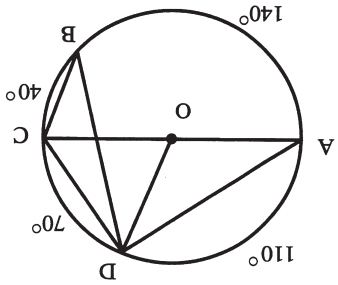
ANSWERS

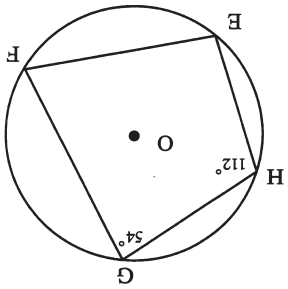
1. $= \frac{1}{2}\,\overset{\frown}{mCD} = 35^\circ$ (T24-1)

2. $= 90^\circ$ (T24-3)



3. $= 70^\circ$
The measure of a central angle is equal to the measure of its intercepted arc.

4. $= \frac{1}{2}\,\overset{\frown}{mBAD} = 125^\circ$



5. 68° (T24-4)

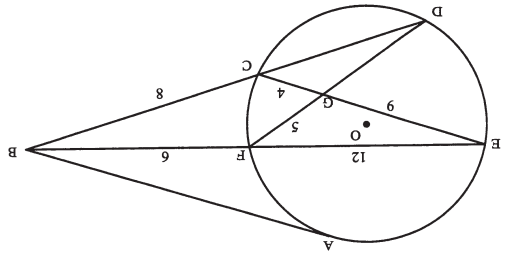
6. 126° (T24-4)

7. $= \frac{1}{2}\,\overset{\frown}{mEBC} = \frac{1}{2}\,(170^\circ) = 85^\circ$ (T24-8)

8. $= \frac{1}{2}\,(\overset{\frown}{mDE} - \overset{\frown}{mFE}) = \frac{1}{2}\,(90^\circ - 60^\circ) = 15^\circ$ (T24-7)

9. $= \frac{1}{2}\,(\overset{\frown}{mBC} + \overset{\frown}{mFD}) = \frac{1}{2}\,(70^\circ + 150^\circ) = 110^\circ$ (T24-6)

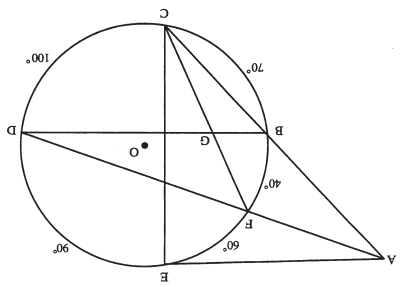
10. $= \frac{1}{2}\,(\overset{\frown}{mBE} = \frac{1}{2}\,(100^\circ) = 50^\circ$ (T24-1)



13. $(AB)^2 = EB \bullet FB$ (T24-11)
$(AB)^2 = 18 \bullet 6$
$(AB)^2 = 108$
$AB = 6\sqrt{3} = 10.4$

12. $DB \bullet CB = EB \bullet FB$ (T24-10)
$(DC + 8)8 = 18 \bullet 6$
$8\,DC + 64 = 108$
$8DC = 44$
$DC = 5.5$

11. $DG \bullet GF = EG \bullet GC$ (T24-9)
$DG \bullet 5 = 9 \bullet 4$
$5DG = 36$
$DG = 7.2$



GEOMETRY
The Complete Course

Lesson Twenty Four

Angles And Segments Of A Circle

KA8424

Worksheet

Instructors may duplicate the worksheets as needed

I. VIDEOTAPE FOLLOW-UP QUESTIONS

I. Introduction.

II. Inscribed Angles.
- A. Basic terms and their definitions
  1. Inscribed angle
  2. Intercept
- B. Related theorems
  1. The measure of an inscribed angle is equal to one-half of the measure of its intercepted arc. (T24-1)
  2. If two inscribed angles of a circle intercept the same arc or congruent arcs, then the angles are congruent. (T24-2)
  3. An angle inscribed in a semicircle is a right angle. (T24-3)
  4. If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary. (T24-4)
- C. Problems and applications of the theorems

