Circles Vocab and Arcs

IC1

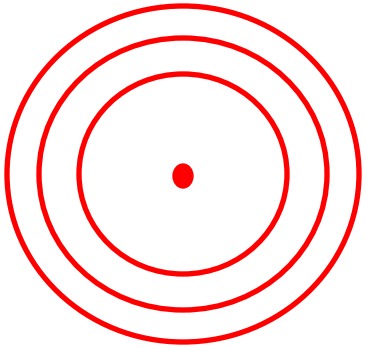
What is a circle?

A set of all points equidistant from a certain location (center of circle)

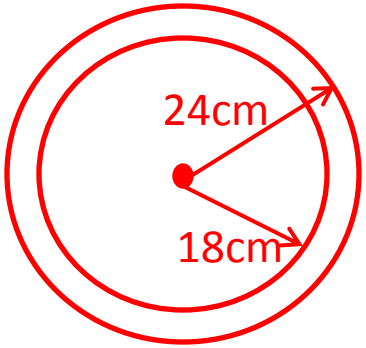
2. Circle A and circle B are concentric.

a) What does that mean?

Circles that share the same center



b) If the radius of circle A is 24 cm and the radius of circle B is 18 cm. What scale factor would map circle A onto circle B?



Big → small (reduction requires a scale factor less than 1)

$$\frac{18}{24} = \frac{3}{4}$$

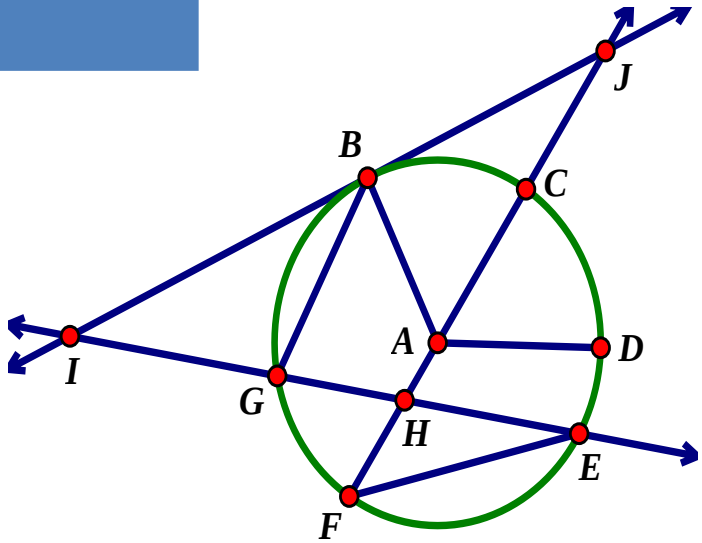
Circle Terminology:

Interior Point –	Any point inside the circle	**Exterior Point –**	Any point outside the circle
Major Arc –	An arc MORE than ½ the circle. *Named with 3 letters.	**Minor Arc –**	An arc LESS than ½ the circle. *Named with 2 letters.
Semi-Circle –	An arc that is ½ the circle.	**Chord –**	A segment with both endpoints on the circle
Tangent Line –	Line that passes through a circle once (touches)	**Secant Line –**	Line that passes through a circle twice.
Central Angle –	An angle at center formed by radii		

6. Match the following for Circle A.

a. 9 Major Arc	f. 2, 4 Interior Point
b. 7 Diameter	g. 3 Secant line
c. 7, 1 Chord	h. 6 Exterior Point
d. 5 Minor Arc	i. 4 Center
e. 10 Tangent line	j. 8 Semi-Circle

1. $\overline{EG}$
2. Point H
3. $\overleftrightarrow{GE}$
4. Point A
5. $\widehat{FD}$
6. Point I
7. $\overline{FC}$
8. $\widehat{CBF}$
9. $\widehat{CEG}$
10. $\overrightarrow{IJ}$



