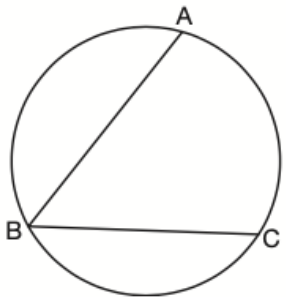
R.3 Chords and secants

1. Inscribe angle measure

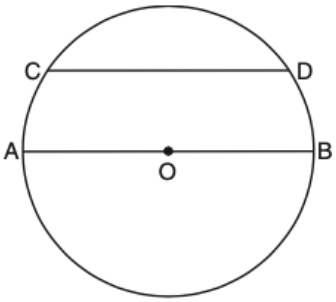
   In the diagram below, $\text{m}\overset{\frown}{ABC} = 268°$.



   What is the number of degrees in the measure of $\angle ABC$?

2. Arc measures

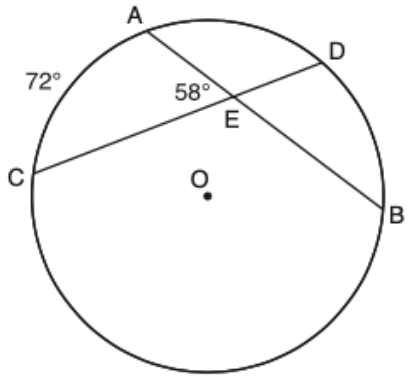
   In the diagram below of circle O, chord $\overline{CD}$ is parallel to diameter $\overline{AOB}$ and $\text{m}\overset{\frown}{CD} = 130$.



   What is $\text{m}\overset{\frown}{AC}$?

3. Chord angle measure situation

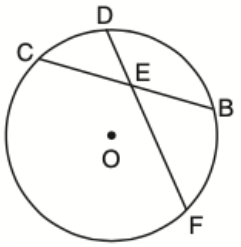
   In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.



   If $\text{m}\overset{\frown}{AC} = 72°$ and $\text{m}\angle AEC = 58°$, how many degrees are in $\text{m}\overset{\frown}{DB}$?

4. Chord length situation

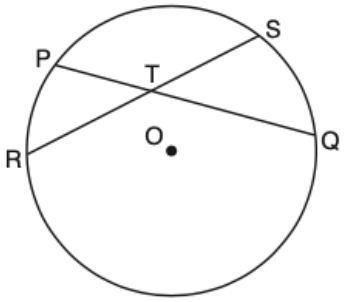
In the diagram below of circle O, chord $\overline{DF}$ bisects chord $\overline{BC}$ at E.



If $BC = 12$ and FE is 5 more than DE, then FE is

5. Chord length situation

In the diagram below, chords $\overline{PQ}$ and $\overline{RS}$ of circle O intersect at T.

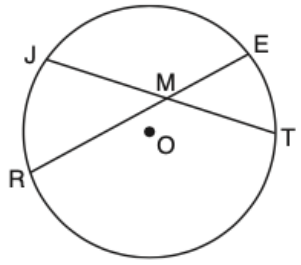


Which relationship must always be true?

(1) $RT = TQ$
(2) $RT = TS$
(3) $RT + TS = PT + TQ$
(4) $RT \times TS = PT \times TQ$

6. Chord length situation

In the diagram below of circle O, chords $\overline{JT}$ and $\overline{ER}$ intersect at M.

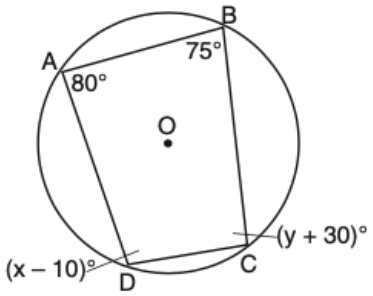


If $EM = 8$ and $RM = 15$, the lengths of $\overline{JM}$ and $\overline{TM}$ could be

(1) 12 and 9.5
(2) 14 and 8.5
(3) 16 and 7.5
(4) 18 and 6.5

7. Inscribe angle measures situation

Quadrilateral $ABCD$ is inscribed in circle O, as shown below.

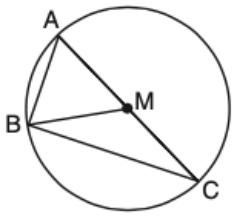


If $m\angle A = 80°$, $m\angle B = 75°$, $m\angle C = (y + 30)°$, and $m\angle D = (x - 10)°$, which statement is true?

(1) $x = 85$ and $y = 50$
(2) $x = 90$ and $y = 45$
(3) $x = 110$ and $y = 75$
(4) $x = 115$ and $y = 70$

8. Semicircle-inscribed triangle angle measure situation

In circle M below, diameter $\overline{AC}$, chords $\overline{AB}$ and $\overline{BC}$, and radius $\overline{MB}$ are drawn.

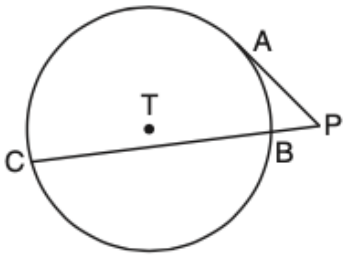


Which statement is *not* true?

(1) $\triangle ABC$ is a right triangle.
(2) $\triangle ABM$ is isosceles.
(3) $m\overset{\frown}{BC} = m\angle BMC$
(4) $m\overset{\frown}{AB} = \frac{1}{2}m\angle ACB$

9. Secant / tangent length situation

In the diagram shown below, $\overline{PA}$ is tangent to circle T at A, and secant $\overline{PBC}$ is drawn where point B is on circle T.



If $PB = 3$ and $BC = 15$, what is the length of $\overline{PA}$?

10. Secant angle situation

In circle O two secants, $\overline{ABP}$ and $\overline{CDP}$, are drawn to external point P. If $m\widehat{AC} = 72°$, and $m\widehat{BD} = 34°$, what is the measure of $\angle P$?