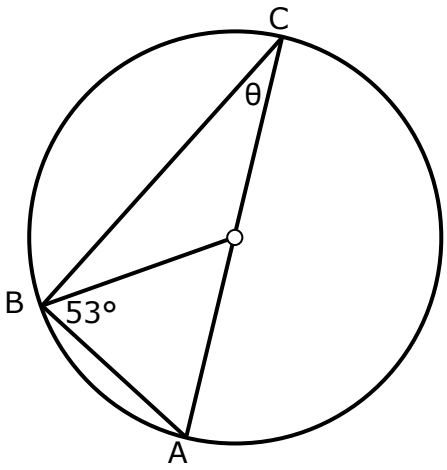
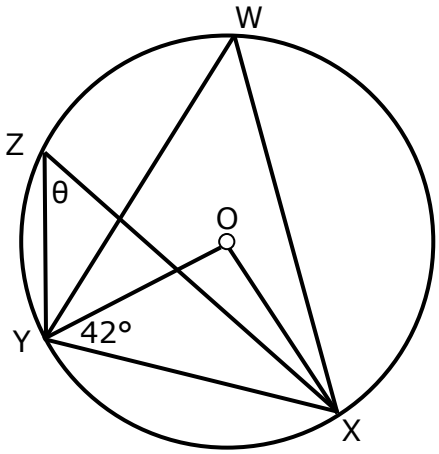
Merit+ Circle Geometry Practice #2

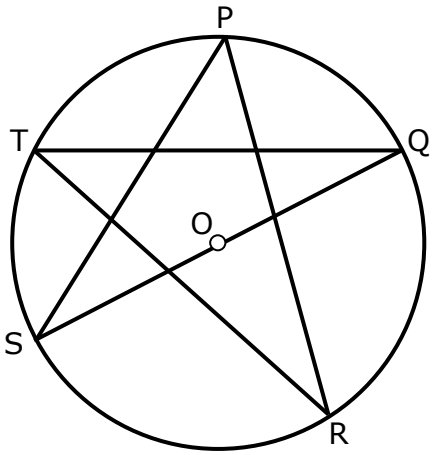
1. Find ∠ACB (marked θ).



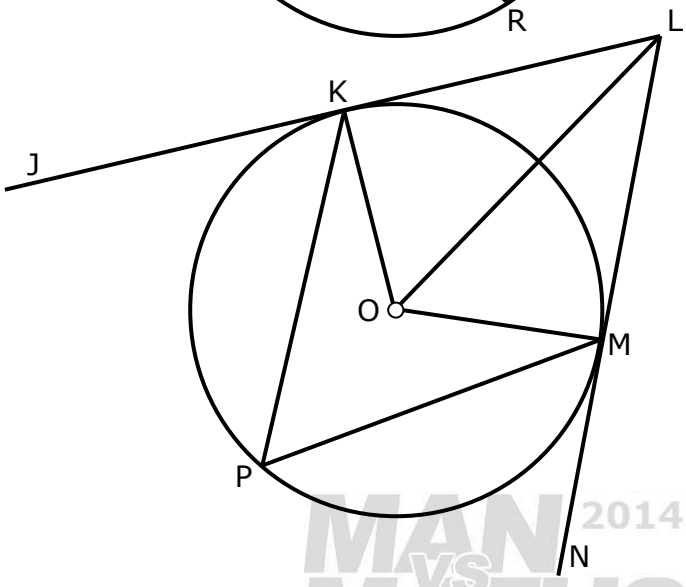
2. Find ∠XZY (marked θ).



