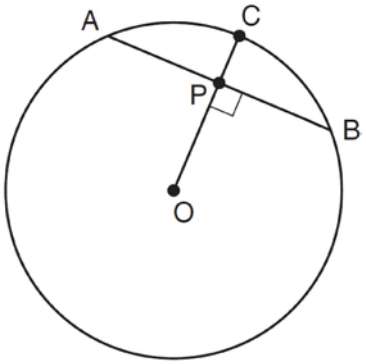
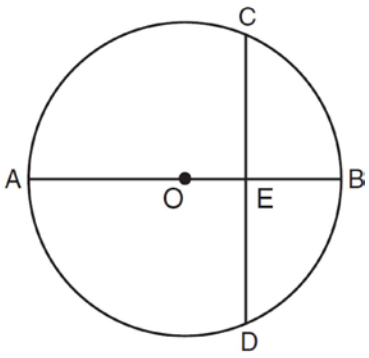
G.C.A.2: Chords, Secants and Tangents 3

1 In the diagram below of circle O, radius $\overline{OC}$ is 5 cm. Chord $\overline{AB}$ is 8 cm and is perpendicular to $\overline{OC}$ at point P.



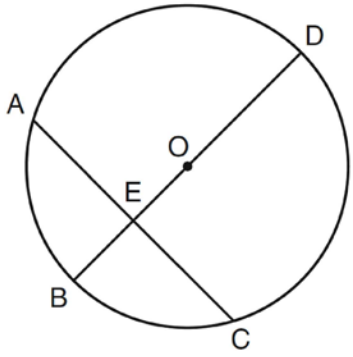
What is the length of $\overline{OP}$, in centimeters?
1) 8
2) 2
3) 3
4) 4

2 In the diagram below of circle O, diameter $\overline{AOB}$ is perpendicular to chord $\overline{CD}$ at point E, $OA = 6$, and $OE = 2$.



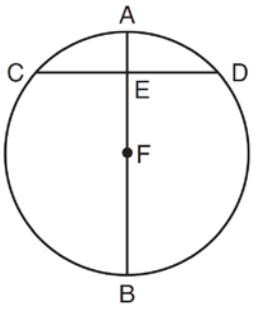
What is the length of $\overline{CE}$?
1) $4\sqrt{3}$
2) $2\sqrt{3}$
3) $8\sqrt{2}$
4) $4\sqrt{2}$

3 In circle O shown below, diameter $\overline{DB}$ is perpendicular to chord $\overline{AC}$ at E.



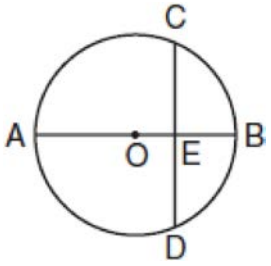
If $DB = 34$, $AC = 30$, and $DE > BE$, what is the length of $\overline{BE}$?
1) 8
2) 9
3) 16
4) 25

4 In the diagram below, diameter $\overline{AB}$ bisects chord $\overline{CD}$ at point E in circle F.



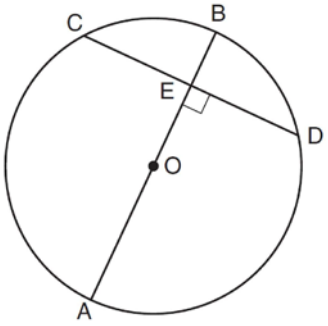
If $AE = 2$ and $FB = 17$, then the length of $\overline{CE}$ is
1) 7
2) 8
3) 15
4) 16

5 In the accompanying diagram of circle O, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ and intersects $\overline{CD}$ at E, $AE = 9$, and $EB = 4$.

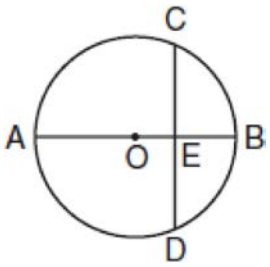


What is ED?
1) 8
2) 7
3) 6
4) 4

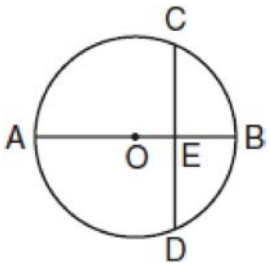
6 In the diagram below of circle O, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ at E. If $AO = 10$ and $BE = 4$, find the length of $\overline{CE}$.



