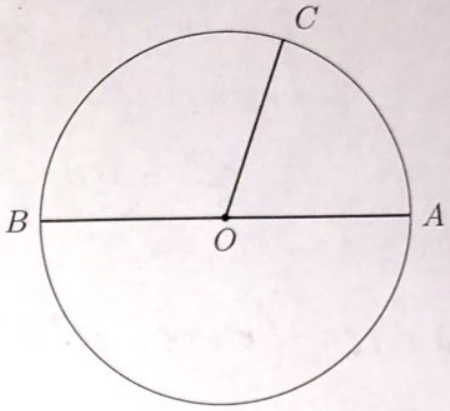
BECA / Dr. Huson / Geometry
Unit 8: Circles
8 March 2022

Name: Solutions

8.4 Sectors, secants, & chords calculations

1. Do Now: Circle O has a diameter $AB = 10$, as shown. Given $m\angle AOC = 72°$.



   (a) Find the circumference of circle O.

$C = 2\pi 5 = 10\pi$

   (b) Find the area of circle O.

$A = \pi 5^2 = 25\pi$

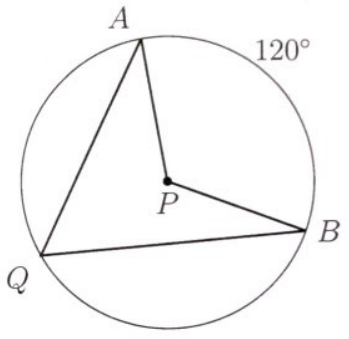
   (c) Find the area of the sector AOC.

$A_s = \left(\frac{72}{360}\right) 25\pi = 5\pi$

   (d) Find the perimeter of sector AOC.

$P_s = 5 + 5 + \left(\frac{72}{360}\right) 10\pi = 10 + 2\pi$

2. Given circle P with $m\overset{\frown}{AB} = 120°$.



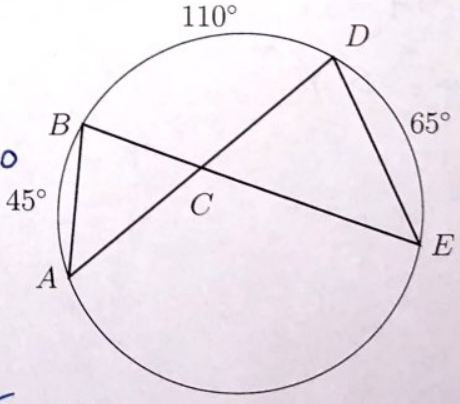
   (a) Write down the $m\angle APB$.

$120°$

   (b) Find the $m\angle AQB$.

$m\angle AQB = \frac{1}{2}(120) = 60°$

3. Given circle O with chords $\overline{AD}$ and $\overline{BE}$ intersecting at C, as shown in the diagram. Given $m\overset{\frown}{AB} = 45°$, $m\overset{\frown}{BD} = 110°$, and $m\overset{\frown}{DE} = 65°$.



   (a) Find the $m\angle BAD$.

$m\angle A = \frac{1}{2}(110) = 55°$

   (b) Find $m\overset{\frown}{AE}$

$m\overset{\frown}{AE} = 360 - (110 + 45 + 65) = 140$

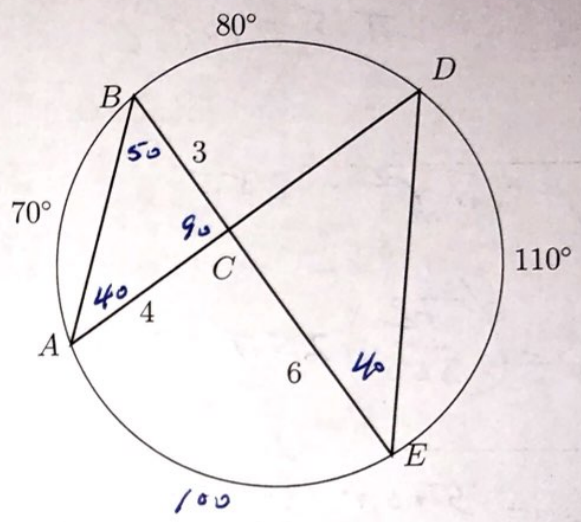
   (c) Find the $m\angle ABE$.

$m\angle B = \frac{1}{2}(140) = 70$

   (d) Find the $m\angle ACB$.

$m\angle ACB = 180 - (55 + 70) = 55$

4. Given circle O with chords $\overline{AD}$ and $\overline{BE}$ intersecting at C, as shown in the diagram. Given $m\widehat{AB} = 70°$, $m\widehat{BD} = 80°$, and $m\widehat{DE} = 110°$.



(a) Find the $m\angle BED$.

$= \frac{80}{2} = 40$

(b) Find the $m\angle ACB$.

$m\angle ACB = 180 - (50 + 40) = 90$

(c) Given $AC = 4$ and $BC = 3$, find AB.

$\triangle ABC \sim \triangle EDC$ $\quad AB = \sqrt{3^2 + 4^2}$

$= 5$

(d) Given $CE = 6$, find CD.

$k = \frac{6}{4} = 1.5$

$CD = 3 * 1.5 = 4.5$

5. The secants $\overline{ABC}$ and $\overline{ADE}$ intersect the circle O, as shown in the diagram. Given $m\widehat{BD} = 28°$ and $m\widehat{CE} = 136°$.

(a) Find the $m\angle CDE$.

$= \frac{136}{2} = 68$

(b) Find the $m\angle BCD$.

$= \frac{28}{2} = 14$

(c) Find the $m\angle A$.

$m\angle A + 14 = 68$

$m\angle A = 54°$