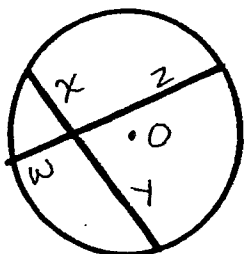


Circle Theorems

Lengths of Segments

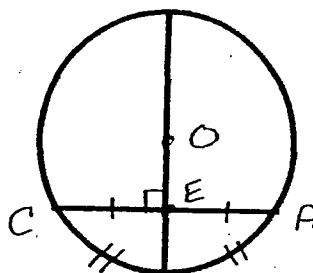
1



2 intersecting chords

$$x \cdot y = w \cdot z$$

2



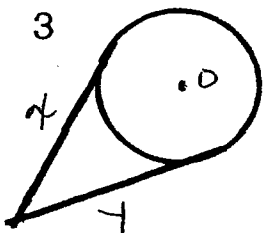
a chord and a diameter

$$\overline{OB} \perp \overline{AC}$$

$$AE = EC$$

$$m\widehat{AB} = m\widehat{BC}$$

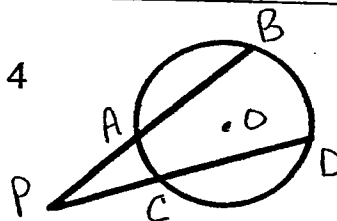
3



2 Tangent segments

$$X = Y$$

4



2 secant segments

$$PA \cdot PB = PC \cdot PD$$

Ex if $PA = 3$
 $AB = 5$
 $PC = 2$

find CD.

$$PA + AB = PB = 3 + 5 = 8$$

$$3 \cdot 8 = 2 \cdot x \quad [x = PD]$$

$$24 = 2x$$

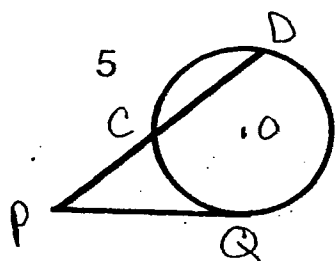
$$12 = x$$

$$PD = PC + CD$$

$$12 = 2 + y$$

$$CD = 10$$

$$y = 10$$



A secant segment and a tangent segment

$$PQ^2 = PC \cdot PD$$

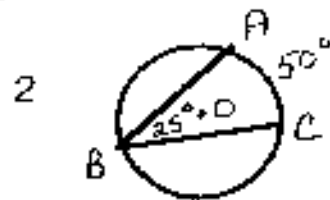
Circle Theorems

Angles



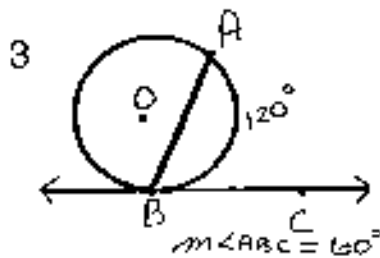
Central Angle

$$m\angle BOC = m\widehat{BC}$$



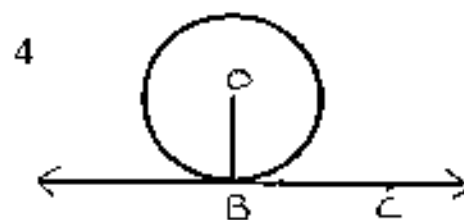
Inscribed Angle

$$m\angle ABC = \frac{1}{2} m\widehat{AC}$$



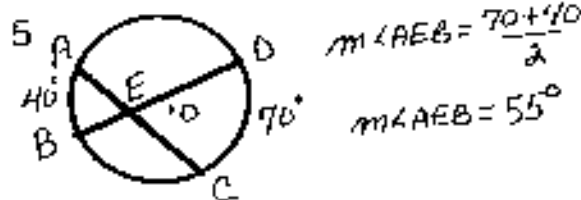
Angle formed by tangent & chord

$$m\angle ABC = \frac{1}{2} m\widehat{AB}$$



Angle formed by tangent & radius

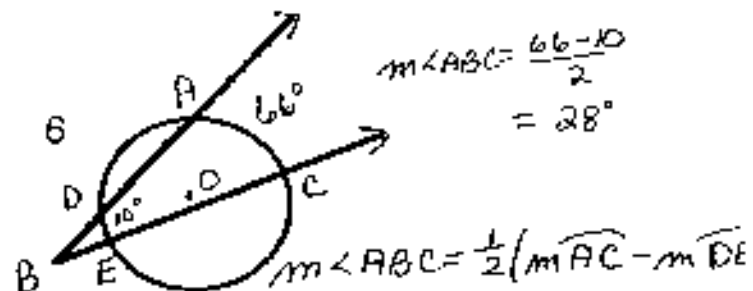
$$\overline{OB} \perp \overline{BC} \quad m\angle OBC = 90^\circ$$



