

CHAPTER 11

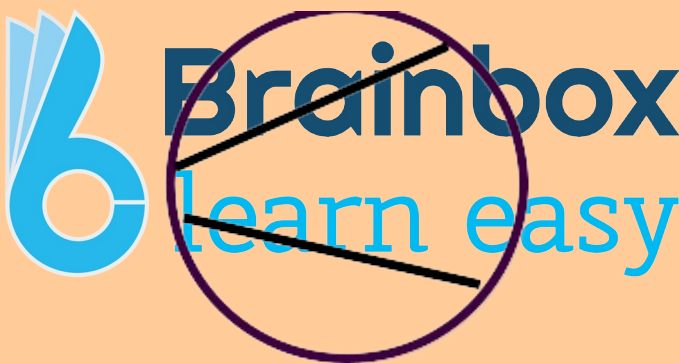
Constructions

IV. Construction of tangents to a circle from a given point outside the circle, if its centre is not given:

Steps of construction:

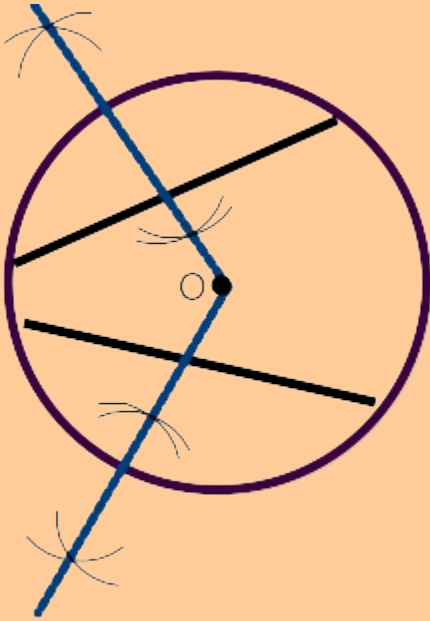
Step I:

Draw two non – parallel chords of the circle.



Step II:

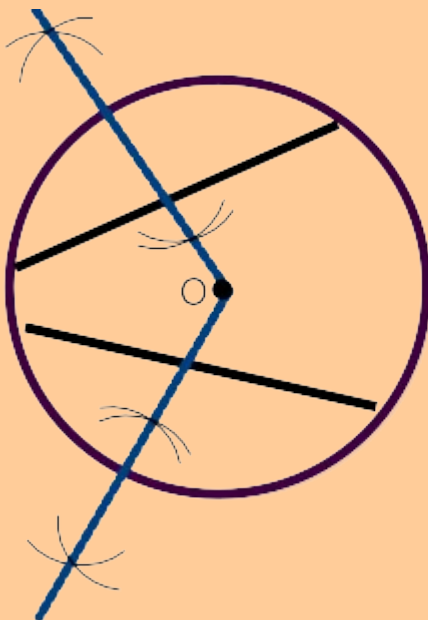
Draw perpendicular bisectors of both the chords intersecting each other at point 'O', which is the centre of the given circle.



Step III:

[To draw tangents we use the steps discussed in type III construction]

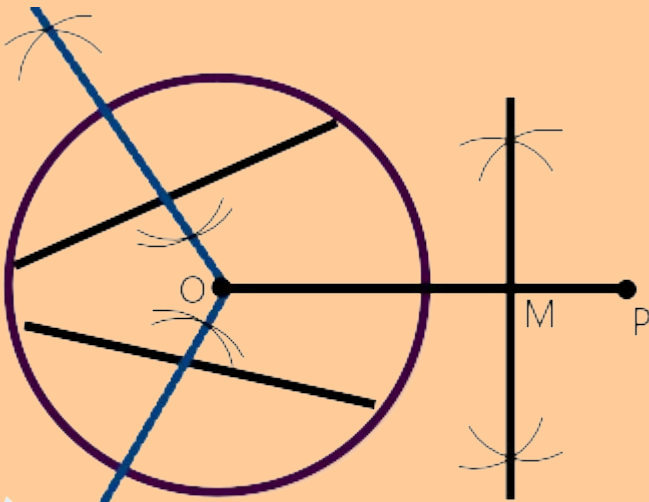
Mark a point 'P' outside the circle such that $OP = x$ cm.



