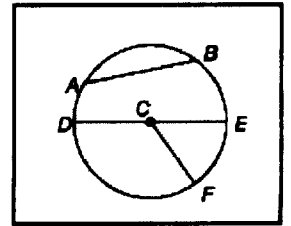# 10-1 Circles & Circumference

- A circle is the locus or set of all points in a plane __equidistant__ from a given point, called the __center__ of the circle.
- We name the circle by its __center__ point. (⊙C)

Special Segments in a Circle

1. A __radius__ is a segment with endpoints at the __center__ and __on__ the circle.
   All radii are __≅__. (EX: __$\overline{CF}$__ and __$\overline{CE}$__)

2. A __chord__ is a segment with endpoints __on__ the circle. (EX: __$\overline{AB}$__)

3. A __diameter__ of a circle is a __chord__ that passes through the __center__ and is made up of __collinear__ radii. (EX: __$\overline{DE}$__)

Radius and Diameter Relationships :
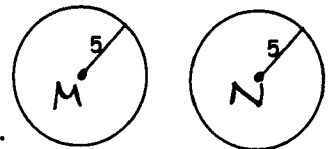
Radius Formula: $r = \dfrac{d}{2}$ or $r = \dfrac{1}{2}d$
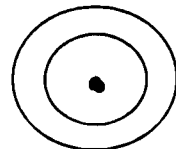
Diameter Formula: $d = 2r$

⊙M ≅ ⊙N

Circle Pairs:

4. __Congruent Circles:__ Two circles are with congruent __radii__.

5. __Concentric Circles:__ Two circles with the same __center__.
   like a bullseye! darts!
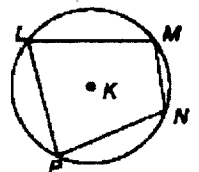
Circumference of a Circle:

$C = \pi d$ or $C = 2\pi r$

- ❖ The circumference of a circle is the distance __around__ the circle.
- ❖ The ratio of $\dfrac{C}{d}$ is an irrational number called __π__.

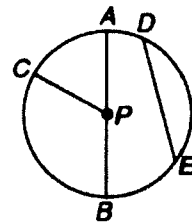6. __Inscribed Polygon:__ all of its vertices are __on__ the circle.
   LMNP is inscribed in ⊙K

7. A circle is __circumscribed__ about a polygon if it contains __all__ vertices of the polygon.
   ⊙K is circumscribed about LMNP

10-1 Circles & Circumference Practice

For Exercises 1-5, refer to the circle.

1. Name the circle.

2. Name a radius.

3. Name a chord.

4. Name a diameter.

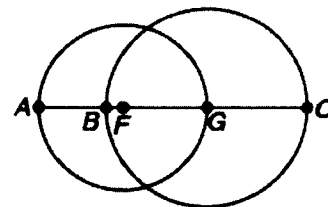5. Name a radius not drawn as part of a diameter.

6. Suppose the diameter of the circle is 16 centimeters. Find the radius.

7. If $PC = 11$ inches, find AB.

The diameters of $\odot F$ and $\odot G$ are 5 and 6 units, respectively. Find each measure.

8. BF

9. AB

The radius, diameter, or circumference of a circle is given. Find the missing measures to the nearest hundredth.

10. $r = 8$ cm

   $d =$ _____, $C \approx$ _____

11. $r = 13$ ft

   $d =$ _____, $C \approx$ _____

12. $d = 9$ m

   $r =$ _____, $C \approx$ _____

13. $C = 35.7$ in.

   $d \approx$ _____, $r \approx$ _____

Find the exact circumference of each circle.

14.
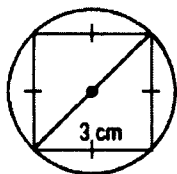
15.
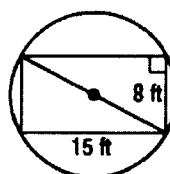
10-1 Circles & Circumference
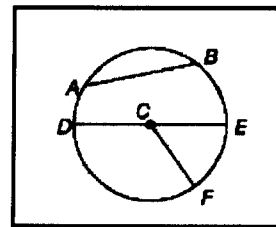
Name_____
Date_____Block__

- A circle is the locus or set of all points in a plane _____ from a

  given point, called the _____ of the circle.