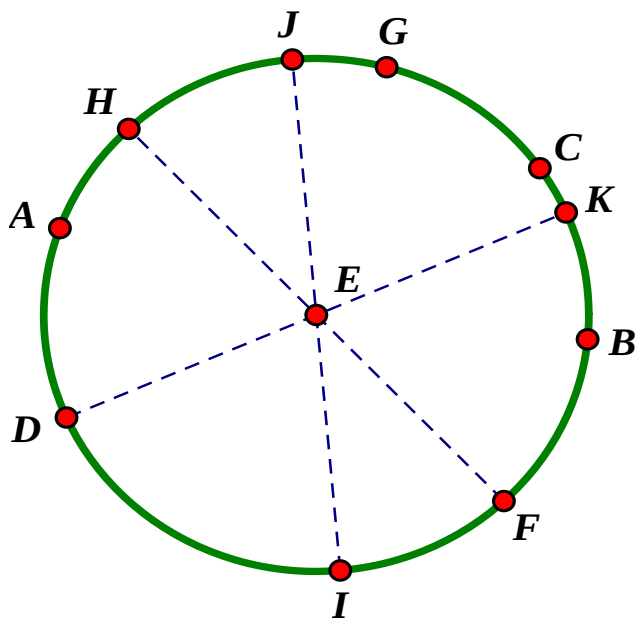
3. Determine whether the arc described is major, minor, or a semicircle.

a) F to G clockwise major

b) A to F clockwise major

c) J to C clockwise minor

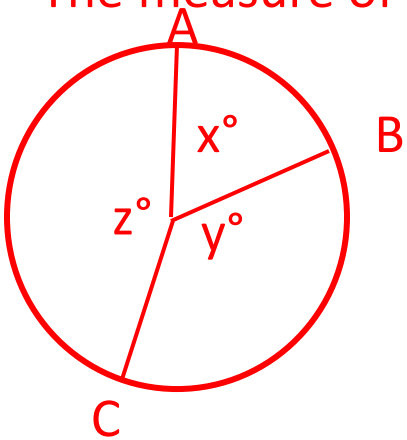
d) K to D clockwise semicircle



Arc Measure:

A number of degrees which describes a portion of a circle's circumference.

The measure of an arc = the central angle measure that intersects the arc



$m\widehat{AB} = x°$

$m\widehat{BC} = y°$

$m\widehat{AC} = z°$

$m\widehat{ACB} = (z + y)°$

Helpful Hints:

- All non-overlapping arcs add to 360°
- Diameters divide circles in half → semi circles have 180° measure.
- Sometimes subtracting what's not included from 360° is a good strategy.

1. Determine the arc measure.

a)

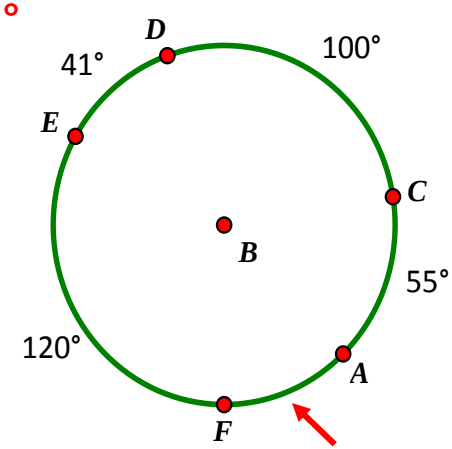
$m\widehat{DF}$ = 41° +120° = 161°

$m\widehat{ECA}$ = 41° +100° + 55° = 196°

$m\widehat{AF}$ = 44°

$m\widehat{CFD}$ = 55° +44° + 120° + 41° = 260°

360° - 100° = 260°



360 - 120 – 41 – 100 – 55 = 44°

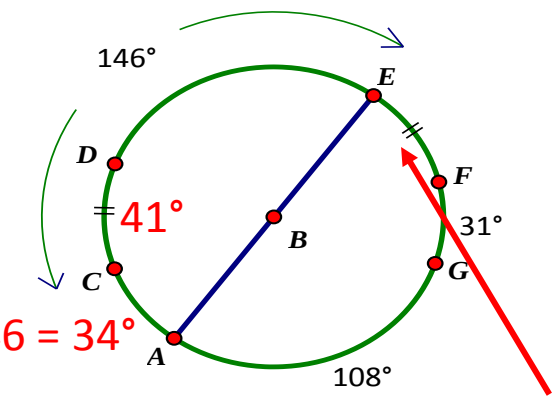
b)

