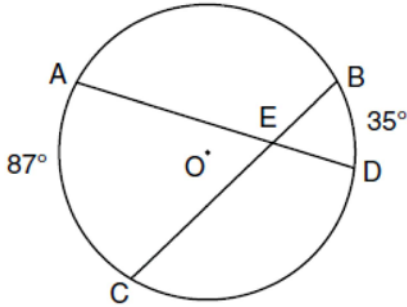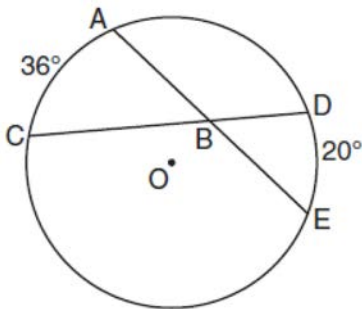## G.C.A.2: Chords, Secants and Tangents 10

1 In the diagram below of circle O, chords $\overline{AD}$ and $\overline{BC}$ intersect at E, $m\widehat{AC} = 87$, and $m\widehat{BD} = 35$.
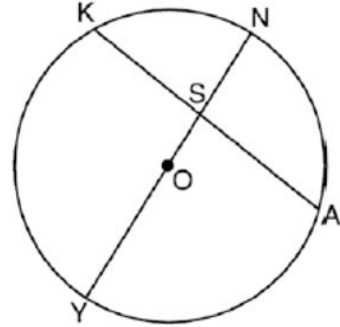

What is the degree measure of $\angle CEA$?
1) 87
2) 61
3) 43.5
4) 26

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

What is $m\angle ABC$?
1) 56
2) 36
3) 28
4) 8
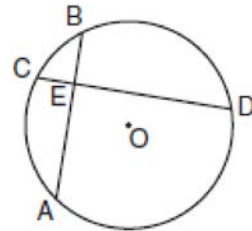
3 In circle O, chord $\overline{KA}$ intersects diameter $\overline{YN}$ at S.

If $m\widehat{YK} = 120°$ and $m\widehat{YA} = 105°$, what is $m\angle ASN$?
1) 22.5º
2) 75º
3) 97.5º
4) 120º

4 In the accompanying diagram of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E and $m\widehat{AC} : m\widehat{CB} : m\widehat{BD} : m\widehat{DA} = 4:2:6:8$.


What is $m\angle DEB$?
1) 36
2) 90
3) 100
4) 126

5   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.
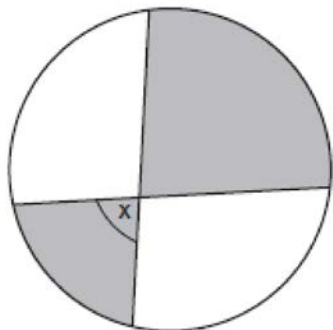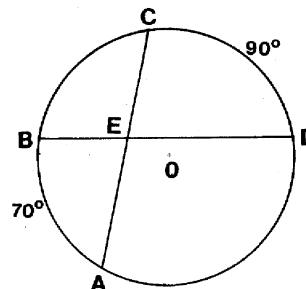
What is the measure of angle x?
1)   40°
2)   72°
3)   81°
4)   108°

6   In circle A below, chord $\overline{BC}$ and diameter $\overline{DAE}$ intersect at F.
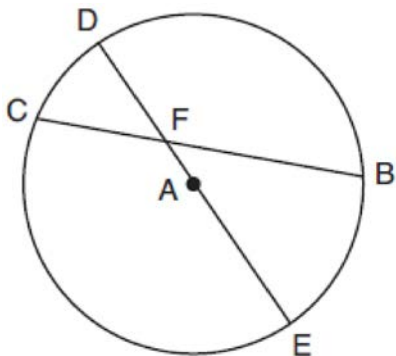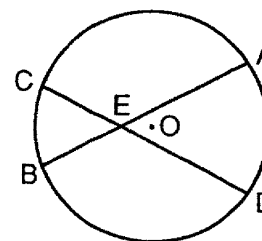
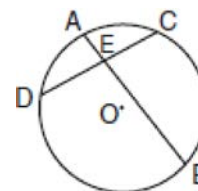If $m\overarc{CD} = 46°$ and $m\overarc{DB} = 102°$, what is $m\angle CFE$?

7   In the accompanying diagram, $\overline{AC}$ and $\overline{BD}$ are chords of circle O and intersect at E. If $m\overarc{AB} = 70$ and $m\overarc{CD} = 90$, find $m\angle BEA$.
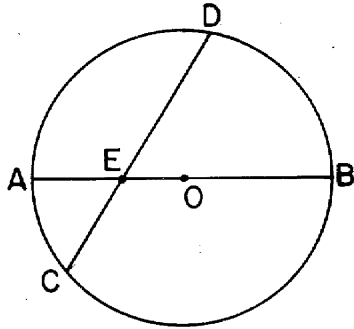
8   In the accompanying diagram, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\overarc{AD} = 70$ and $m\overarc{BC} = 40$, find $m\angle AED$.

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

2

10   In the accompanying diagram, $\overline{AB}$ is a diameter of circle O and chord $\overline{CD}$ intersects diameter $\overline{AB}$ at E. If $m\widehat{AD} = 100$ and $m\widehat{AC} = 40$, find $m\angle DEB$.

