

9.

Figure 2

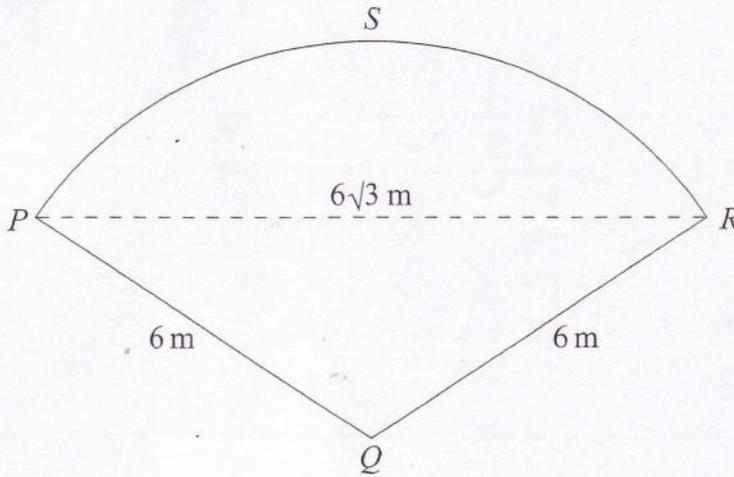


Figure 2 shows a plan of a patio. The patio $PQRS$ is in the shape of a sector of a circle with centre Q and radius 6 m.

Given that the length of the straight line PR is $6\sqrt{3}$ m,

- (a) find the exact size of angle PQR in radians. (3)
- (b) Show that the area of the patio $PQRS$ is 12π m². (2)
- (c) Find the exact area of the triangle PQR . (2)
- (d) Find, in m² to 1 decimal place, the area of the segment PRS . (2)
- (e) Find, in m to 1 decimal place, the perimeter of the patio $PQRS$. (2)



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7.

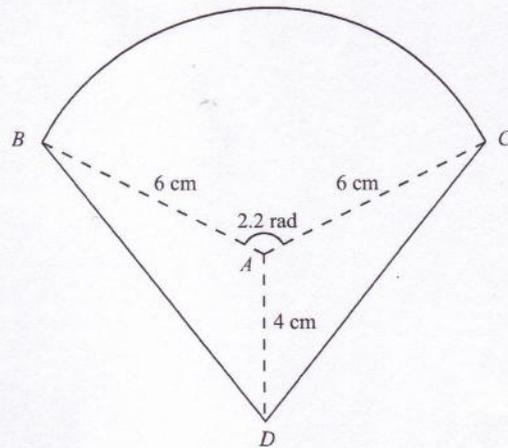


Figure 3

The shape BCD shown in Figure 3 is a design for a logo.

The straight lines DB and DC are equal in length. The curve BC is an arc of a circle with centre A and radius 6 cm. The size of $\angle BAC$ is 2.2 radians and $AD = 4$ cm.

Find

- (a) the area of the sector BAC , in cm^2 , (2)
- (b) the size of $\angle DAC$, in radians to 3 significant figures, (2)
- (c) the complete area of the logo design, to the nearest cm^2 . (4)



7.

