

Activity

-6 (01/12/13)

## Tangents drawn from an external point

### Objective

To verify using the method of paper cutting, pasting and folding that the lengths of tangents drawn from an external point are equal.

### Pre-requisite knowledge

Meaning of tangent to a circle.

### Procedure

1. Draw a circle of any radius on a coloured paper and cut it. Let O be its centre.
2. Paste the cutout on a rectangular sheet of paper. [Fig 10(a)]
3. Take any point P outside the circle.
4. From P fold the paper in such a way that it just touches the circle to get a tangent PA (A is the point of contact). [Fig 10(b)]. Join PA.
5. Repeat step 4 to get another tangent PB to the circle (B is the point of contact). [Fig 10(c)]. Join PB.
6. Join the centre of the circle O to P, A and B. [Fig 10(d & e)]
7. Fold the paper along OP. [Fig 10(f)] What do you observe?

### Observations

Students will observe that

1.  $\triangle OPA$  and  $\triangle OPB$  completely cover each other.
2. Length of tangent PA = Length of tangent PB.

### Learning outcome

Students learn how to get tangents from an external point to a circle using paper folding and verify the theorem.

### Remark

The teacher may ask the students to perform the activity by taking point P (external point) at different locations.

### Materials required

coloured papers,  
pair of scissors,  
ruler,  
sketch pens,  
compass,  
pencil.