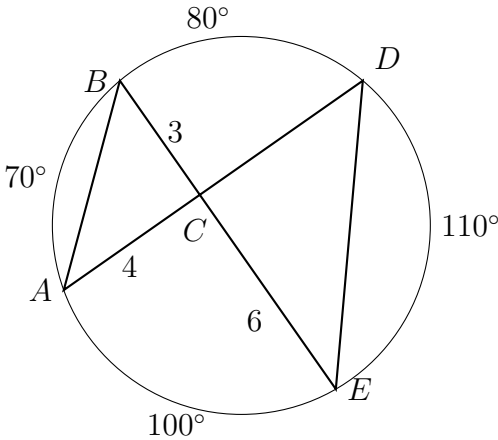


11.3 Regents: Similar triangles in circles

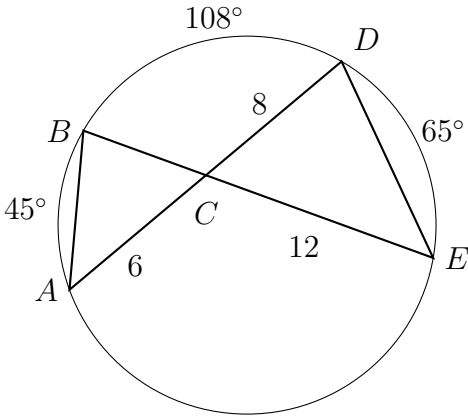
GEO-G.C.2b

1. As shown, circle O has chords \overline{AD} and \overline{BE} intersecting at C , and $m\widehat{AB} = 70^\circ$, $m\widehat{BD} = 80^\circ$, $m\widehat{AE} = 100^\circ$, and $m\widehat{DE} = 110^\circ$. $BC = 3$, $AC = 4$, and $CE = 6$.



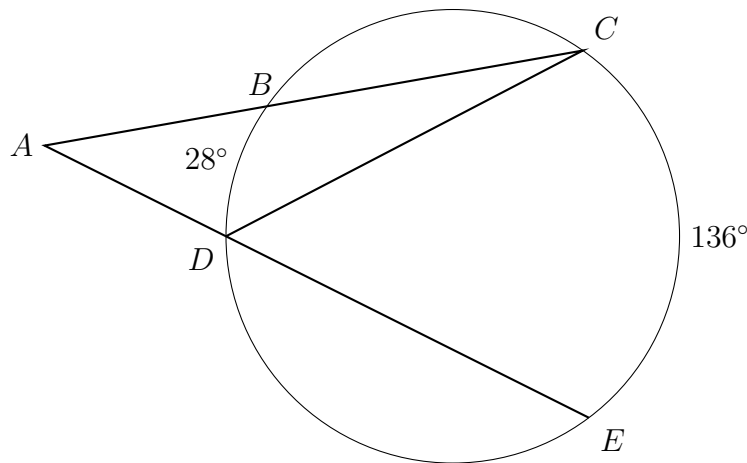
- (a) Write down the measure of angles $\angle B$ and $\angle D$.
- (b) Write down the measure of angles $\angle A$ and $\angle E$.
- (c) Find the measures of the two angles at C .
- (d) Find the scale factor and CD .

2. Given circle O with chords \overline{AD} and \overline{BE} intersecting at C , as shown in the diagram. Given $m\widehat{AB} = 45^\circ$, $m\widehat{BD} = 108^\circ$, and $m\widehat{DE} = 65^\circ$.

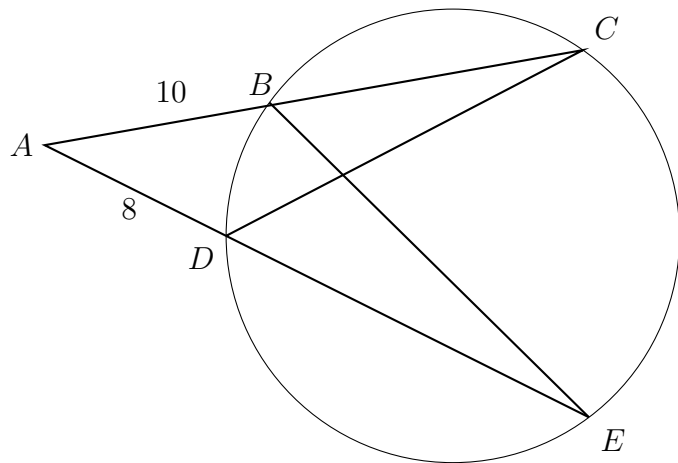


- (a) Write down the measure of angles $\angle B$ and $\angle D$.
- (b) Write down the measure of angles $\angle A$ and $\angle E$.
- (c) Find the measures of the two angles at C .
- (d) Find the scale factor and BC .

