

### NOTES 11.1

#### CIRCUMFERENCE & AREA OF CIRCLES

CIRCUMFERENCE	$C = 2\pi r$ or $C = \pi d$
AREA	$A = \pi r^2$

#### EXAMPLES:

1. Find the circumference and area of a circle with a radius of 6.8 cm.

$$C = 2\pi r$$

$$C = 2\pi(6.8)$$

$$C = 13.6\pi$$

$$C = \frac{13.6\pi \text{ cm}}{40}$$

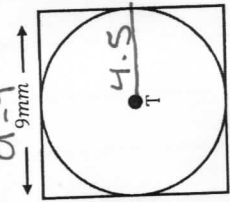
$$A = 40.24\pi \text{ cm}^2$$

$$A = \pi r^2$$

$$A = \pi(6.8)^2$$

$$A = 46.24\pi$$

2. Find the circumference and area of  $\odot T$  shown below.



$$C = \pi d$$

$$C = \pi(9)$$

$$C = 9\pi \text{ mm}$$

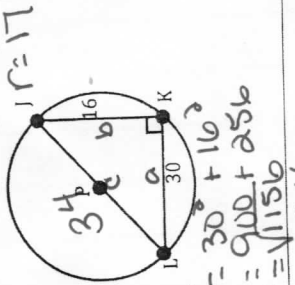
$$A = \pi r^2$$

$$A = \pi(4.5)^2$$

$$A = 20.25\pi$$

$$C = \frac{9\pi \text{ mm}}{20.25\pi \text{ mm}^2}$$

3. Find the circumference and area of  $\odot P$  below.



$$C = 34\pi$$

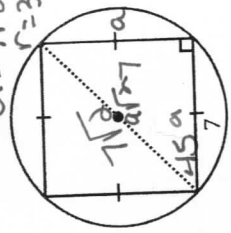
$$A = \pi r^2$$

$$A = \pi(17)^2$$

$$A = 289\pi$$

$$C = \frac{34\pi \text{ cm}}{289\pi \text{ cm}^2}$$

4. Find the circumference and area of the circle below.



$$C = \pi d$$

$$C = 7\sqrt{2}\pi$$

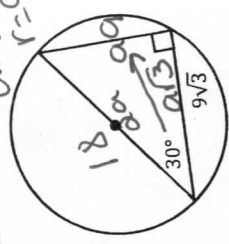
$$A = \pi r^2$$

$$A = (3.5\sqrt{2})^2 \pi$$

$$A = 12.25(2)\pi$$

$$A = 24.5\pi$$

5. Find the circumference and area of the circle below.



$$C = \pi d$$

$$C = 18\pi$$

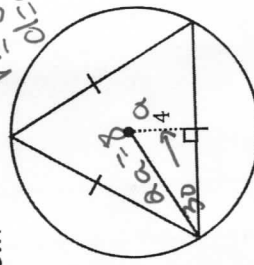
$$A = \pi r^2$$

$$A = \pi(9)^2$$

$$A = 81\pi$$

$$C = \frac{18\pi \text{ cm}}{81\pi \text{ cm}^2}$$

6. Find the circumference and area of the circle below.



$$C = \pi d$$

$$C = 16\pi$$

$$A = \pi r^2$$

$$A = \pi(8)^2$$

$$A = 64\pi$$

$$C = \frac{16\pi \text{ cm}}{64\pi \text{ cm}^2}$$

## NOTES 11.2

### ARC LENGTH & AREA OF SECTORS

Definition

ARC LENGTH:

A portion of the circumference of a circle

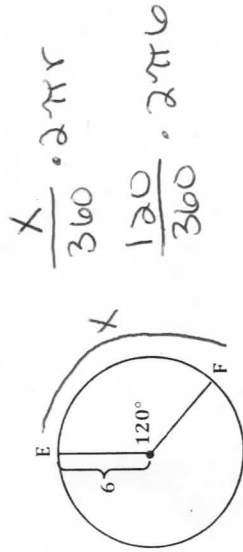
Formula

$$\text{ARC LENGTH} = \frac{x^\circ}{360^\circ} \cdot 2\pi r$$

← know

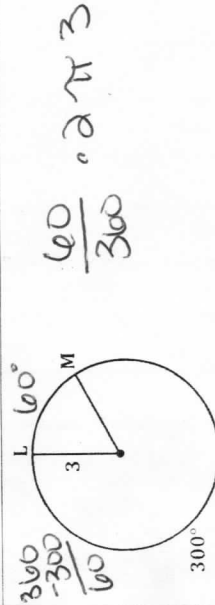
Circumference

EXAMPLE 1: Find the length of  $\widehat{EF}$  below.



$$\widehat{EF} = 4\pi$$

EXAMPLE 2: Find the length of  $\widehat{LM}$  below.



$$\widehat{LM} = 1\pi$$

Definition

SECTOR: A region bounded by two radii of the circle and their intercepted arc

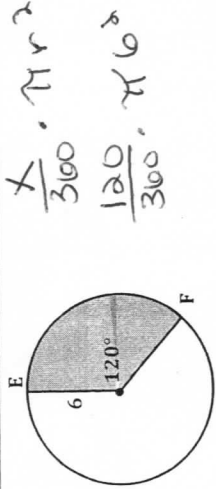
Formula

← know

$$\text{SECTOR AREA} = \frac{x^\circ}{360^\circ} \cdot \pi r^2$$

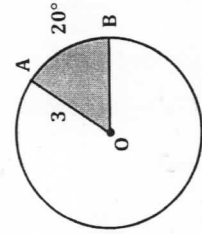
area

EXAMPLE 3: Find the area of the sector below.



$$\text{Sector Area} = 12\pi$$

EXAMPLE 4: Find the length of  $\widehat{AB}$  and the area of the sector.



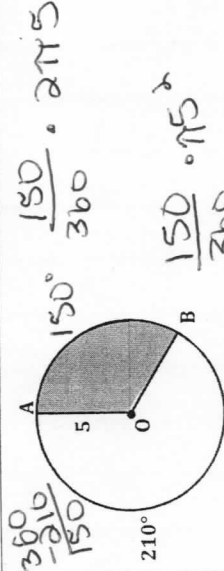
$$\frac{20}{360} \cdot 2\pi \cdot 3 = \frac{1}{3}\pi$$

$$\frac{20}{360} \cdot \pi \cdot 3^2 = \frac{1}{3}\pi$$

$$\widehat{AB} = \frac{1}{3}\pi$$

$$\text{Sector Area} = \frac{1}{3}\pi$$

EXAMPLE 5: Find the length of  $\widehat{AB}$  and the area of the sector.



$$\frac{150}{360} \cdot 2\pi \cdot 5$$

$$\frac{150}{360} \cdot \pi \cdot 5^2$$

$$\widehat{AB} = \frac{25}{6}\pi$$

$$\text{Sector Area} = \frac{125}{12}\pi$$