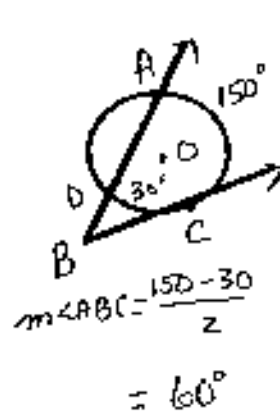
Angle formed by 2 chords

$$m\angle AEB = m\angle DEC$$

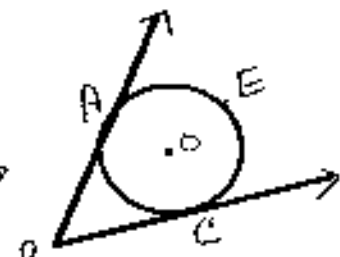
$$m\angle AEB = \frac{1}{2} (m\widehat{AB} + m\widehat{DC})$$



Angles formed by tangents & secants



$$m\angle ABC = \frac{150 - 30}{2} = 60^\circ$$



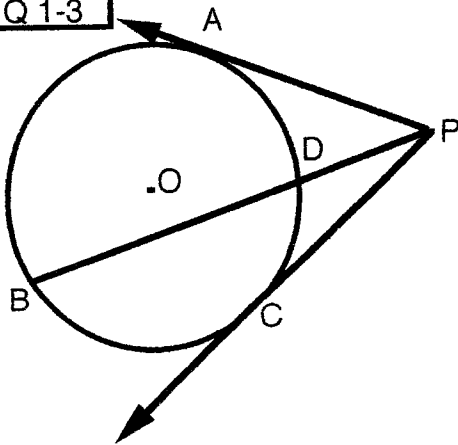
$$m\angle ABC = \frac{250 - 110}{2} = 70^\circ$$

Circle Review

Name _____

Please Note: Each problem is separate.

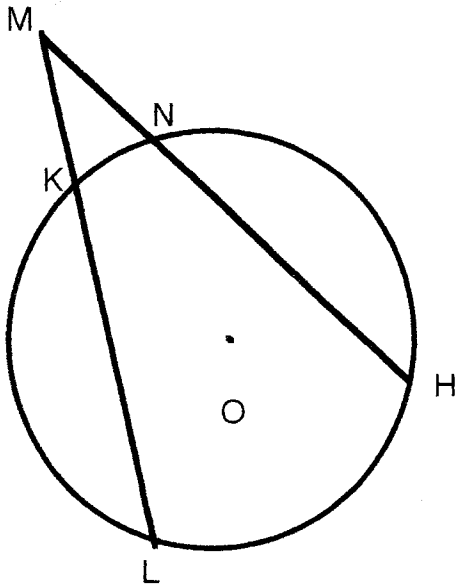
Q 1-3



\overline{PA} and \overline{PC} are tangent to Circle O at A and C.

- If $PA=8$ and $PD=4$
Find $DB =$ _____
 $PC =$ _____
- If $m\widehat{BC} = 100^\circ$ and $m\widehat{DC} = 30^\circ$
Find $m\angle BPC =$ _____
- If $m\angle APB = 48^\circ$ and $m\widehat{AD} = 40^\circ$
Find $m\widehat{AB} =$ _____

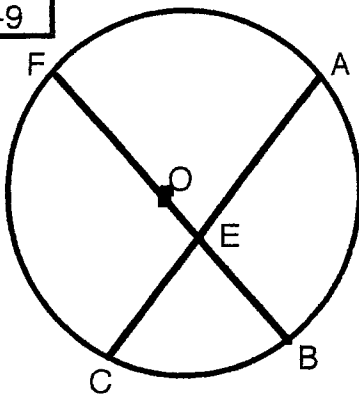
Q 4-6



In Circle O

- If $m\widehat{HL} = 130^\circ$ and $m\widehat{KN} = 45^\circ$
Find $m\angle LMH =$ _____
- If $MN = 3$, $MK = 2.5$ and $KL = 15.5$
Find $NH =$ _____
- If $KL = NH$, $m\widehat{NH} = 125^\circ$ and $m\angle KMN = 25^\circ$
Find $m\widehat{LH} =$ _____
Find $m\widehat{KN} =$ _____

