CIRCLES

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1. In Figure 1, from an external point P, two tangent PQ and PR are drawn to a circle of radius $4cm$ with center O. If$\angle PQR = 90°$, then length of PQ is _____.

   (a) $3cm$

   (b) $4cm$

   (c) $2cm$

   (d) $2\sqrt{2}cm$

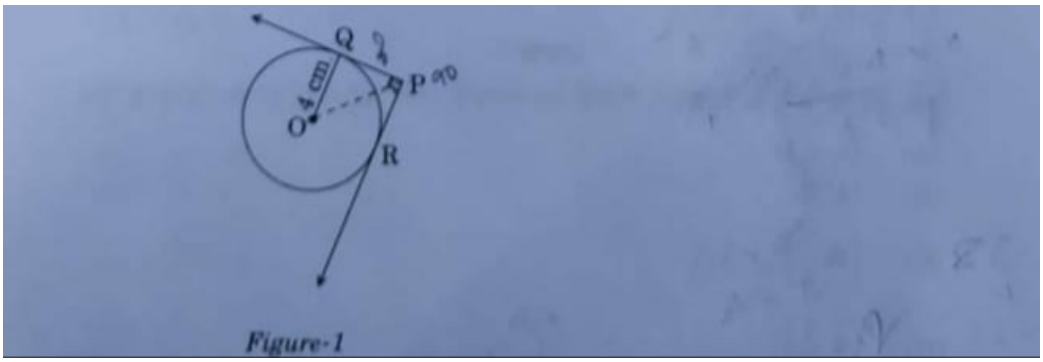

Figure 1: Circle with intersecting line and external points

2. In Figure 2, PQ is tangent to the circe with center at O, at the point B. If$\angle AOB = 100°$, then$\angle ABP$ is equal to

(a) 50°

(b) 40°

(c) 60°

(d) 80°

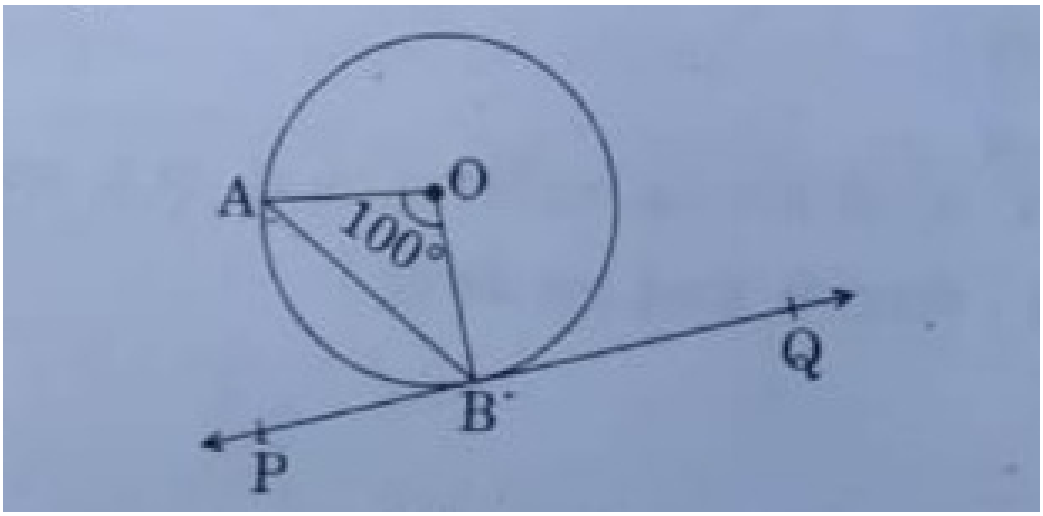

Figure 2: Geometric Diagram

3. In Figure 3, quadrilateral $ABCD$ is drawn to circumscribe a circle. Prove that
   $AB + CD = BC + AD$

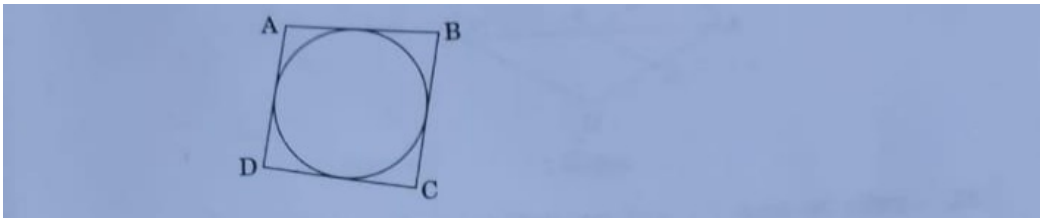

Figure 3: Inscribed Circle in a Rectangle

4. In Figure 4, find the perimeter of $\triangle ABC$, if $AP = 12cm$

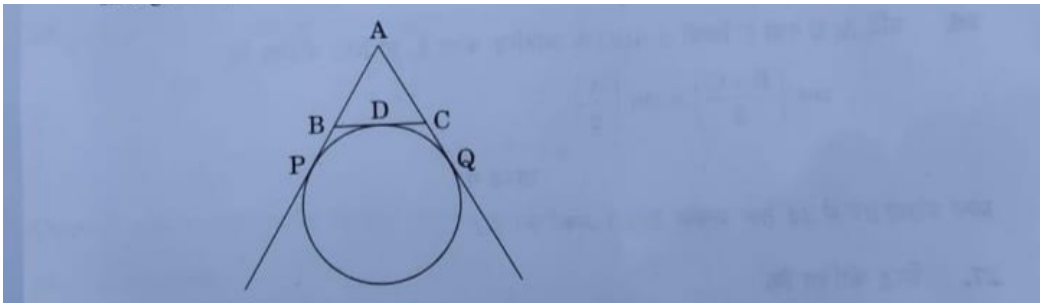

Figure 4: Inscribed Triangle in a Triangle