3. The secants \overline{ABC} and \overline{ADE} intersect the circle O , as shown in the diagram. Given $m\widehat{BD} = 28^\circ$ and $m\widehat{CE} = 136^\circ$.
- (a) Find the $m\angle CDE$.
 - (b) Find the $m\angle C$.
 - (c) Find the $m\angle A$.



4. The secants \overline{ABC} and \overline{ADE} intersect the circle O , as shown in the diagram. $AB = 10$, $AD = 8$, $AC = 24$. (note: similar triangles)
- (a) $\overline{AD} \rightarrow ?$
 - (b) $k =$
 - (c) $\overline{AC} \rightarrow ?$
 - (d) $AE =$

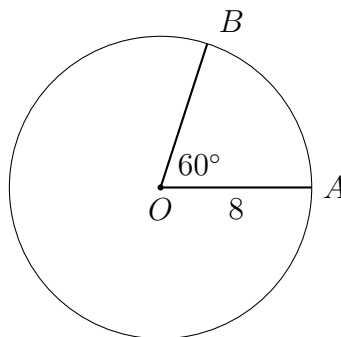


5. Circle O has a radius $AO = 8$, as shown below, and $m\angle AOB = 60^\circ$.

(a) Find the arc measure $m\widehat{AB}$.

(b) Find the length of the arc \widehat{AB} .

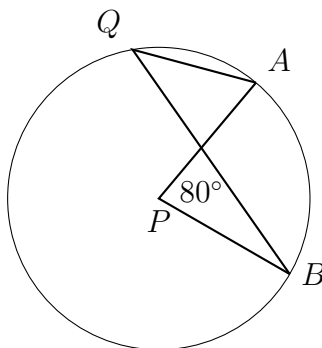
(c) Find the area of the sector AOB .



6. Given circle P with $m\angle APB = 80^\circ$.

(a) Write down the $m\widehat{AB}$.

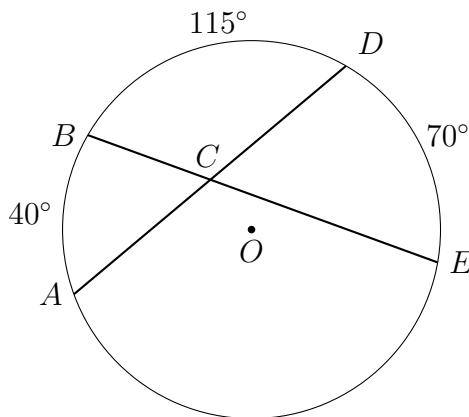
(b) Find the $m\angle AQB$.



7. Given circle O with chords \overline{AD} and \overline{BE} intersecting at C , as shown in the diagram. Given $m\widehat{AB} = 40^\circ$, $m\widehat{BD} = 115^\circ$, and $m\widehat{DE} = 70^\circ$.

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

(b) Find the measure of the minor arc, $m\widehat{AE}$.



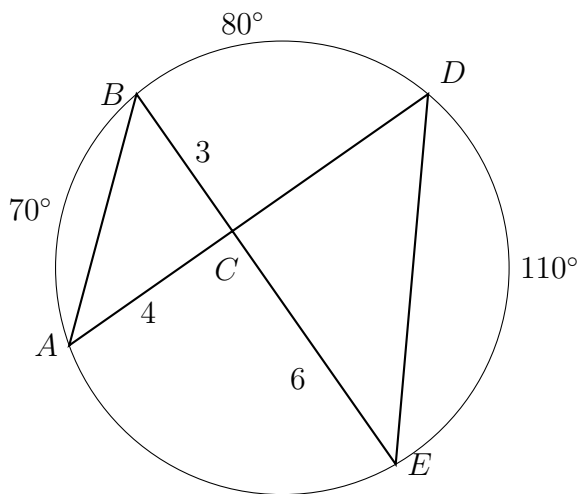
8. Given circle O with chords \overline{AD} and \overline{BE} intersecting at C , as shown in the diagram. Given $m\widehat{AB} = 70^\circ$, $m\widehat{BD} = 80^\circ$, and $m\widehat{DE} = 110^\circ$.

