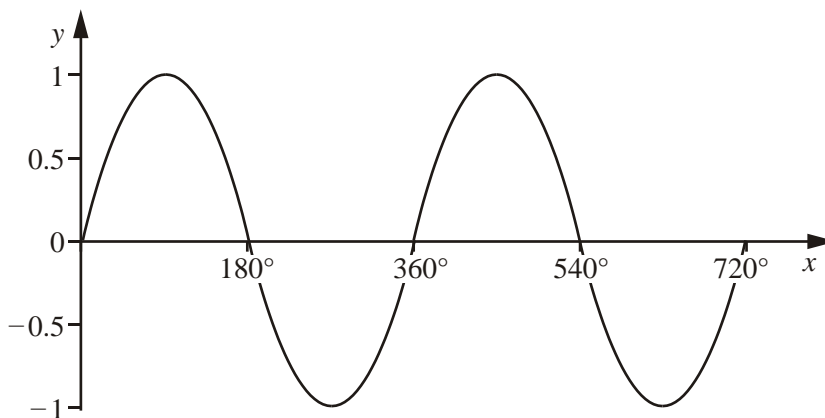


Not to scale

..... m

[4]

- 4.



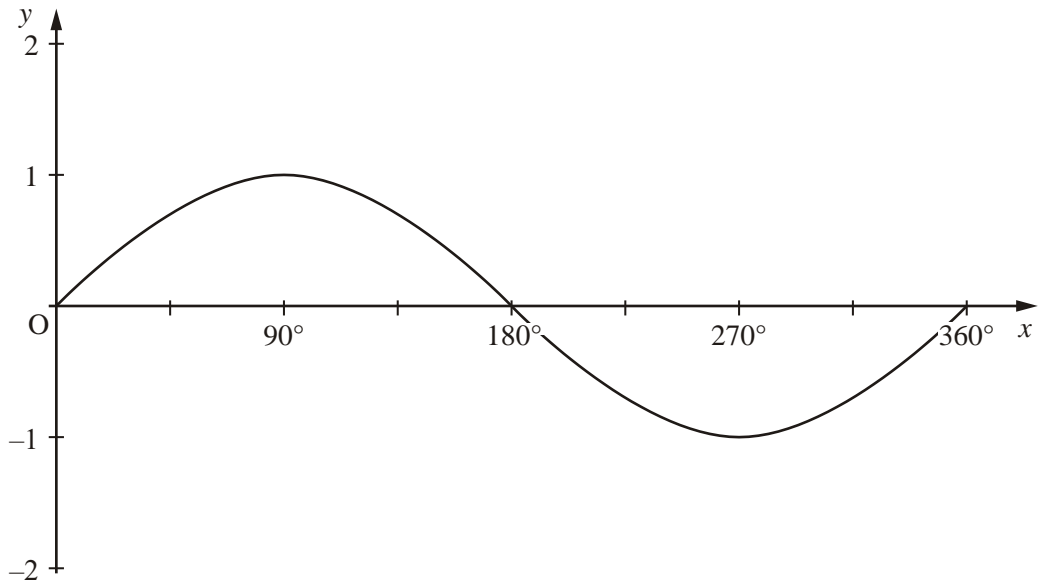
The diagram shows the graph  $y = \sin x$  for  $0^\circ \leq x \leq 720^\circ$ .  
The value  $x = 30^\circ$  satisfies the equation  $\sin x = 0.5$ .

Find the 3 other values of  $x$  which satisfy  $\sin x = 0.5$  for  $0^\circ \leq x \leq 720^\circ$ .

.....