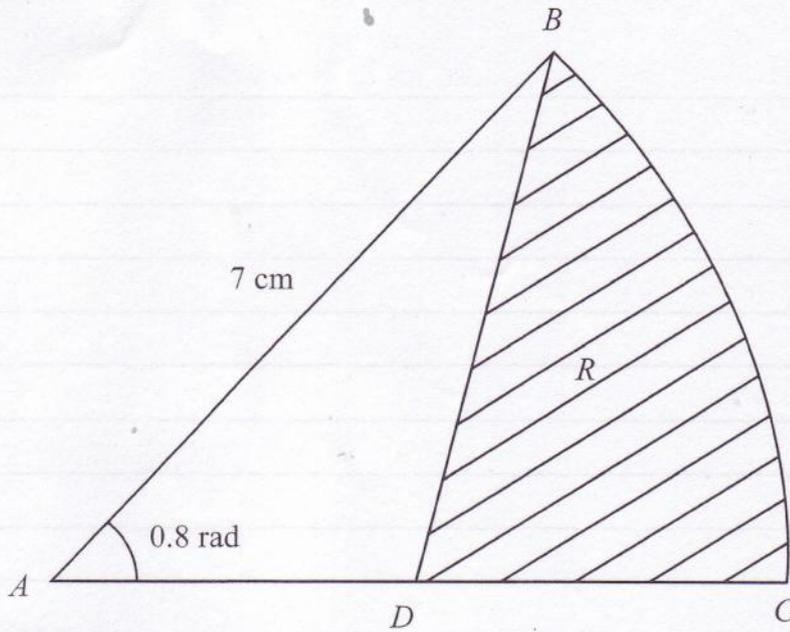


Figure 1

Figure 1 shows ABC , a sector of a circle with centre A and radius 7 cm.

Given that the size of $\angle BAC$ is exactly 0.8 radians, find

- (a) the length of the arc BC , (2)
- (b) the area of the sector ABC . (2)

The point D is the mid-point of AC . The region R , shown shaded in Figure 1, is bounded by CD , DB and the arc BC .

Find

- (c) the perimeter of R , giving your answer to 3 significant figures, (4)
- (d) the area of R , giving your answer to 3 significant figures. (4)



8.

Figure 2

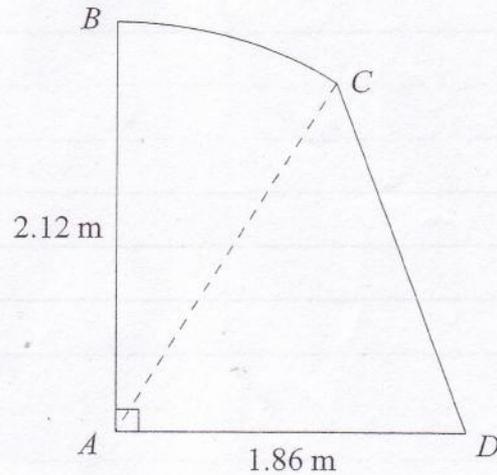


Figure 2 shows the cross section $ABCD$ of a small shed.
 The straight line AB is vertical and has length 2.12 m.
 The straight line AD is horizontal and has length 1.86 m.
 The curve BC is an arc of a circle with centre A , and CD is a straight line.
 Given that the size of $\angle BAC$ is 0.65 radians, find

- (a) the length of the arc BC , in m, to 2 decimal places, (2)
- (b) the area of the sector BAC , in m^2 , to 2 decimal places, (2)
- (c) the size of $\angle CAD$, in radians, to 2 decimal places, (2)
- (d) the area of the cross section $ABCD$ of the shed, in m^2 , to 2 decimal places. (3)



5.

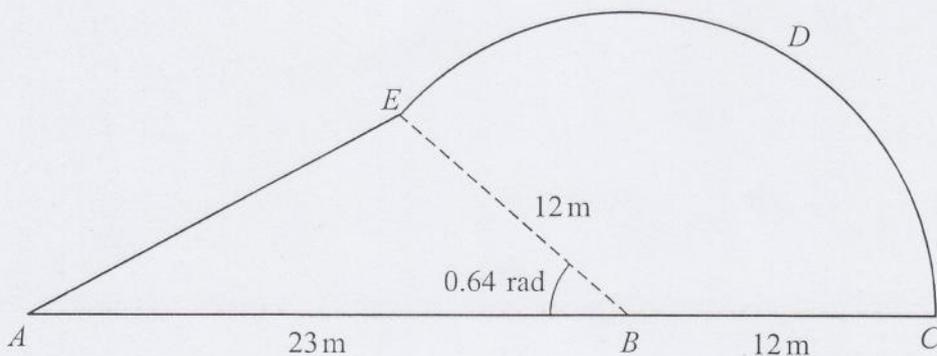


Figure 2

Figure 2 shows a plan view of a garden.

The plan of the garden $ABCDEA$ consists of a triangle ABE joined to a sector $BCDE$ of a circle with radius 12 m and centre B .

The points A , B and C lie on a straight line with $AB = 23$ m and $BC = 12$ m.

Given that the size of angle ABE is exactly 0.64 radians, find

- (a) the area of the garden, giving your answer in m^2 , to 1 decimal place, (4)
- (b) the perimeter of the garden, giving your answer in metres, to 1 decimal place. (5)