12   In the accompanying figure of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E and $\overline{AD}$ is a diameter. If $m\widehat{CB} = 82$, find $m\angle AED$.

11   In the accompanying diagram, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\widehat{AC} = 75$ and $m\widehat{DB} = 45$, find $m\angle AED$.
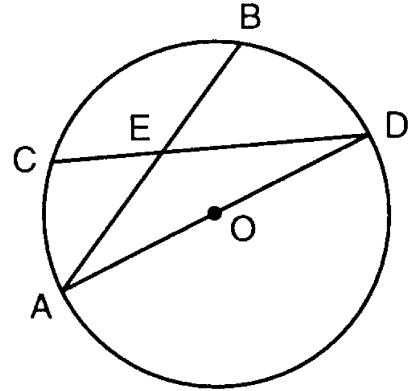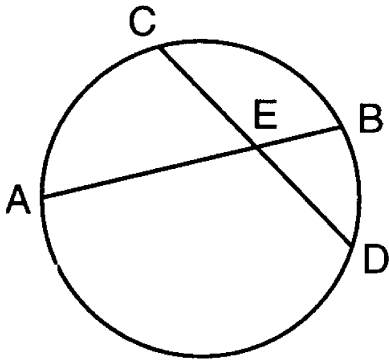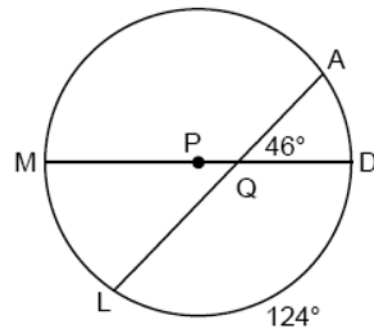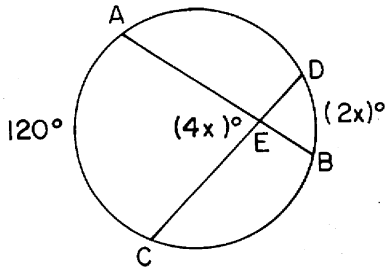
13   In the diagram below of circle P, diameter $\overline{MD}$ and chord $\overline{AL}$ intersect at Q, $m\angle AQD = 46°$, and $m\widehat{LD} = 124°$.
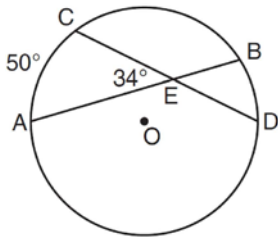
What is $m\widehat{AD}$?
1)   36°
2)   46°
3)   51°
4)   92°

14 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

16 In the accompanying diagram of circle O, m$\overset{\frown}{AB} = 64$ and m$\angle AEB = 52$.

What is the measure of $\overset{\frown}{CD}$?
1) 104°
2) 80°
3) 52°
4) 40°
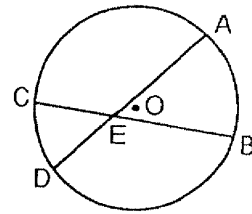
15 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.

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

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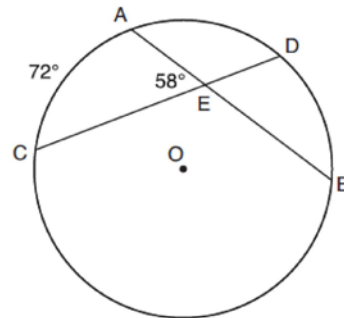
If m$\overset{\frown}{AC} = 72°$ and m$\angle AEC = 58°$, how many degrees are in m$\overset{\frown}{DB}$?
1) 108°
2) 65°
3) 44°
4) 14°

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: 3

$$\frac{120+(180-105)}{2} = \frac{195}{2} = 97.5$$

REF: 012510geo

4 ANS: 2   REF: 060221siii

5 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
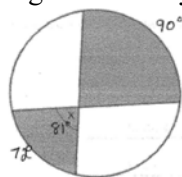
of the intercepted arcs. $x = \dfrac{90+72}{2} = 81$.

REF: 080408b

6 ANS:
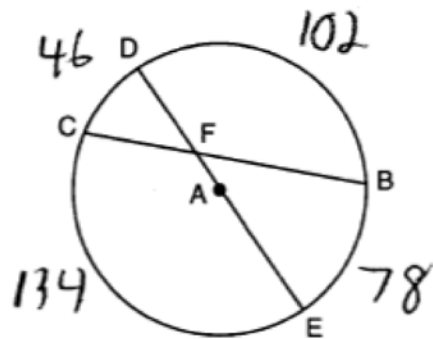
$$\frac{134+102}{2} = 118$$

REF: 081827geo

1

7 ANS:
80

REF: 018410siii
8 ANS:
55

REF: 069411siii
9 ANS:
80

REF: 060111siii
10 ANS:
60

REF: 088709siii
11 ANS:
120

REF: 089811siii
12 ANS:
131

REF: 089915siii
13 ANS: 1

$$\frac{56+x}{2} = 46$$

$$x + 56 = 92$$

$$x = 36$$

REF: 082421geo
14 ANS: 2   REF: 018931siii
15 ANS: 2

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

$$50 + x = 68$$

$$x = 18$$

REF: 011214ge
16 ANS: 4   REF: 019429siii

17 ANS: 3

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

$$x + 72 = 116$$

$$x = 44$$

REF: 061817geo