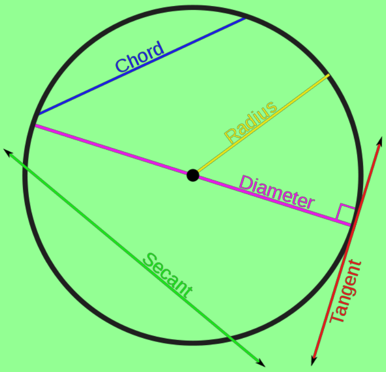
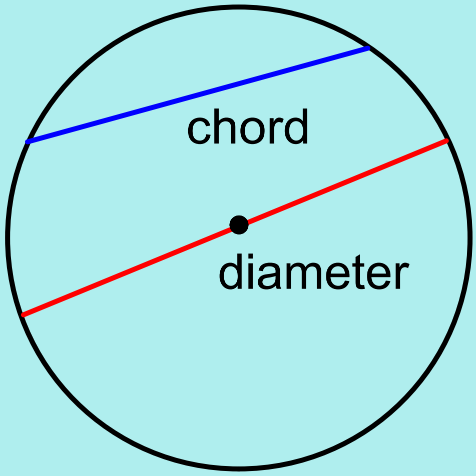
# Section 8.2


## Properties of Chords in Circles



- A line segment that joins two points on a circle is a **chord**.

- A **diameter** of a circle is a chord through the centre of the circle.

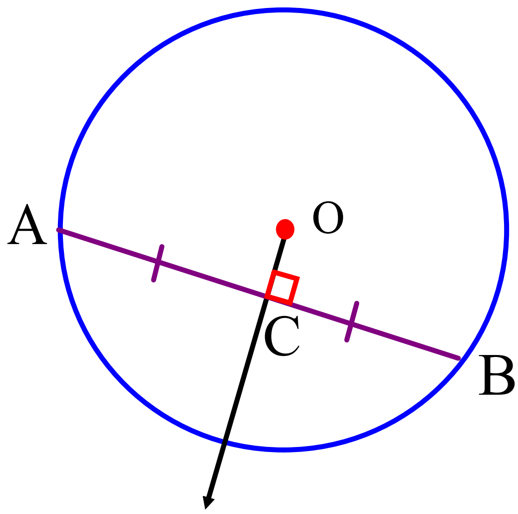


## Perpendicular to a Chord Property 1

- A line drawn from the centre of a circle that is perpendicular to a chord bisects the chord. (It cuts the chord into two equal parts.)

$$\angle OCA = \angle OCB = 90^{o}$$

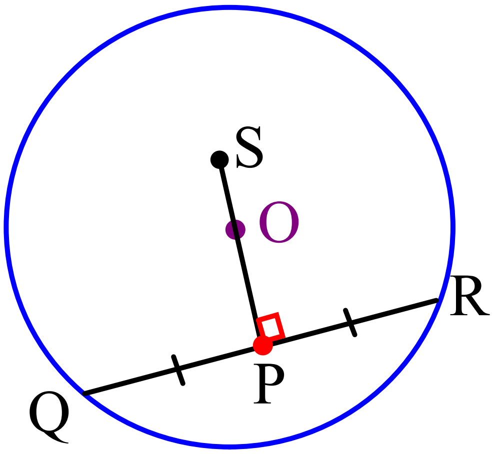
$$\boxed{AC = CB}$$



## Perpendicular to a Chord Property 2

- The perpendicular bisector of a chord in a circle passes through the centre of the circle.

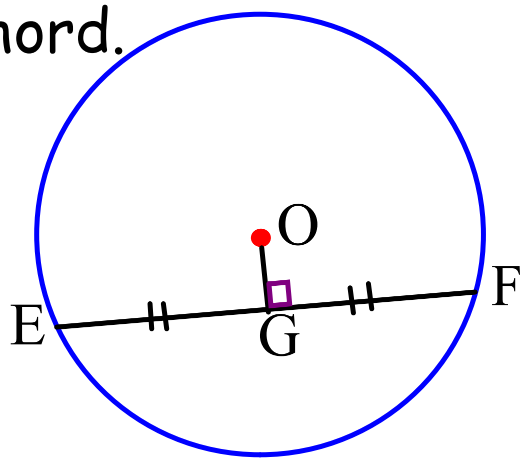
When $\angle SPR = \angle SPQ = 90^0$ and $RP = PQ$, then SP passes through the centre.



## Perpendicular to a Chord Property 3

- A line that joins the centre of a circle and the midpoint of a chord is perpendicular to the chord.

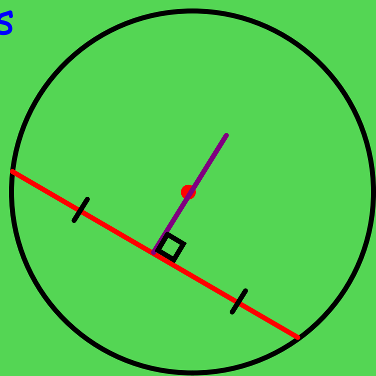
When O is the centre and EP = PF, then
$\angle$ OGE = $\angle$ OGF = $90^0$.



# STOP!

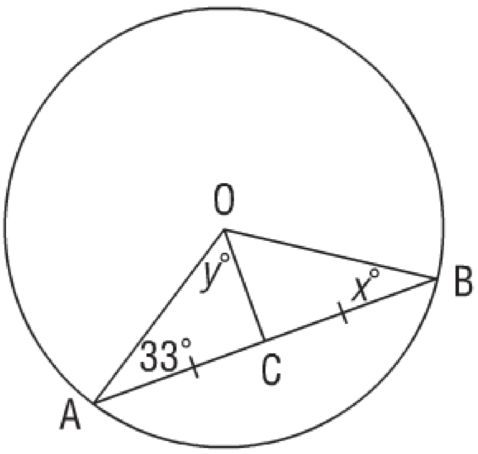
Aren't they all saying the same thing?

Yes!
When we see diagrams like this, we know that the lines are perpendicular, and the chord is cut in two equal pieces.



# Determining the Measure of Angles in a Triangle

Example #1. Determine the values of $x^\circ$ and $y^\circ$.




*Think: What do I know about angle C?*

The angles formed at C are $90^\circ$.

*Use angle sum of a triangle:*

$180^0 - 90^0 - 33^0 = 57^0$

Therefore, $y^\circ =$ 57°

To find angle x:
We know the radii are equal, so $\Delta AOB$ is isosceles.
Then, $\angle OBA = \angle OAB$
Therefore, $x^\circ =$ 33°