3. Find ∠RPS if ∠RTQ is 38°.

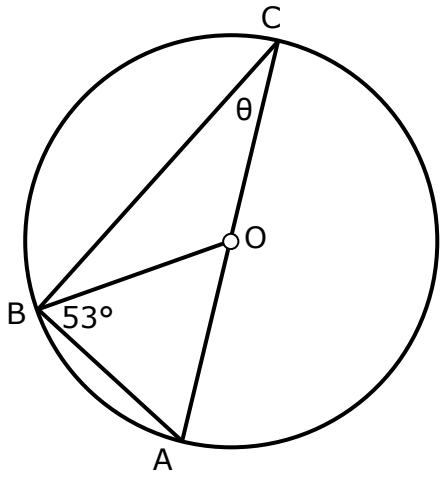


4. JL is a tangent intersecting at K
   NL is a tangent intersecting at M
   Find the size of ∠KLO in terms of ∠KPM



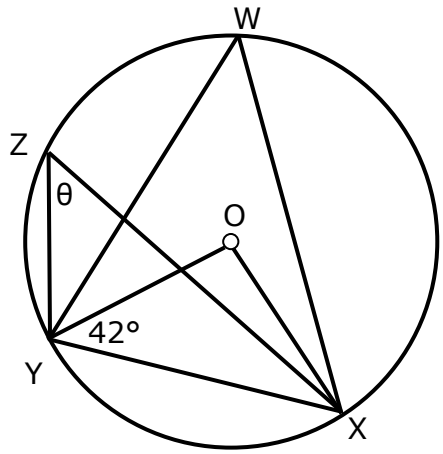
Answers: Merit+ Circle Geometry Practice #2

1. Find ∠ACB (marked θ).



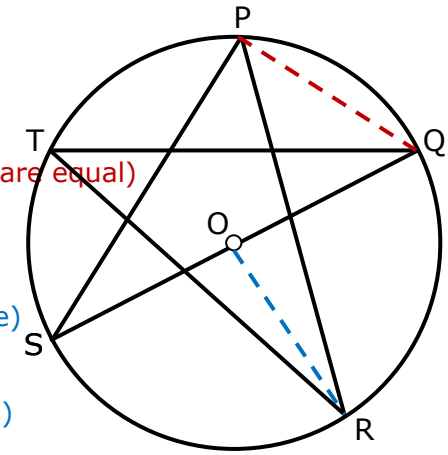
∠ABC = 90° (subtended from ends of a diameter)
∠OBC = 37° (adds to 90° with ∠ABC)
∠ACB = 37° (equal to ∠OBC because an isosceles triangle formed from radii)

2. Find ∠XZY (marked θ).



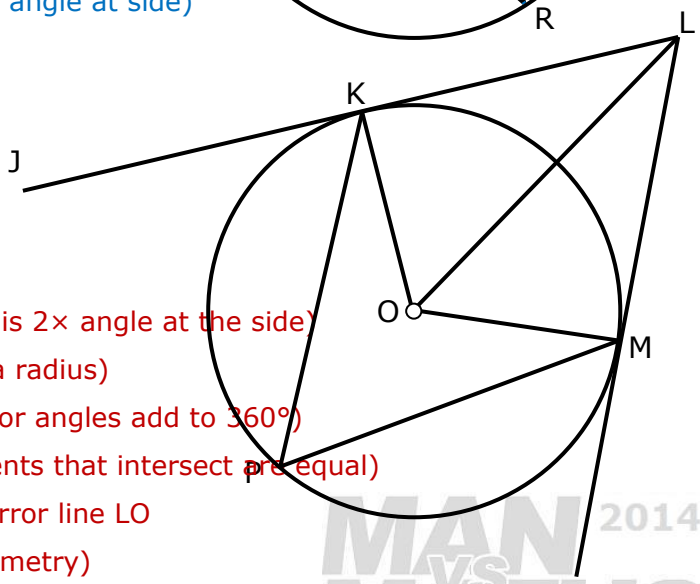
∠OXY = 42° (triangle formed from radii is isosceles)
∠XOY = 96° (interior angles of a triangle add to 180°)
∠XZY = 48° (angle subtended to centre is twice the angle to the sides)

3. Find ∠RPS if ∠RTQ is 38°.



∠RPQ = 38° (angles subtended to the side by the same arc are equal)
∠QPS = 90° (subtended from ends of a diameter)
∠RPS = 52° (∠RPS and ∠RPQ add to ∠QPS = 90°)
∠QOR = 76° (angle at centre from an arc is 2× angle at side)
∠ROS = 104° (adjacent angles on a line add to 180°)
∠RPS = 52° (angle at centre from an arc is 2× angle at side)

4. JL is a tangent intersecting at K
NL is a tangent intersecting at M
Find the size of ∠KLO in terms of ∠KPM



Let ∠KPM = x
∠KOM = $2x$ (angle at centre subtended by arc is 2× angle at the side)
∠OKL = ∠OML = 90° (tangents are at 90° to a radius)
∠KLM = 180° − $2x$ (quadrilateral KLMO's interior angles add to 360°)
OK = OM (both radiuses) and LK = LM (tangents that intersect are equal)
so the quadrilateral is symmetric with mirror line LO
∠KLO = 90° − x (half of ∠KLM because of symmetry)
∠KLO = 90° − ∠KPM