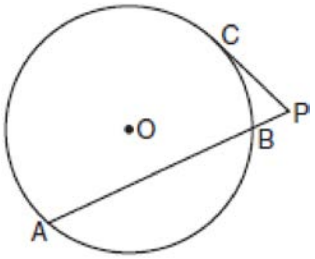
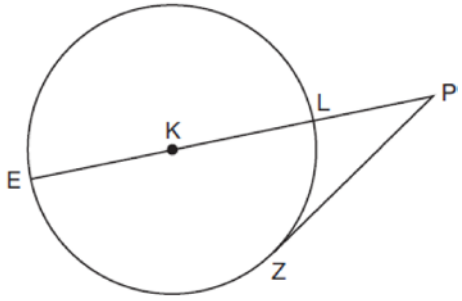
G.C.A.2: Chords, Secants and Tangents 16

1 Diameter $\overline{ROQ}$ of circle O is extended through Q to point P, and tangent $\overline{PA}$ is drawn. If $m\overset{\frown}{RA} = 100°$, what is $m\angle P$?
1) 10°
2) 20°
3) 40°
4) 50°

2 In the accompanying diagram of circle O, $\overline{PC}$ is a tangent, $\overline{PBA}$ is a secant, $m\overset{\frown}{AB} = 132$, and $m\overset{\frown}{CB} = 46$. Find $m\angle P$.

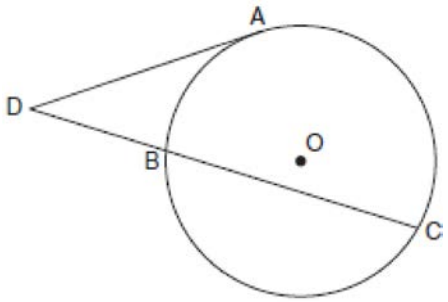


3 In the diagram below of circle K, secant $\overline{PLKE}$ and tangent $\overline{PZ}$ are drawn from external point P.



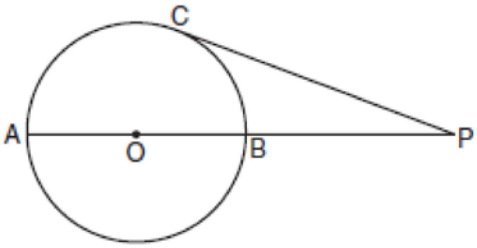
If $m\overset{\frown}{LZ} = 56°$, determine and state the degree measure of angle P.

4 In the diagram below, tangent $\overline{DA}$ and secant $\overline{DBC}$ are drawn to circle O from external point D, such that $\overset{\frown}{AC} \cong \overset{\frown}{BC}$.



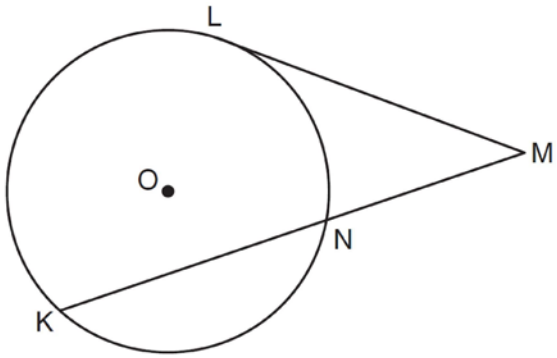
If $m\overset{\frown}{BC} = 152°$, determine and state $m\angle D$.

5 In the accompanying diagram of circle O, diameter $\overline{AOB}$ is extended through B to external point P, tangent $\overline{PC}$ is drawn to point C on the circle, and $m\overset{\frown}{AC} : m\overset{\frown}{BC} = 7:2$. Find $m\angle CPA$.

