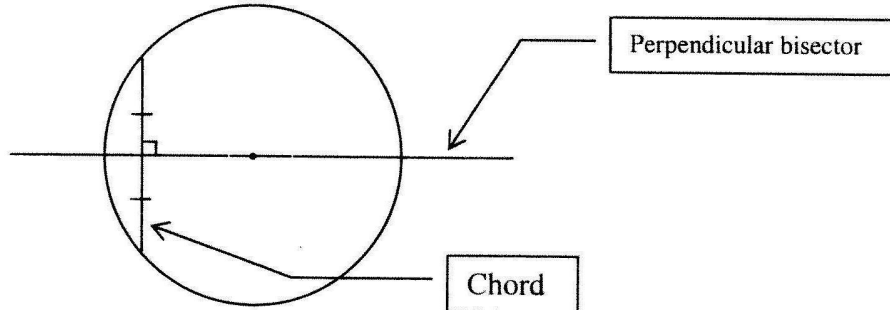


### BLM 3 – Geometry Theorems

1. Chord Perpendicular Bisector theorem

A line through the centre of a circle bisects a chord *iff* (if and only if) it is perpendicular to that chord. This means that

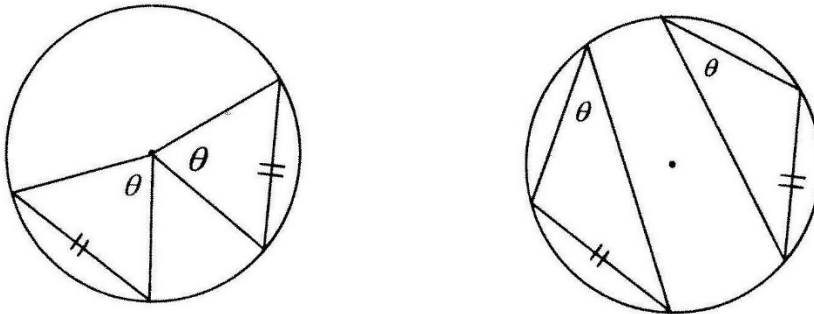
- a) the perpendicular bisector of a chord passes through the centre of the circle
- b) the line joining the midpoint of a chord to the centre is perpendicular to the chord
- c) the line through the centre and perpendicular (at  $90^\circ$ ) to a chord bisects the chord (i.e., splits the chord into two segments of equal length)



Note: there is ALWAYS a radius that will be at a right angle to the chord. Otherwise, the chord is really a diameter!

2. Equal Chords theorem

Inscribed angles or central angles containing equal chords are equal.



Since the chords are equal, the angles are equal ( $\theta = \theta$ ) and vice versa.

3. Inscribed Angle theorem

The central angle is twice the inscribed angle *iff* (if and only if)

- both angles share the same arc
- the angles contain equal chords.