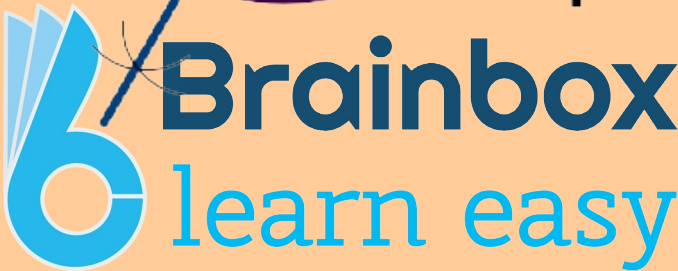
• P

Step IV:

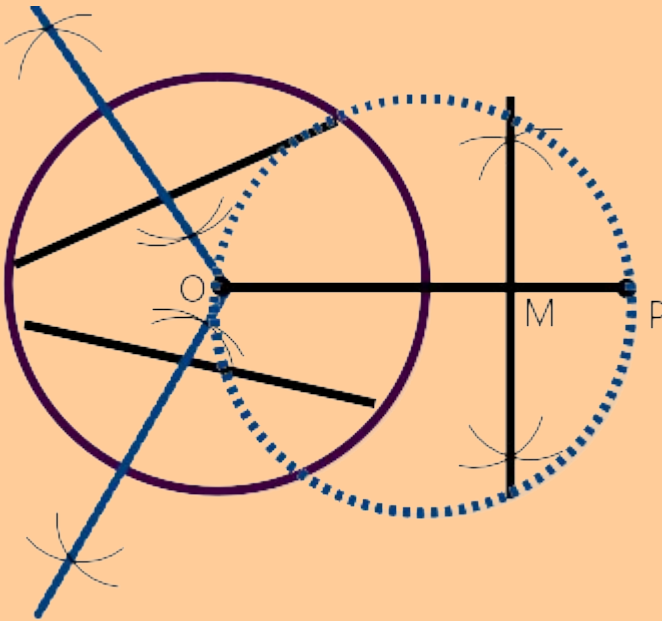
Join OP and draw its perpendicular bisector, which cuts OP at M.



Step V:



Draw a circle with 'M' as centre and radius equal to 'MP' to intersect the given circle at the points T and T' . Join PT and PT' .



Thus PT and PT' are the required tangents.

Example:

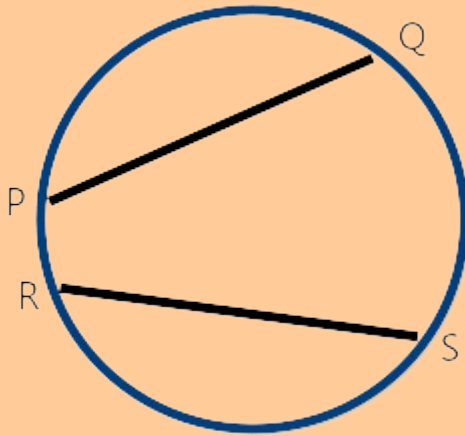
Draw a circle with the help of a round water bottle cap. Take a point outside the circle. Construct the pair of tangents from this point to the circle.

Sol.

Steps of construction:

Step I:

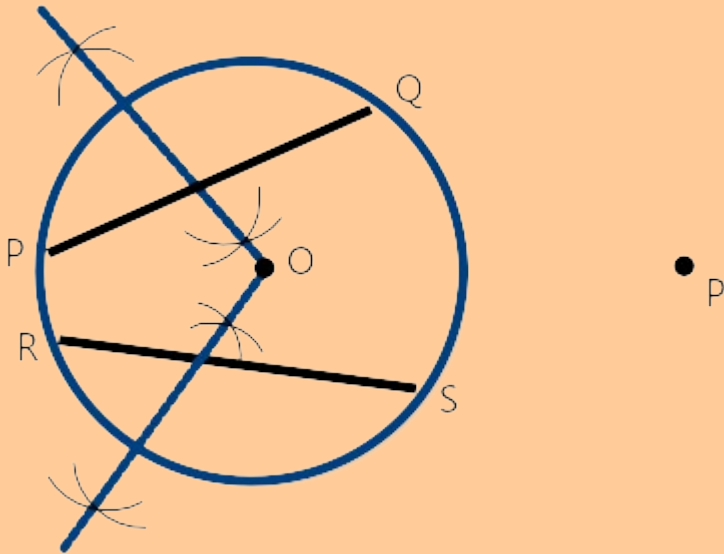
Draw the circle using a round water bottle cap and draw two non – parallel chords PQ and RS on this circle.

