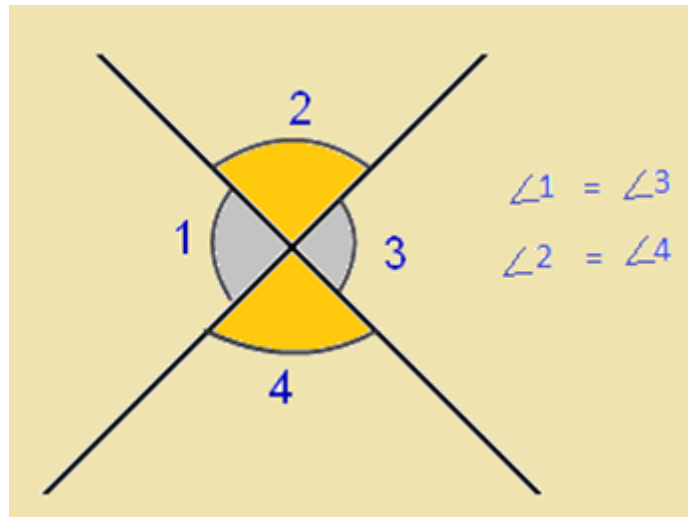


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NCERT Class 9 Solutions: Circles (Chapter 10) Exercise 10.5 – Part 4 (For CBSE, ICSE, IAS, NET, NRA 2022)

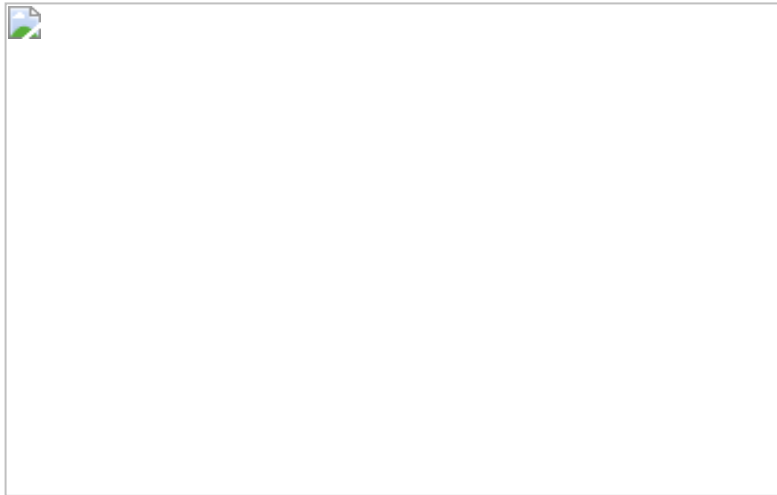
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Vertical opposite angles are the angles that are vertically opposite to each other when two lines intersect

Q-9 Two circles intersect at two points Q and B. Through Q, two line segments PQA and RQS are drawn to intersect the circles at P, A and R, and S respectively (see Fig.) . Prove that $\angle PBR = \angle SBA$.



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Solution:

- Here, two circles intersect at two point Q and B.
- Two line segment PQA and RQS are drawn to intersect the circles at A, D and P, Q respectively
- Now, join PR and AS chords.

For chord PR,

- $\angle RQP = \angle PBR$ (Angles in the same segment) ... equation (1)

For chord AS,

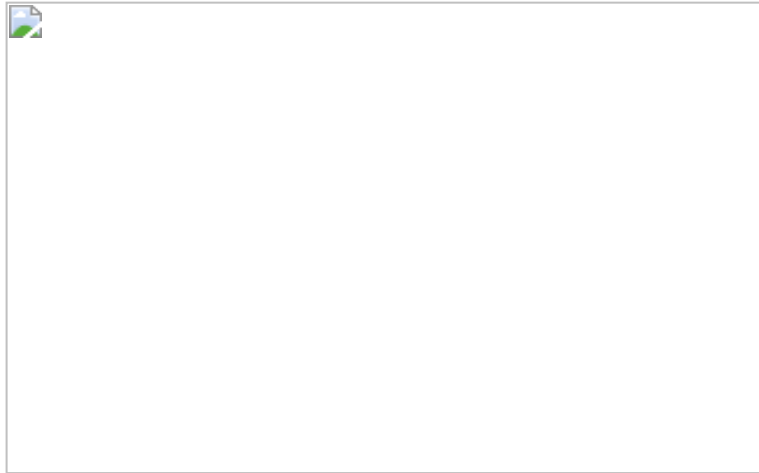
- $\angle AQS = \angle SBA$ (Angles in same segment) ... equation (2)
- PQA and RQS are line segments intersecting at Q, therefore $\angle RQP = \angle AQS$ (Vertically opposite angles) ... equation (3)

By the equations (1)

- $\angle RQP = \angle PBR$
- $\angle AQS = \angle PBR$ ($\because \angle RQP = \angle AQS$ From equation (3))
- $\angle PBR = \angle SBA$ ($\because \angle AQS = \angle SBA$ From equation (2))

Q-10 If circles are drawn taking two sides of a triangle as diameters, prove that the point of intersection of these circles lie on the third side.

Solution:



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- Given, two circles are drawn on the sides PQ and PR of the triangle ΔPQR as diameters.
- The circles intersect at P and S.

To prove, S is on QR. We have to prove that QSR is a straight line, that is, $\angle PSQ$ & $\angle PSR$ are supplementary.

$$\angle PSQ = \angle PSR = 90^\circ \text{ (Angle in the semi circle)}$$

Therefore, $\angle PSQ + \angle PSR = 180^\circ$ and $\angle QSR$ is straight line.

Thus, S on the QR.