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

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

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

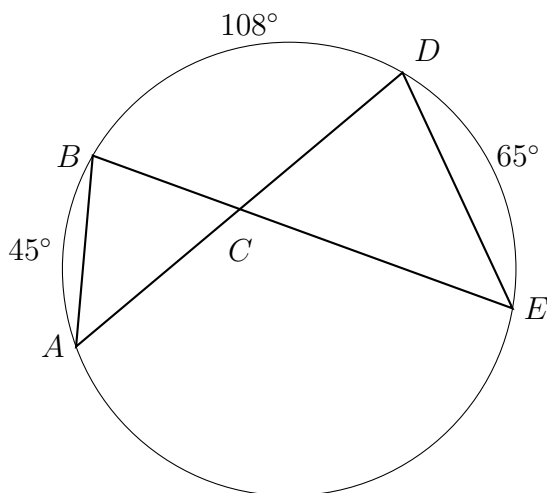
(d) Given $CE = 6$, find CD .



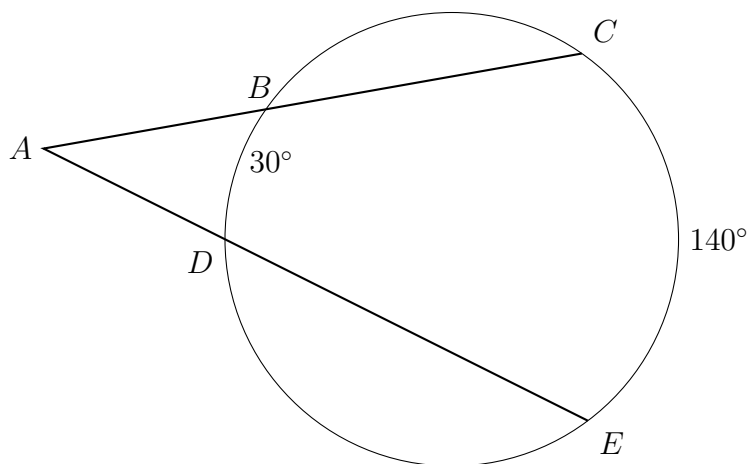
9. Given circle O with chords \overline{AD} and \overline{BE} intersecting at C , as shown in the diagram. Given $m\widehat{AB} = 45^\circ$, $m\widehat{BD} = 108^\circ$, and $m\widehat{DE} = 65^\circ$.

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

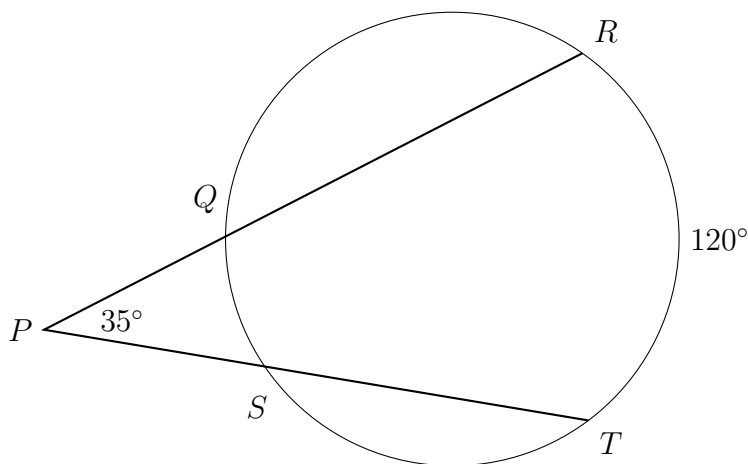
(b) Find the $m\angle ACB$.



