G.C.A.2: Chords, Secants and Tangents 10
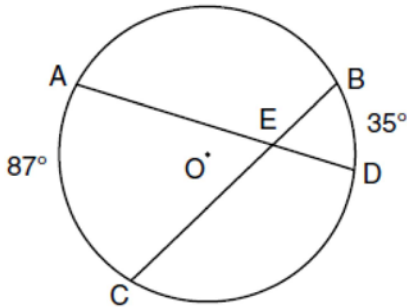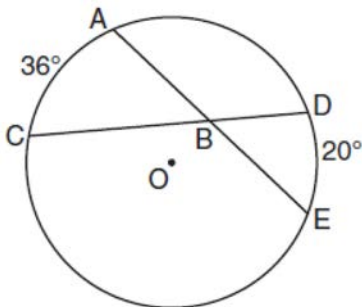
1   In the diagram below of circle O, chords $\overline{AD}$ and $\overline{BC}$ intersect at E, $m\overset{\frown}{AC} = 87$, and $m\overset{\frown}{BD} = 35$.
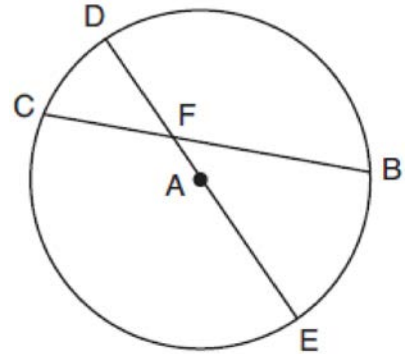

What is the degree measure of $\angle CEA$?
1)   87
2)   61
3)   43.5
4)   26

2   In the diagram below of circle O, chords $\overline{AE}$ and $\overline{DC}$ intersect at point B, such that $m\overset{\frown}{AC} = 36$ and $m\overset{\frown}{DE} = 20$.

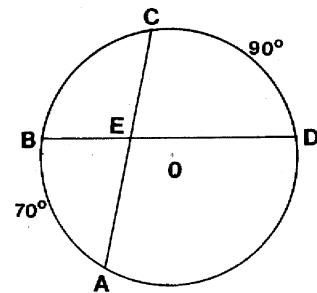What is $m\angle ABC$?
1)   56
2)   36
3)   28
4)   8

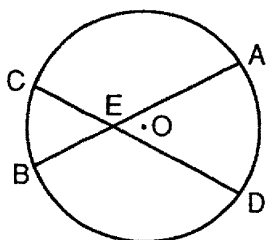3   In circle A below, chord $\overline{BC}$ and diameter $\overline{DAE}$ intersect at F.

If $m\overset{\frown}{CD} = 46°$ and $m\overset{\frown}{DB} = 102°$, what is $m\angle CFE$?
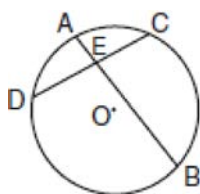
4   In the accompanying diagram, $\overline{AC}$ and $\overline{BD}$ are chords of circle O and intersect at E. If $m\overset{\frown}{AB} = 70$ and $m\overset{\frown}{CD} = 90$, find $m\angle BEA$.

5   In the accompanying diagram, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\overset{\frown}{AD} = 70$ and $m\overset{\frown}{BC} = 40$, find $m\angle AED$.

6   In the accompanying diagram of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E, $m\overset{\frown}{AC} = 50$, and $m\overset{\frown}{BD} = 150$. Find $m\angle AED$.

7   In the accompanying diagram, $\overline{AB}$ is a diameter of circle O and chord $\overline{CD}$ intersects diameter $\overline{AB}$ at E. If $m\overset{\frown}{AD} = 100$ and $m\overset{\frown}{AC} = 40$, find $m\angle DEB$.
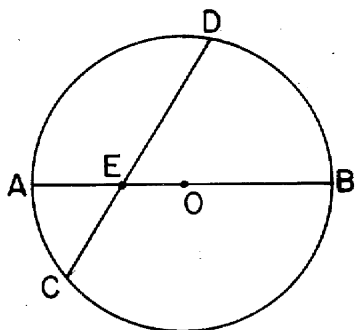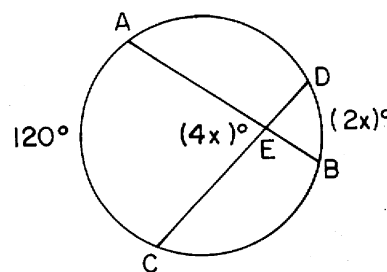
8   In the accompanying diagram, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\overset{\frown}{AC} = 75$ and $m\overset{\frown}{DB} = 45$, find $m\angle AED$.
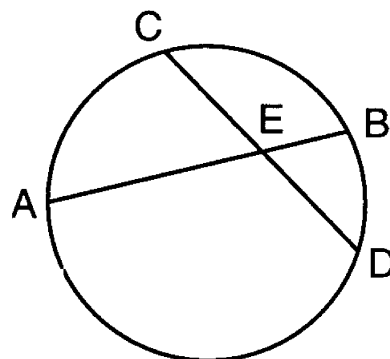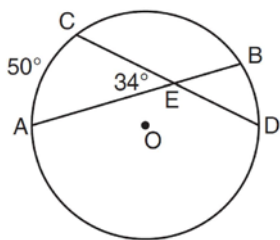
9   In the diagram below, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\angle AEC = 4x$, $m\overset{\frown}{AC} = 120$, and $m\overset{\frown}{DB} = 2x$, what is the value of x?
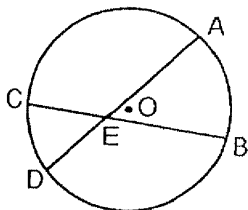
1)   12
2)   20
3)   30
4)   60