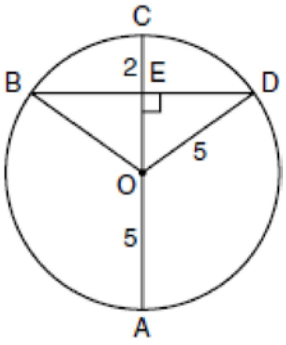
7 In the accompanying diagram of circle O, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ at E, $CD = 8$, and $EB = 2$. What is the length of the diameter of circle O?



8 In the accompanying diagram of circle O, diameter $\overline{AB} \perp \overline{CD}$. and $CD = 14$. Find CE.

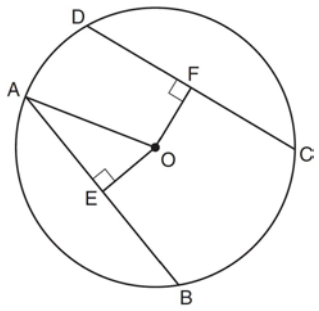


9 In the diagram below, circle O has a radius of 5, and $CE = 2$. Diameter $\overline{AC}$ is perpendicular to chord $\overline{BD}$ at E.



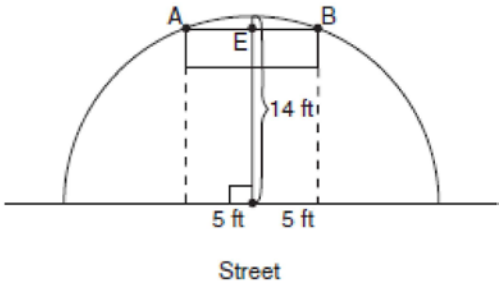
What is the length of $\overline{BD}$?
1) 12
2) 10
3) 8
4) 4

10 In circle O shown below, chords $\overline{AB}$ and $\overline{CD}$ and radius $\overline{OA}$ are drawn, such that $\overline{AB} \cong \overline{CD}$, $\overline{OE} \perp \overline{AB}$, $\overline{OF} \perp \overline{CD}$, $OF = 16$, $CF = y + 10$, and $CD = 4y - 20$.



Determine the length of $\overline{DF}$. Determine the length of $\overline{OA}$.

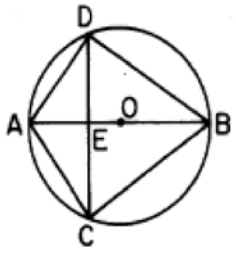
11 The accompanying diagram shows a semicircular arch over a street that has a radius of 14 feet. A banner is attached to the arch at points A and B, such that $AE = EB = 5$ feet. How many feet above the ground are these points of attachment for the banner?



12 In circle O, diameter $\overline{AB}$ intersects chord $\overline{CD}$ at E. If $CE = ED$, then $\angle CEA$ is which type of angle?
1) straight
2) obtuse
3) acute
4) right

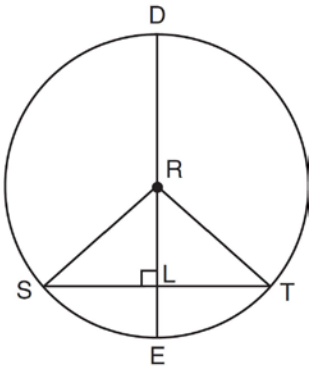
13 In a circle, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ at L. Which statement will always be true about this circle?
1) $CL = LD$
2) $AL > LB$
3) $(CL) \times (LD) = AB$
4) $BL > LA$

14 In the accompanying diagram of circle O, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ at point E. What is the image of $\overline{AC}$ in $\overline{AB}$?



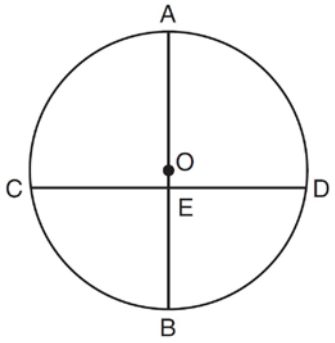
1) $\overline{AD}$
2) $\overline{BD}$
3) $\overline{ED}$
4) $\overline{AE}$

