Notes for Lessons 11-5 and 11-6: Circles

Circumference of a circle = π(d) where d = diameter
Area of a circle = π(r²) where r = radius

Solve the following using the above equations:

1) Find the circumference and area of the circle with a radius of 1.5 cm

$C = \pi(3) = $ ⟨3π cm⟩

$A = \pi(2.25) = $ ⟨2.25π cm²⟩

2) Find the radius of a pizza pan if its circumference = 12.56 ft

$12.56 = d(\pi)$

$d = 4$ ⟨$r = 2$ ft⟩

3) Find the diameter of a circle whose area = 50.24 m²

$50.24 = \pi r^2$

$16 = r^2$ ⟨$d = 8$ m⟩

$r = 4$

4) A bicycle wheel has a diameter of 60 cm. How far will it travel if it makes 50 revolutions (hint: you need to use the circumference)?

$C = \pi(60)$
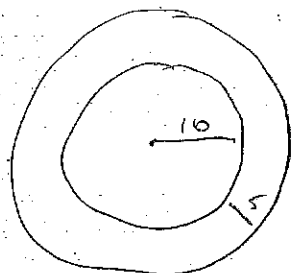
$* \quad 50$

3000π ⟨9420 cm⟩

5) A 5 foot sidewalk is being built around a circular garden. The radius of the garden is 10 ft. Find the area of the sidewalk.

$A_{large \bigcirc} = \pi(15)^2 = 225\pi$

$A_{small \bigcirc} = \pi(10)^2 = 100\pi$

$A_{path} = 125\pi = $ ⟨392.5 ft²⟩

Length of an arc = $\dfrac{x}{360}$ $(\pi (d))$

Area of a sector = $\dfrac{x}{360}$ $(\pi(r^2))$

Where x = the angle measure of the arc and central angle

Solve the following using the above formulas.

6) Find the length of the arc and the area of the sector of the circle with a radius of 12 and central angle of 40°

$length = \dfrac{1}{9}\dfrac{40}{360} (\pi(24)) = \boxed{8.37 \text{ units}}$

Area of sector =
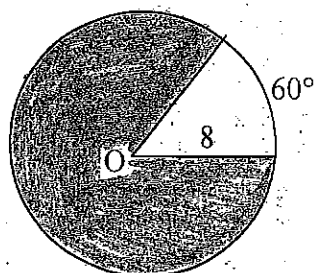$\dfrac{1}{9}\dfrac{40}{360} (\pi(12)^2)$
$\boxed{53.16 \text{ units}^2}$

7) The area of sector AOB is 48π and m<AOB = 270°. Find the radius of the circle.

$48\pi = \dfrac{3}{4}\dfrac{270}{360} \pi r^2$

$64 = r^2$

$\boxed{r = 8 \text{ units}}$

Find the area of the shaded region. Point O marks the center of each circle.

8)	9)

8) 60° 8 O

$Area = \dfrac{5}{6}\dfrac{300}{360} (\pi\, 8^2)$

$\boxed{167.47 \text{ units}^2}$

9) 6 O
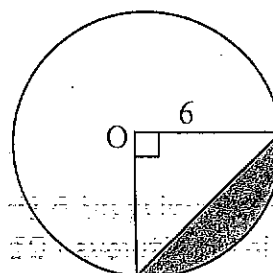
$A_{sector} = \dfrac{1}{4}\dfrac{90}{360} (\pi\, 36) = 9\pi$

$A_\Delta = \frac{1}{2}(6)(6) = 18$

$A_{shaded} = 9\pi - 18$

$\boxed{10.27 \text{ units}^2}$