[2]

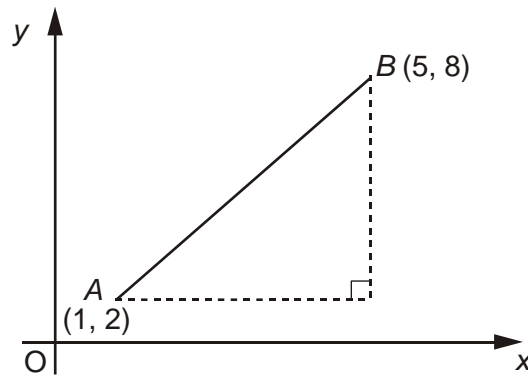
5. This is the graph of  $y = \sin x$  for  $0^\circ \leq x \leq 360^\circ$ .



(a) Solve the equation  $\sin x = 0.45$  for  $0^\circ \leq x \leq 360^\circ$ .  
Give your answers correct to 1 decimal place.

.....

6.



Not to scale

The diagram above shows the points  $A(1, 2)$  and  $B(5, 8)$ .

(a) Find the coordinates of the midpoint of  $AB$ .

(....., .....) [2]

(b) Calculate the length of the line  $AB$ .

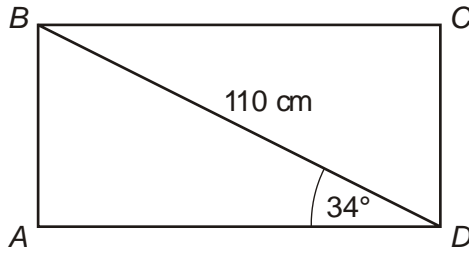
.....

.....

..... units

[3]

7.



Not to scale

$ABCD$  is the base of a rectangular box.  
 $BD = 110$  cm.  
 Angle  $ADB = 34^\circ$ .

(a) Calculate the length of  $AB$ .

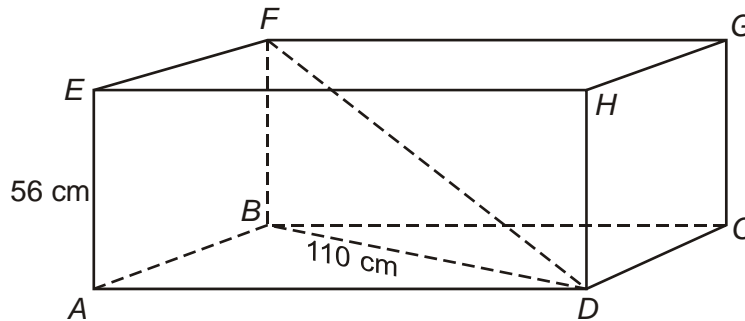
Give your answer to a suitable degree of accuracy.

.....  
 .....  
 .....  
 .....

..... cm

[4]

(b)



The box has base  $ABCD$  and top  $EFGH$ .  
 The height of the box is 56 cm.

Calculate the angle between  $FD$  and the base.

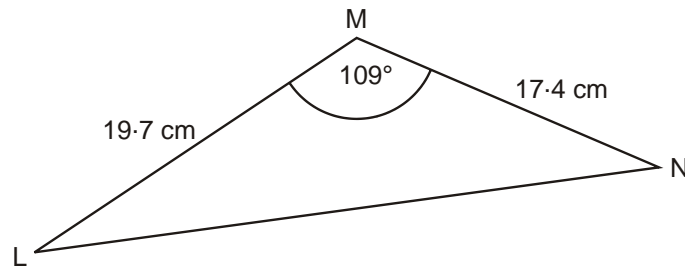
.....  
 .....  
 .....  
 .....

.....

[3]

8. The diagram shows triangle LMN.

LM = 19.7 cm. MN = 17.4 cm.  
 Angle LMN =  $109^\circ$ .



Not to scale

(a) Calculate LN.

..... cm

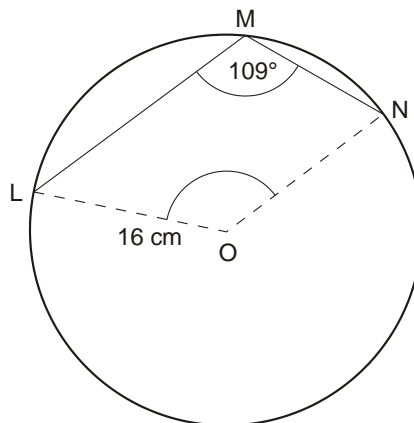
[3]

(b) Calculate the area of triangle LMN.