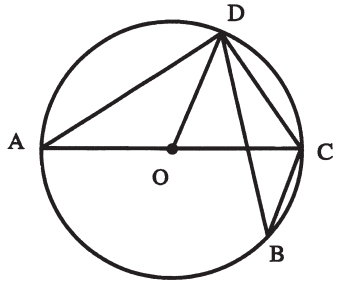
III. Angles Formed by Chords, Tangents, and Secants.
- A. Review of terms and their definitions
  1. Tangent
  2. Chord
  3. Secant
- B. Related theorems
  1. If two arcs of a circle are included between parallel segments, then the arcs are congruent. (T24-5)
  2. If two chords intersect within a circle, then the measure of the angle formed is equal to one-half the sum of the measures of the intercepted arcs. (T24-6)
  3. 1f a tangent and a secant, two secants, or two tangents intersect in a point in the exterior of a circle, then the measure of the angle is equal to one-half the difference of the measures of the intercepted arcs. (T24-7)
  4. If a tangent and chord intersect in a point on the circle, then the measure of the angle they form is one-half the measure of the intercepted arc. (T24-8)
- C. Problems and applications of the theorems

IV. Segments of Chords, Tangents, and Secants.
- A. Basic terms
  1. Secant segment
  2. Tangent segment
- B. Related theorems
  1. If two chords intersect inside a circle, then the product of the lengths of the segments of one chord is equal to the product of the lengths of the segments of the other chord. (T24-9)
  2. If two secants intersect in the exterior of a circle, then the product of the lengths of one secant segment and its external segment is equal to the product of the lengths of the other secant segment and its external segment. (T24-10)
  3. If a secant and a tangent intersect in the exterior of a circle, then the product of the lengths of the secant segment and its external segment is equal to the square of the length of the tangent segment. (T24-11)
- C. Problems and applications of the theorems

II. SUPPLEMENTARY EXERCISES

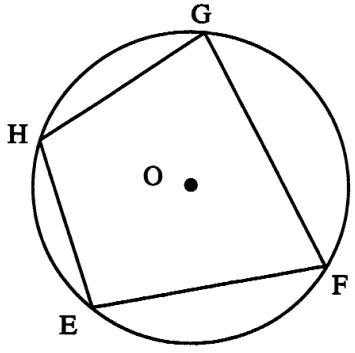
1-4 Given circle O with diameter $\overline{AC}$ and inscribed angles A and B, $m\overset{\frown}{BC} = 40°$, $m\overset{\frown}{CD} = 70°$.

1. $m\angle CBD =$ ___
2. $m\angle ADC =$ ___
3. $m\angle DOC =$ ___
4. $m\angle BCD =$ ___



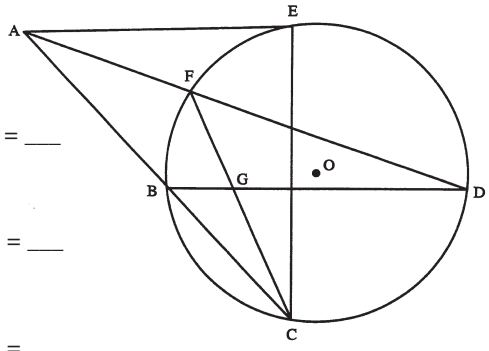
5-6 Given circle O with inscribed quadrilateral EFGH, $m\angle H = 112°$, $m\angle G = 54°$.

5. $m\angle F =$ ___
6. $m\angle E =$ ___



7-10 Given circle O with tangent $\overline{AE}$, secants $\overline{AD}$ and $\overline{AC}$, chords $\overline{BD}$ and $\overline{FC}$, $m\overset{\frown}{BC} = 70°$, $m\overset{\frown}{BF} = 40°$, $m\overset{\frown}{FE} = 60°$, $m\overset{\frown}{ED} = 90°$, $m\overset{\frown}{DC} = 100°$.

7. $m\angle AEC =$ ___
8. $m\angle DAE =$ ___
9. $m\angle BGC =$ ___
10. $m\angle BCE =$ ___



11-13 Given circle O with tangent $\overline{AB}$, secants $\overline{BE}$ and $\overline{BD}$, chords $\overline{EC}$ and $\overline{DF}$, EF = 12, FB = 6, BC = 8, GC = 4, GE = 9, GF = 5.

11. DG = ___
12. DC = ___
13. AB = ___