~~11/7/2014~~

KEY

Tues 11/11/14

1)

6.7 Circumference & Arc Length

Page 218 – 229

2)

Circumference

- **Defn. – the distance around a circle.**
- **Theorem– Circumference of a Circle –**

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

*** Always use the π button on your calculator, NOT 3.14!!!**

3)

<u>Ex</u>: Find the circumference of a circle with a diameter of 12 cm. (Round to 2 decimal places.) $r=6$

$C=2\pi r$

$C=2\pi(6)$

$\boxed{C=12\pi \text{ cm}}$

4)

<u>Ex</u>: Find the radius of a circle with a circumference of 52 in. $C=52$

$C=2\pi r$

$52=2\pi r$

$\frac{52}{2\pi}=r$

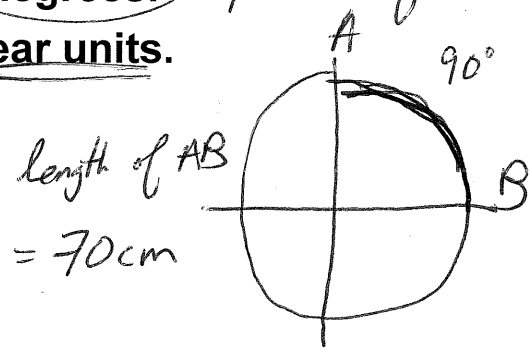
$\frac{26}{\pi}=r$ $\boxed{r=\frac{26}{\pi}\text{ in.}}$ ≈ 8.28

5)

Arc Length

- **Definition. – a piece of the circumference of a circle.**

- **The measure of an arc is in degrees.** in relation to portion of the circle
- **The length of an arc is in linear units. (such as ft, cm, etc.)**



length of AB
= 70cm

6)

Arc Length Corollary

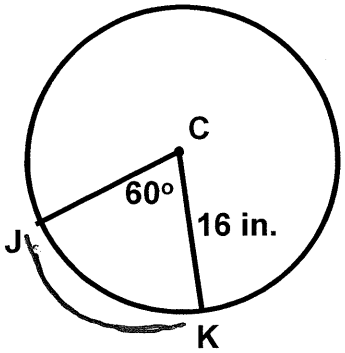
- **The length of $\widehat{AB}$ is:**

fraction of circle $\boxed{\dfrac{m\,\widehat{AB}}{360^o}} * 2\pi r$

7)

Ex: Find the length of $\widehat{JK}$.

$$\frac{m\widehat{JK}}{360^o} * 2\pi r$$



$$\frac{60}{360} \cdot 2\pi(16)$$

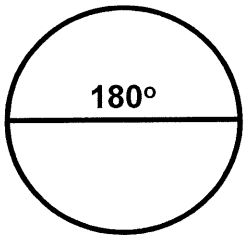
$$\frac{1}{6} \cdot 32\pi = \boxed{\frac{16\pi}{3} \text{ in.}}$$

$$\approx \boxed{16.76 \text{ in.}}$$

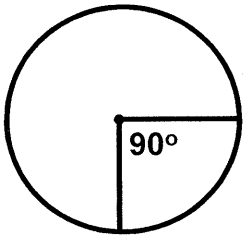
8)

Arc Length Corollary Observations

- The length of a semicircle is ½ the circumference.

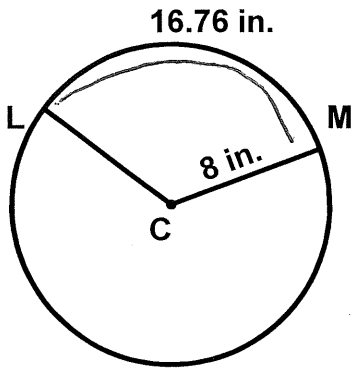


- The length of a 90° arc is ¼ the circumference.



$$\boxed{\frac{\text{Length}}{2\pi r} = \frac{\text{Arc}}{360}}$$

9) **Ex: Find the m $\widehat{LM}$.**



$$\text{length of } \widehat{LM} = \frac{m\,\widehat{LM}}{360^\circ} * 2\pi r$$

$$L = \frac{m\,\widehat{Arc}}{360} \cdot 2\pi r$$

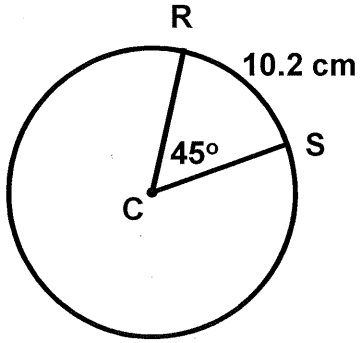
$$\frac{16.76}{2\pi r} = \frac{Arc}{360}$$

$$\frac{16.76}{2\pi(8)} = \frac{Arc}{360}$$

$$\frac{(360)(16.76)}{16\pi} = \frac{Arc(16\pi)}{16\pi}$$

$$\boxed{Arc = 120.03^\circ}$$

10) **<u>Ex</u>: Find the circumference of circle C.**



$$\text{length of } \widehat{RS} = \frac{m\,\widehat{RS}}{360^\circ} * 2\pi r$$

$$\frac{\text{Length}}{2\pi r} = \frac{Arc}{360^\circ}$$

* Find <u>radius</u> first

$$\frac{10.2}{2\pi r} = \frac{45}{360}$$

$$\frac{10.2}{2\pi r} = \frac{1}{8}$$

$$\frac{10.2(8)}{2\pi} = r$$

$$(10.2)(8) = 2\pi r$$

$$12.98 = r$$

$$C = 2\pi r$$

$$C = 2\pi(12.98)$$

$$\boxed{C = 81.6 \text{ cm}}$$

<u>Assignment</u>
Page 228 – 229
#s 1 – 21 all