..... cm<sup>2</sup>

[2]

(c) L, M and N are three points on the circumference of a circle centre O, radius 16cm.



Not to scale

(i) Show that obtuse angle LON =  $142^\circ$ .

[2]

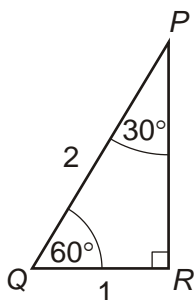
(ii) Calculate the length of the arc LMN.

..... cm

[3]

9. The diagram shows a right-angled triangle  $PQR$ .

$PQ$  is 2 units long and  $QR$  is 1 unit long.  
 Angle  $PQR = 60^\circ$  and angle  $QPR = 30^\circ$ .



Not to scale

(a) Find  $\sin 60^\circ$ .

Give your answer in the form  $\frac{\sqrt{a}}{b}$ .

.....  
 .....

[3]

(b) Find  $\tan 30^\circ$ .

Give your answer in the form  $\frac{\sqrt{a}}{b}$

.....  
 .....  
 .....

[2]

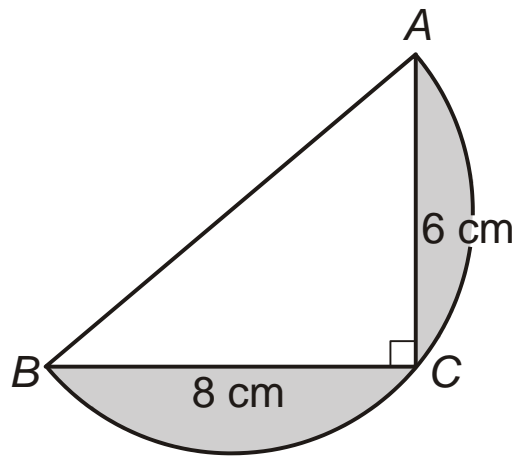
(b) Draw a different triangle and write down the exact value of  $\sin 45^\circ$ .

Give your answer in the form  $\frac{\sqrt{a}}{b}$

.....  
 .....

[2]

10.



Not to scale

The diagram shows part of a circle, radius 5cm, with points  $A$ ,  $B$  and  $C$  on the edge.  $AC = 6$  cm,  $BC = 8$  cm and angle  $C = 90^\circ$ .

(a) Explain how you can tell that  $AB$  is the diameter of the circle.

.....  
.....  
 $AB$  is the diameter because .....  
.....

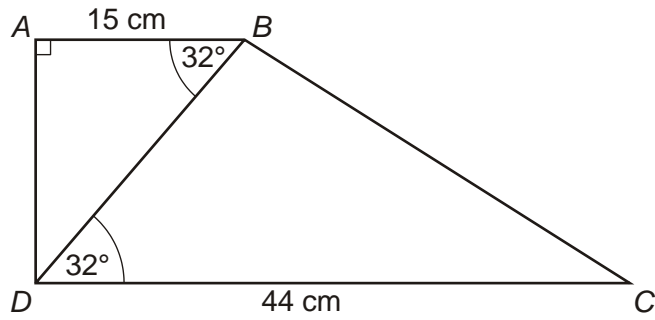
[2]

(b) Calculate the total shaded area.  
Give the units of your answer.

.....

[6]

11.



Not to scale

*ABCD* is a trapezium.  
Angle *BAD* =  $90^\circ$ .  
Angle *BDC* = angle *ABD* =  $32^\circ$   
*AB* = 15cm and *DC* = 44cm.

Calculate the length of *BC*

Give your answer to a suitable degree of accuracy.

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..... cm

[6]