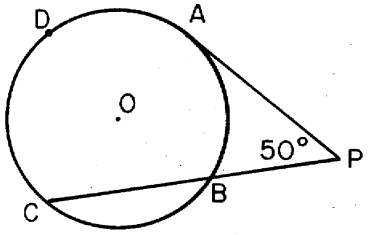


(Not drawn to scale)

6 In the diagram below, tangent $\overline{ML}$ and secant $\overline{MNK}$ are drawn to circle O. The ratio $\overset{\frown}{mLN} : \overset{\frown}{mNK} : \overset{\frown}{mKL}$ is $3:4:5$. Find $m\angle LMK$.

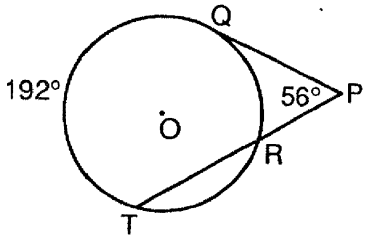


7 In the accompanying diagram, tangent $\overline{PA}$ and secant $\overline{PBC}$ are drawn to circle O. If $\overset{\frown}{mADC}$ is twice $\overset{\frown}{mAB}$ and $m\angle P$ is 50, what is $\overset{\frown}{mAB}$?



1) 25
2) 50
3) 100
4) 200

8 In the accompanying diagram, $\overline{PQ}$ is tangent to circle O at Q and $\overline{PRT}$ is a secant. If $m\angle P = 56$ and $\overset{\frown}{mQT} = 192$, find $\overset{\frown}{mQR}$.



9 Point P lies outside circle O, which has a diameter of $\overline{AOC}$. The angle formed by tangent $\overline{PA}$ and secant $\overline{PBC}$ measures 30°. Sketch the conditions given above and find the number of degrees in the measure of minor arc CB.

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Answer Section

1 ANS: 1

$\frac{100-80}{2}=10$

REF: 062219geo

2 ANS:

68. $m\widehat{AC}=182$. $\frac{182-46}{2}=68$

REF: 080925b

3 ANS:

$\frac{124-56}{2}=34$

REF: 081930geo

4 ANS:

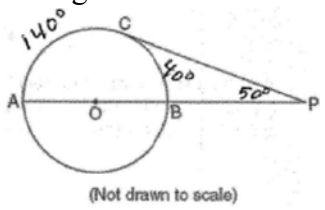
$\frac{152-56}{2}=48$

REF: 011728geo

5 ANS:

50. $\widehat{AC}$ and $\widehat{BC}$ form a semi-circle and measure 140° $(\frac{7}{9}\times 180)$ and 40° $(\frac{2}{9}\times 180)$, respectively. The angle formed by a tangent and a secant is equal to half the difference between the intercepted arcs.

$\frac{140-40}{2}=50$.



REF: 010721b

6 ANS:

30. $3x+4x+5x=360$. $m\widehat{LN}:m\widehat{NK}:m\widehat{KL}=90:120:150$. $\frac{150-90}{2}=30$

$x=20$

REF: 061136ge

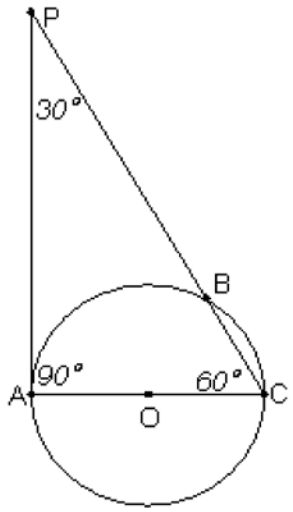
7 ANS: 3 REF: 018531siii

8 ANS:

80

REF: 089510siii

9 ANS:



m$\overset{\frown}{CB}$ = 60. Because $\overline{PA}$ is a tangent, $m\angle A = 90°$. It follows that $m\angle C = 60°$. The measure of an inscribed angle is half that of its intercepted arc. So $m\overset{\frown}{AB} = 120$. Since $\overline{AOC}$ is a diameter, $m\overset{\frown}{CB} = 60$.

REF: 060132b