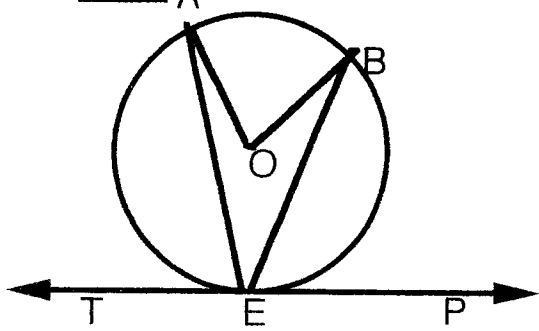
Q 7-9



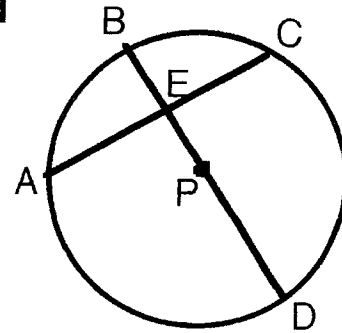
In Circle O

- $m\widehat{AF} = 85^\circ$ and $m\widehat{FC} = 149^\circ$
Find $m\angle CEB =$ _____
 $m\angle AEB =$ _____
- If $FE = 9$, $EB = 4$ and $AE = EC$
Find $CE =$ _____
- If $m\angle FEA = 76^\circ$ and $m\widehat{CB} = 52^\circ$
Find $m\widehat{FA} =$ _____
Find $m\angle AEB =$ _____

Q 10



Q 11-12



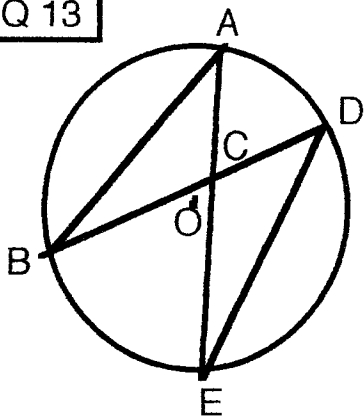
10. Circle O

- If $m \widehat{AE} : m \widehat{AB} : m \widehat{BE} = 4 : 2 : 3$
 Find $m \angle BEP =$ _____
 $m \angle AEP =$ _____
 $m \angle AET =$ _____
 $m \angle AOB =$ _____

Circle P $\widehat{AC} \perp \widehat{BD}$

11. If $m \widehat{AB} = 48^\circ$
 Find $m \widehat{BC} =$ _____
 $m \widehat{DC} =$ _____
12. If $AC = 10$ and $PD = 6$
 Find $EP =$ _____

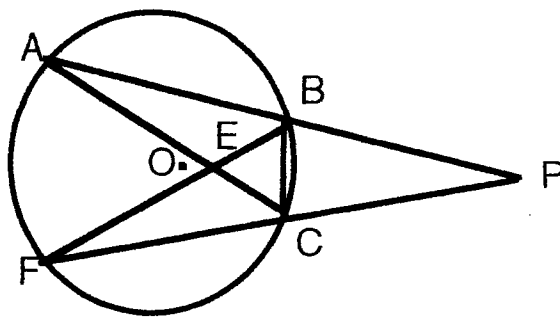
Q 13



Circle O

13. If $m \angle BAE = 38^\circ$ and $m \angle AED = 22^\circ$
 Find $m \angle ACD =$ _____
 $m \angle BCE =$ _____
 $m \angle DCE =$ _____

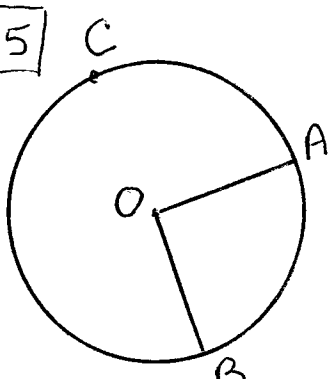
Q 14



Circle O

14. If $m \angle ABF = 55^\circ$, $m \widehat{BC} = 50^\circ$ and $AB = FC$
 Find
 $m \angle BFC =$ _____
 $m \angle BPC =$ _____
 $m \angle BEC =$ _____
 $m \widehat{FC} =$ _____
 $m \angle PCB =$ _____

Q 15



Circle O
 $m \angle AOB = 80^\circ$
 $AO = 10 \text{ cm}$
 Area of Sector AOB =
 length of Arc AB =