

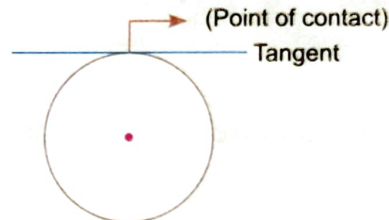
Title : Tangents drawn from an External Point

Objective

To verify experimentally that lengths of tangents drawn from an external point to a circle are equal.

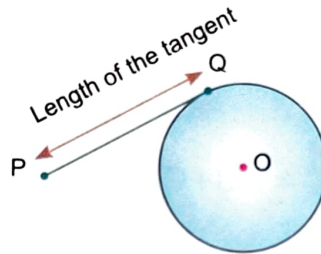
Tangent

A line touching the circle at a point is called a tangent to the circle.



Prerequisite Knowledge

1. Tangent to a circle.
2. Length of a tangent.

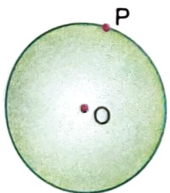


Materials Required

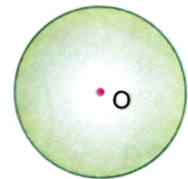
Glazed papers, a white chart paper, sketch pens, a pair of scissors, geometry box, fevicol.

Procedure

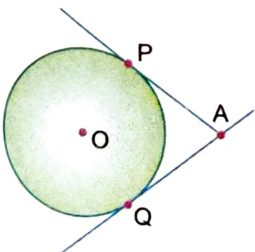
1. Cut a circle of any radius from a glazed paper and paste it on a white chart paper.



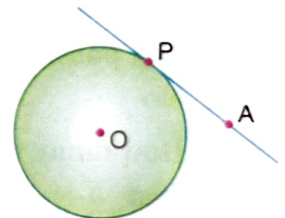
2. Take any point P on the circle.



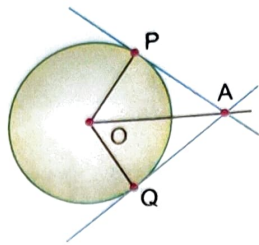
3. From P, fold the paper in such a way that it just touches the circle at P. Press it and unfold to get a tangent PA.



4. From A, fold the paper to get tangent AQ.



5. Fold the circle along OA.



6. Join OP, OA, OQ.

Observation

Students observe that point P coincide with Q.

$$\therefore AP = AQ$$

Result Thus it is verified that lengths of tangents drawn from an external point to a circle are equal.

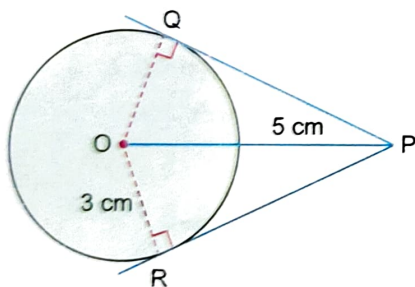
Learning Outcome

Students will learn how to measure tangents from an external point to a circle by using paper folding.

Activity Time

1. Draw two tangents from a point P to a circle of radius 3 cm. If its distance from the centre is 10 cm, measure the lengths of the tangents. Are they equal?

2. In the adjoining figure, prove that $AD + BC = AB + CD$.



3. In the adjoining figure, find PQ and PR.

