What is a circle?

A set of all points equidistant from a certain location (center of circle)
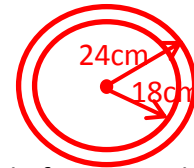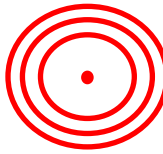
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1. Circle A and circle B are concentric.

    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)

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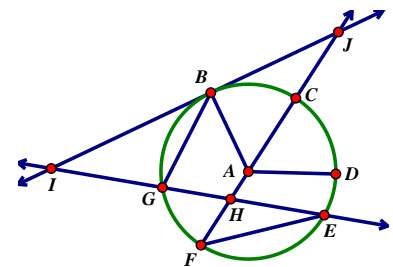
24cm
18cm

Circle Terminology:

| Interior Point –	Exterior Point –
Any point inside the circle	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

2. Match the following for Circle A (use each item once).

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. $\overline{EG}$ 6. Point I

2. Point H   7. $\overline{FC}$

3. $\overleftrightarrow{GE}$ 8. $\overparen{CBF}$

4. Point A   9. $\overparen{CEG}$

5. $\overparen{FD}$ 10. $\overleftrightarrow{IJ}$

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__
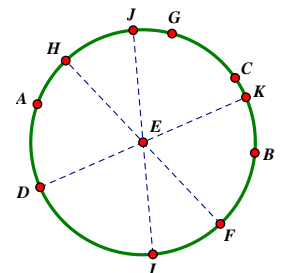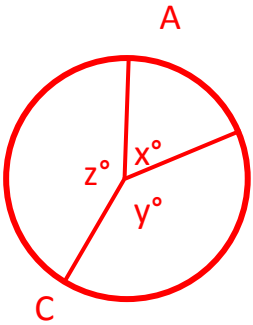
1. Determine the arc measure.

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°

41°   D   100°
E
C
B
55°
120°
A
F
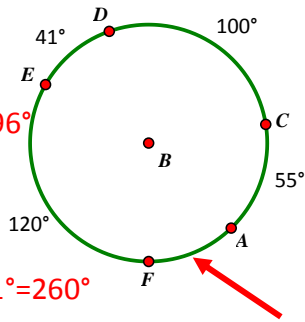
b) $m\widehat{AC}$ = 34°

$m\widehat{DAG}$ =41°+34°+108°=183°

$m\widehat{AD}$ – 41°+34°=75°

$m\widehat{DAF}$ =183°+31°=214°

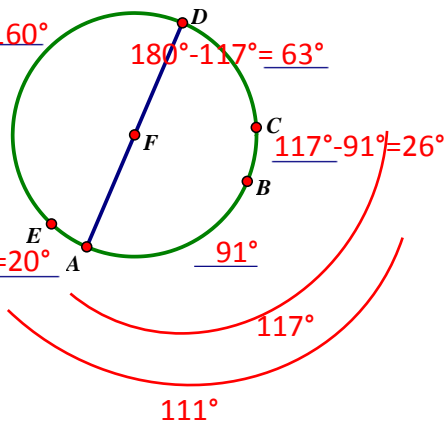180-146=34°   180–108-31=41°

146°   E
D   =41°   F
B   31°
C   G
A   108°
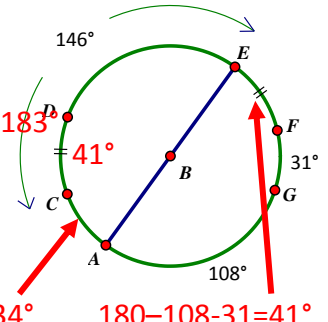
2. Determine the measure of the requested arcs.

Given: Circle F

$m\widehat{AC}$ =117°   180°-20°=160°
$m\widehat{BE}$ = 111°   180°-117°= 63°
$m\widehat{BA}$ = 91°   117°-91°=26°
111°- 91°=20°

D
180°-117°= 63°
F   C
117°-91°=26°
B
E   91°
A
117°
111°

3. Determine the missing information.

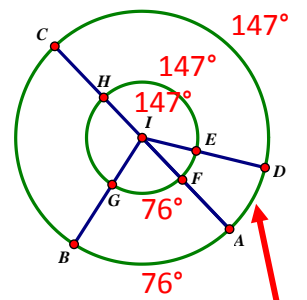Given concentric circles with $m\widehat{GF}$ = 76° & m∠HIE = 147°. $\overline{CA}$ & $\overline{FH}$ are diameters.

$m\widehat{CB}$ =180°-76°=104°

$m\widehat{HE}$ = 147°

$m\widehat{BDC}$ = 360° - 104° = 256°
            180°+76°=256°

m∠CIB = 104°

Central angle measures = arc measures

147°
C   147°
H   147°
I
E
F   D
G   76°
B   A
76°
180°-147° = 33°

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 $m\widehat{BCE}$?

B
A   72° 72°   C
72° 72°
72°
E   D
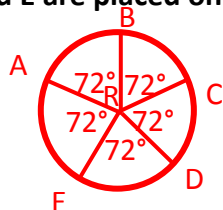
$\frac{360}{5}$ = 72°

360° - 144° = 216°   or   (72°)(3) = 216°