10. The secants \overline{ABC} and \overline{ADE} intersect the circle O , as shown in the diagram.
Given $m\widehat{BD} = 30^\circ$ and $m\widehat{CE} = 140^\circ$. Find the $m\angle A$.

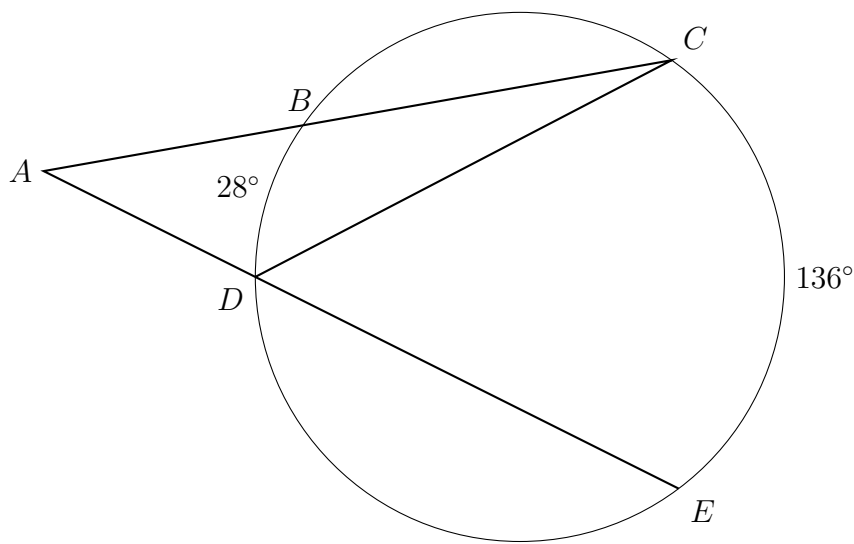


11. The secants \overline{PQR} and \overline{PST} intersect the circle O , as shown in the diagram.
Given $m\angle P = 35^\circ$ and $m\widehat{RT} = 120^\circ$. Find the $m\widehat{QS}$.



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

- (a) Find the $m\angle CDE$.
- (b) Find the $m\angle BCD$.
- (c) Find the $m\angle A$.



13. Write down the center and radius of each circle.

(a) $(x - 4)^2 + (y - 3)^2 = 9$

(c) $x^2 + y^2 = 4$

(b) $(x + 5)^2 + (y - 2)^2 = 4^2$

(d) $(x + 7)^2 + (y - 2)^2 = 9^2$

14. Write down the center and radius of each circle.

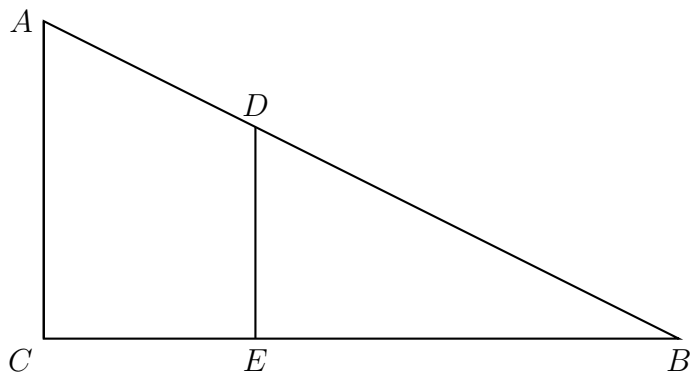
(a) $(x + 1)^2 + (y - 3)^2 = 49$

(c) $x^2 + y^2 = 20$

(b) $(x + 4)^2 + (y + 2)^2 = 5^2$

(d) $(x + 1)^2 + (y - 2)^2 = 121$

15. In right triangle ABC shown below, point D is on \overline{AB} and point E is on \overline{BC} such that $\overline{AC} \parallel \overline{DE}$. Given $BD = 10$, $BC = 12$, and $EC = 4$.



(a) Find the length of \overline{BE} .

(b) Find the scale factor, k , dilating $\triangle DBE \rightarrow \triangle ABC$, centered at B .

(c) Find the area of $\triangle ABC$.

(d) Find the area of $\triangle DEB$.

(e) Find the ratio of the areas of the two triangles.