$m\widehat{AC}$ = 34°

$m\widehat{DAG}$ = 41° +34° + 108° = 183°

$m\widehat{AD}$ = 41° +34° = 75°

$m\widehat{DAF}$ = 183° + 31° = 214°



180 - 146 = 34°

180 – 108 - 31 = 41°

2. Determine the measure of the missing arcs on the circle.

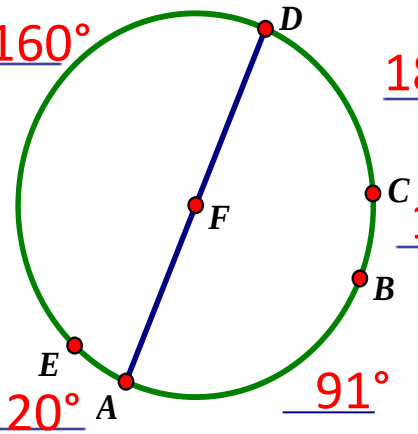
Given: Circle F

$m\widehat{AC} = 117°$

$m\widehat{BE} = 111°$

$m\widehat{BA} = 91°$

180° - 20° = 160°



180° - 117° = 63°

117° - 91° = 26°

117°

91°

111° - 91° = 20°

111°

3. Determine the missing information.

a) Given concentric circles with $m\widehat{GF} = 76°$, m∠HIE = 147° and $\overline{CA}$ & $\overline{FH}$ are diameters

$m\widehat{CB}$ = 104°

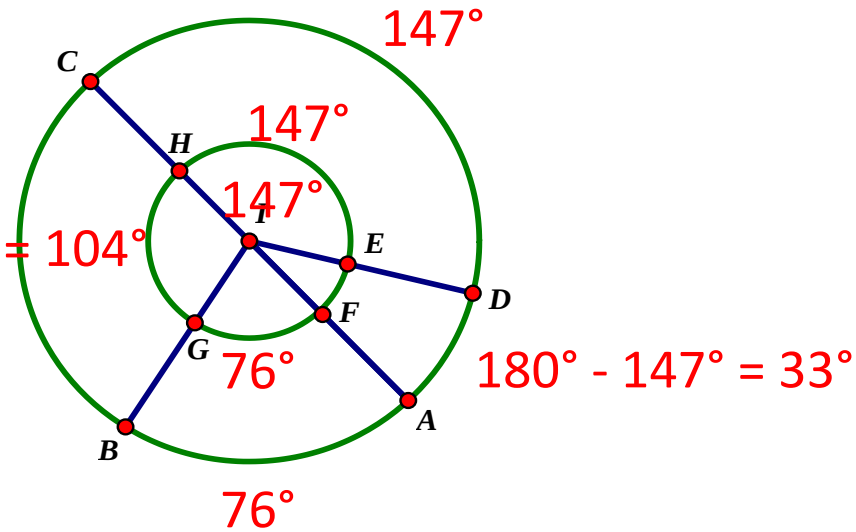
$m\widehat{HE}$ = 147°

$m\widehat{BDC}$ = 180° +76° = 256°

360° - 104° = 256°

m∠CIB = 104°

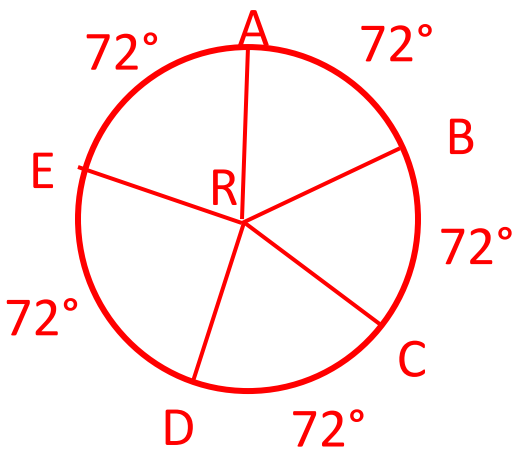
Central angle measures = arc measures



4. Points A, B, C, D, and E are placed on circle R in this order such that there are five congruent arcs.

What is the $m\widehat{BCE}$

$$\frac{360}{5} = 72°$$



360° - 144° = 216°

or

(72°)(3) = 216°