10. The diagram shows a circle with centre O . ST is a tangent to the circle with point of contact $\mathrm{Q} . \angle \mathrm{PQT}=56^{\circ} . \quad \mathrm{P}$
(a) Calculate the size of $\angle \mathrm{POQ}$.
(b) Hence calculate the length of the major arc PQ given that the radius of the circle is 14 cm .

11. The sign outside a pet shop is formed from part of a circle.

The circle has centre $O$ and radius 26 cm .


Given that the line $\mathrm{AB}=48 \mathrm{~cm}$, calculate the width, $w \mathrm{~cm}$, of the sign.
12. The Pot Black Snooker Club has this sign at its entrance.

It consists of 10 circles each with radius 8 cm .
Calculate the height, $h \mathrm{~cm}$, of the sign.

13. The line DF is a tangent to the circle centre O shown below. E is the point of contact of the tangent. Given that angle CEF is $38^{\circ}$, calculate the size of angle EOC.

14. The circle in the diagram has centre O and radius 6 cm .
$R$ is the point of contacT of the tangent PQ .

Given that $O Q=10 \mathrm{~cm}$ calculate the length of RQ.

15. A child's toy is in the shape of a sphere with a duck and some water inside.


As the ball rolls around the water remains at the

The diagram opposite shows the cross section when the sphere has been halved.

Given that the radius of the sphere is 6 cm and that the depth of the water is 4 cm , calculate the width of the water surface ( $w \mathrm{~cm}$ ).