15 In circle R shown below, diameter $\overline{DE}$ is perpendicular to chord $\overline{ST}$ at point L.



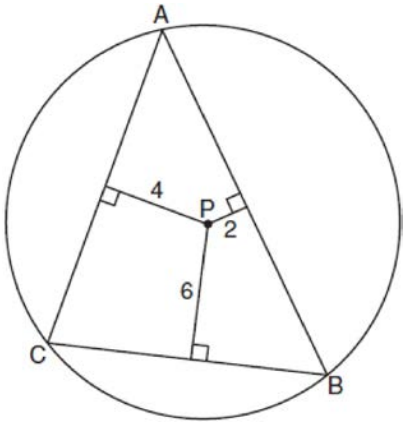
Which statement is *not* always true?
1) $\overline{SL} \cong \overline{TL}$
2) $RS = DR$
3) $\overline{RL} \cong \overline{LE}$
4) $(DL)(LE) = (SL)(LT)$

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



If $\overline{AB} \perp \overline{CD}$, which statement is always true?
1) $\overset{\frown}{AC} \cong \overset{\frown}{BD}$
2) $\overset{\frown}{BD} \cong \overset{\frown}{DA}$
3) $\overset{\frown}{AD} \cong \overset{\frown}{BC}$
4) $\overset{\frown}{CB} \cong \overset{\frown}{BD}$

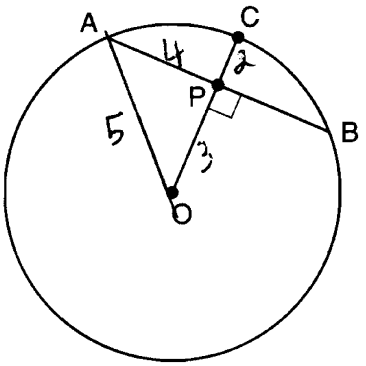
17 In the diagram below, $\triangle ABC$ is inscribed in circle P. The distances from the center of circle P to each side of the triangle are shown.



Which statement about the sides of the triangle is true?
1) $AB > AC > BC$
2) $AB < AC$ and $AC > BC$
3) $AC > AB > BC$
4) $AC = AB$ and $AB > BC$

G.C.A.2: Chords, Secants and Tangents 3
Answer Section

1 ANS: 3



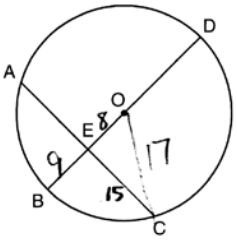
REF: 011113ge

2 ANS: 4

$\sqrt{6^2 - 2^2} = \sqrt{32} = \sqrt{16}\sqrt{2} = 4\sqrt{2}$

REF: 081124ge

3 ANS: 2



$\sqrt{17^2 - 15^2} = 8.\ 17 - 8 = 9$

REF: 061221ge

4 ANS: 2

$\sqrt{17^2 - 15^2} = \sqrt{289 - 225} = \sqrt{64} = 8$

REF: 011424ge

5 ANS: 3 REF: 080114siii

6 ANS:

$EO = 6.\ CE = \sqrt{10^2 - 6^2} = 8$

REF: 011234ge

7 ANS:

10. $2x = 4^2$

$x = 8$

$d = 8 + 2 = 10$

REF: 019907siii

8 ANS:
7

REF: 068104siii

9 ANS: 3
Because $\overline{OC}$ is a radius, its length is 5. Since $CE = 2$ $OE = 3$. $\triangle EDO$ is a 3-4-5 triangle. If $ED = 4$, $BD = 8$.

REF: fall0811ge

10 ANS:
$2(y + 10) = 4y - 20$. $\overline{DF} = y + 10 = 20 + 10 = 30$. $\overline{OA} = \overline{OD} = \sqrt{16^2 + 30^2} = 34$

$2y + 20 = 4y - 20$

$40 = 2y$

$20 = y$

REF: 061336ge

11 ANS:
$\sqrt{171}$. The distance from A to the point on the street directly below E is also a radius of 14 feet.

$5^2 + b^2 = 14^2$

$b^2 = 171$.

$b = \sqrt{171}$

REF: 080124b

12 ANS: 4 REF: 081308ge

13 ANS: 1 REF: 089617siii

14 ANS: 1 REF: 069018siii

15 ANS: 3 REF: 011322ge

16 ANS: 4 REF: 081403ge

17 ANS: 1
The closer a chord is to the center of a circle, the longer the chord.

REF: 011005ge