**Step II:**

Draw the perpendicular bisectors of PQ and RS such that they intersect at 'O'. Therefore 'O' is the centre of the given circle.

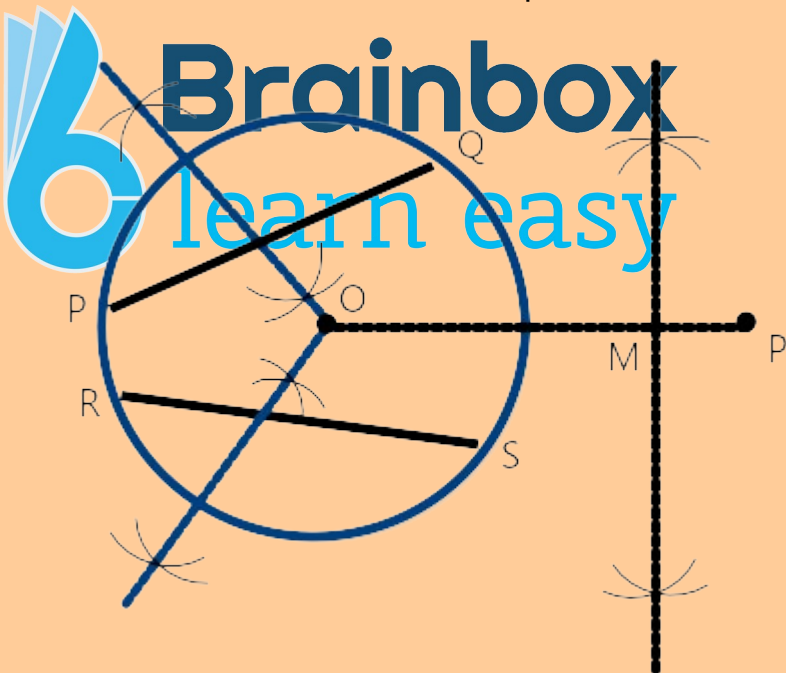
**Step III:**

Mark a point 'P' outside the circle.



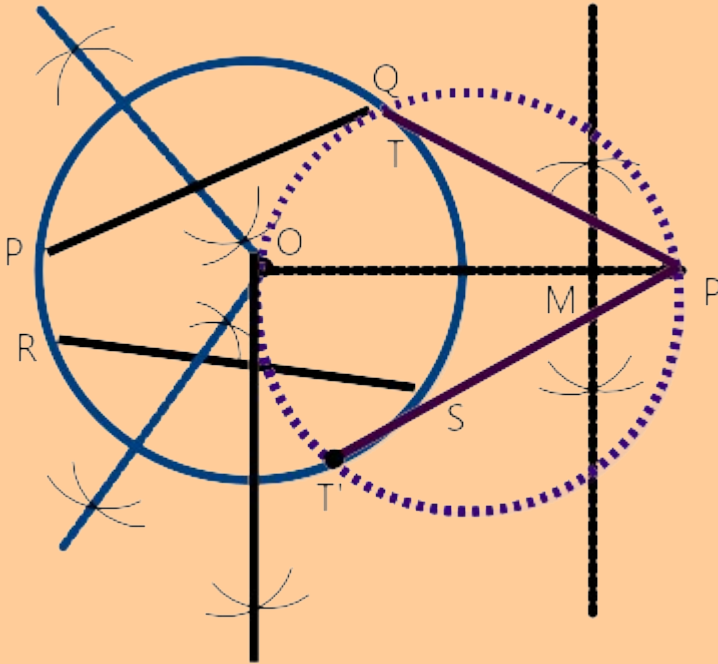
Step IV:

Join OP and bisect it. Let 'M' be the midpoint of OP.



Step V:

Draw a circle with 'M' as centre and radius equal to MP to intersect the given circle at the point T and T'. Join PT and PT'.



Hence, PT and PT' are the required tangents.



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