2

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

If m∠AEC = 34 and m$\overarc{AC}$ = 50, what is m$\overarc{DB}$?
1) 16
2) 18
3) 68
4) 118

11 In the accompanying diagram of circle O, m$\overarc{AB}$ = 64 and m∠AEB = 52.

What is the measure of $\overarc{CD}$?
1) 104°
2) 80°
3) 52°
4) 40°

12 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.
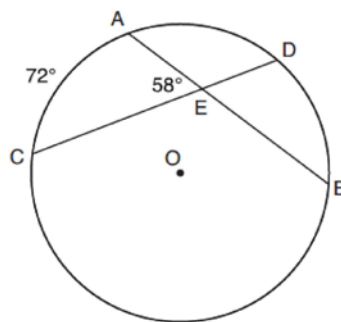
If m$\overarc{AC}$ = 72° and m∠AEC = 58°, how many degrees are in m$\overarc{DB}$?
1) 108°
2) 65°
3) 44°
4) 14°

13 In the accompanying figure of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E and $\overline{AD}$ is a diameter. If m$\overarc{CB}$ = 82, find m∠AED.
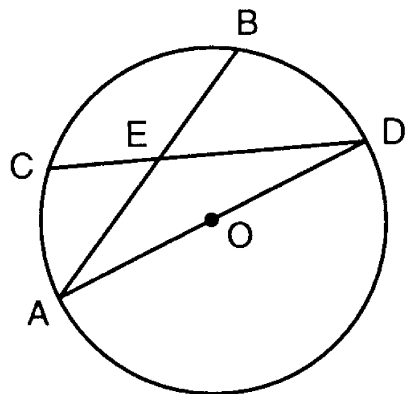
14 In the accompanying diagram of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E and
$\overset{\frown}{mAC}:\overset{\frown}{mCB}:\overset{\frown}{mBD}:\overset{\frown}{mDA} = 4:2:6:8$.
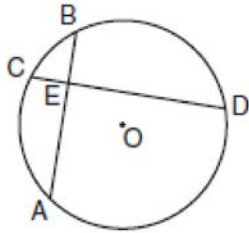
What is m∠DEB?
1) 36
2) 90
3) 100
4) 126

15 The accompanying diagram shows a child's spin toy that is constructed from two chords intersecting in a circle. The curved edge of the larger shaded section is one-quarter of the circumference of the circle, and the curved edge of the smaller shaded section is one-fifth of the circumference of the circle.
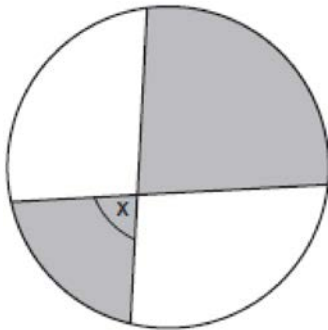
What is the measure of angle x?
1) 40°
2) 72°
3) 81°
4) 108°

G.C.A.2: Chords, Secants and Tangents 10
Answer Section

1 ANS: 2

$$\frac{87+35}{2} = \frac{122}{2} = 61$$
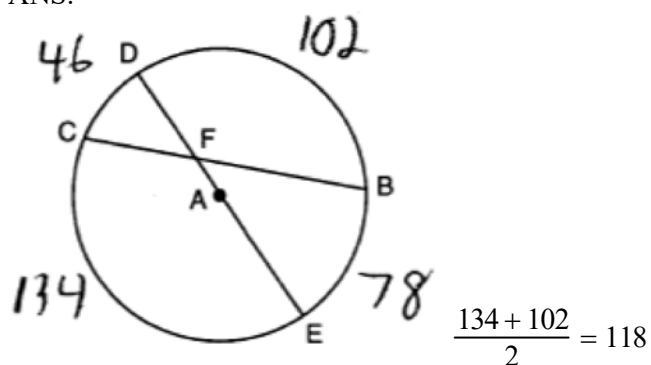
   REF: 011015ge

2 ANS: 3

$$\frac{36+20}{2} = 28$$

   REF: 061019ge

3 ANS:

$$\frac{134+102}{2} = 118$$

   REF: 081827geo

4 ANS:
   80

   REF: 018410siii

5 ANS:
   55

   REF: 069411siii

6 ANS:
   80

   REF: 060111siii

7 ANS:
   60

   REF: 088709siii

8 ANS:
   120

   REF: 089811siii

9 ANS: 2   REF: 018931siii

10 ANS: 2

$$\frac{50+x}{2} = 34$$

$$50 + x = 68$$

$$x = 18$$

REF: 011214ge

11 ANS: 4 REF: 019429siii

12 ANS: 3

$$\frac{x+72}{2} = 58$$

$$x + 72 = 116$$

$$x = 44$$

REF: 061817geo

13 ANS:
131

REF: 089915siii

14 ANS: 2 REF: 060221siii

15 ANS: 3

Because the curved edge of the larger shaded section is one-quarter of the circumference of the circle, that arc measures 90°. Because the curved edge of the smaller shaded section is one-fifth of the circumference of the circle, that arc measures 72°. The angle formed by the intersection of two chords is equal to half the sum
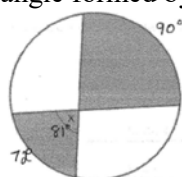
of the intercepted arcs. $x = \dfrac{90+72}{2} = 81$.

REF: 080408b