- We name the circle by its _____ point. (_____)

Special Segments in a Circle

1. A <u>radius</u> is a segment with endpoints at the _____ and _____ the circle.

   All radii are _____.   (EX: _____ and _____)

2. A <u>chord</u> is a segment with endpoints _____ the circle.   (EX: _____)

3. A <u>diameter</u> of a circle is a _____ that passes through the
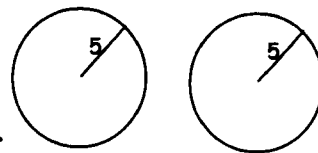
   _____ and is made up of _____ radii.   (EX: _____)

Radius and Diameter Relationships :

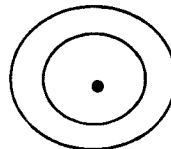Radius Formula: $r = \dfrac{d}{2}$ or $r = \dfrac{1}{2}d$

Diameter Formula: $d = 2r$

Circle Pairs:

4. **Congruent Circles:** Two circles are with congruent _____.

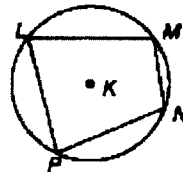5. **Concentric Circles:** Two circles with the same _____.

Circumference of a Circle: $C = \pi d$ or $C = 2\pi r$

❖ The circumference of a circle is the distance _____ the circle.

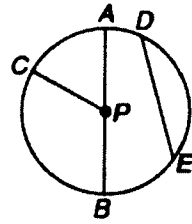❖ The ratio of $\dfrac{C}{d}$ is an irrational number called _____.

6. **Inscribed Polygon:** all of its vertices are _____ the circle.

7. A circle is **circumscribed** about a polygon if it contains _____ vertices of the polygon.

10-1 Circles & Circumference Practice

Master E

For Exercises 1–5, refer to the circle.

1. Name the circle. $\odot P$

2. Name a radius. $\overline{PC}, \overline{PA}, \overline{PB}$

3. Name a chord. $\overline{DE}, \overline{AB}$

4. Name a diameter. $\overline{AB}$

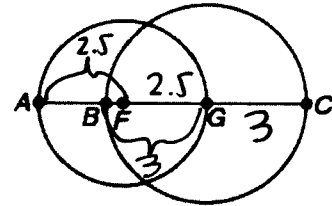5. Name a radius not drawn as part of a diameter. $\overline{PC}$

6. Suppose the diameter of the circle is 16 centimeters. Find the radius. $\dfrac{16}{2} = 8\,cm$

7. If $PC = 11$ inches, find AB. $2(11) = 22\ in$

The diameters of $\odot F$ and $\odot G$ are 5 and 6 units, respectively. Find each measure.

8. BF $3 - 2.5 = \boxed{0.5}$

9. AB $2.5 - .5 = \boxed{2}$

The radius, diameter, or circumference of a circle is given. Find the missing measures to the nearest hundredth.
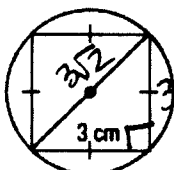
10. $r = 8$ cm

$16\pi \swarrow$

$d = \underline{16\,cm}$, $c \approx \underline{50.27\,cm}$

11. $r = 13$ ft

$26\pi \swarrow$
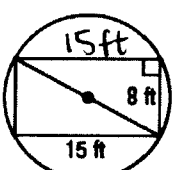
$d = \underline{26\,ft\cdot}$, $c \approx \underline{81.68\,ft\cdot}$

12. $d = 9$ m

$9\pi \swarrow$

$r = \underline{4.5\,m}$, $c \approx \underline{28.27\,m}$

13. $C = 35.7$ in.

$d \approx \underline{11.36\,in}$, $r \approx \underline{5.68\,in}$

$35.7 = \pi \cdot d$

$\dfrac{35.7}{\pi} = d$

Find the exact circumference of each circle.

14.

$d = 3\sqrt{2}$

$C = 3\sqrt{2} \cdot \pi$

$\boxed{13.33\,cm}$

15.

$d^2 = 8^2 + 15^2$

$d^2 = 289$

$d = 17$

$C = 17\pi = \boxed{53.41\ ft.}$