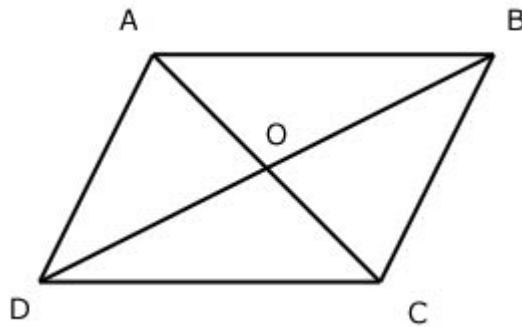
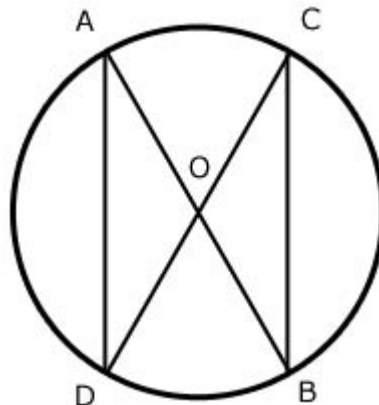


1. ABCD is a parallelogram, with O the point of intersection of the diagonals.



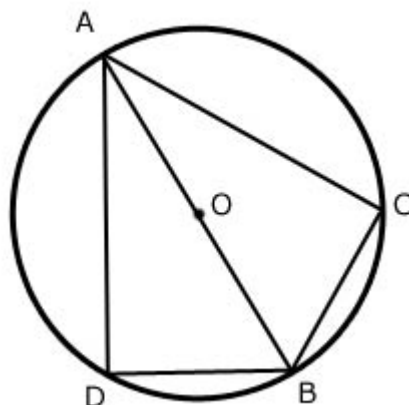
Prove that:

- (a) triangle ABD is congruent to triangle BCD
  - (b) triangle ABC is congruent to triangle ACD
  - (c) triangle AOB is congruent to triangle COD
  - (c) triangle BOC is congruent to triangle AOD
2. AB and CD are diameters of the circle, passing through the centre O.  
Prove that triangle AOD is congruent to triangle COB.



3. AB is a diameter of a circle.

If  $BC = BD$ , prove that triangle ABC is congruent to triangle ABD.



1.
  - (a) BD common side,  
AB = DC opps. sides of parallelogram equal  
AD = BC opps. sides of parallelogram equal  
(SSS)
  - (b) AC common side,  
AB = DC opps. sides of parallelogram equal  
AD = BC opps. sides of parallelogram equal  
(SSS)
  - (c) AO = CO bisected diagonals of a parallelogram are equal  
BO = DO bisected diagonals of a parallelogram are equal  
angle AOB = angle COD vertically opposite angles  
(SAS)
  - (d) AO = CO bisected diagonals of a parallelogram are equal  
BO = DO bisected diagonals of a parallelogram are equal  
angle AOD = angle BOC vertically opposite angles  
(SAS)
2. OA = OB = OC = OD radii of a circle  
angle AOD = angle BOC vertically opposite angles  
(SAS)
3. side BC = BD (given)  
side AB is common, the hypotenuse  
angle ADB = angle ACB =  $90^\circ$  diameter subtends a right angle on the circumference  
(side hypotenuse right angle)