

1. If angles under equalities, then angles are equal
 given: In a circle, two angles subtended by the same
 chord at the circumference are equal. To prove: $\angle A = \angle B$
 Construction: Join the center of the circle to the points A and B.
 Proof: In $\triangle OAC$ and $\triangle OBC$, $OA = OB$ (radii), $OC = OC$ (common).
 $\therefore \triangle OAC \cong \triangle OBC$ (SSS). $\therefore \angle A = \angle B$ (corresponding angles).
 2. If two angles subtended by the same chord at the circumference are equal, then the points A, B, C, D are concyclic.
 Given: $\angle A = \angle B$. To prove: A, B, C, D are concyclic.
 Construction: Join AC and BC.
 Proof: $\angle A = \angle B$ (given). \therefore A, B, C, D are concyclic (angles in the same segment are equal).
 3. If two angles subtended by the same chord at the circumference are equal, then the line segment AB is a chord of the circle.
 Given: $\angle A = \angle B$. To prove: AB is a chord.
 Construction: Join AC and BC.
 Proof: $\angle A = \angle B$ (given). \therefore A, B, C, D are concyclic. \therefore AB is a chord.

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2. If two angles subtended by the same chord at the circumference are equal, then the points A, B, C, D are concyclic.



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