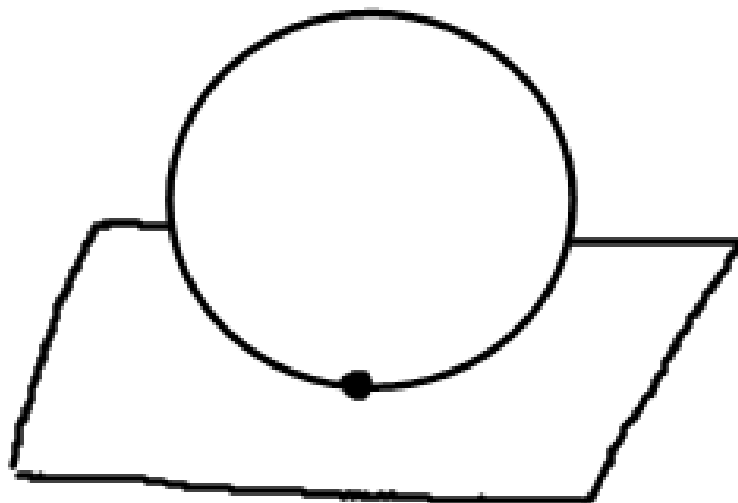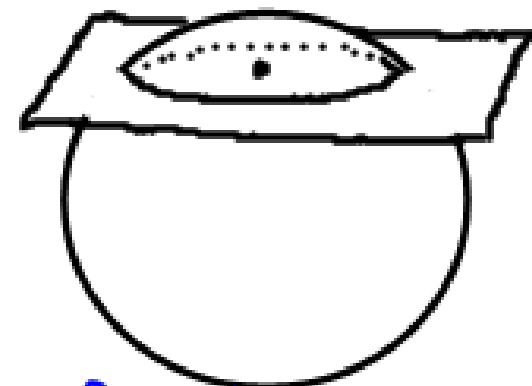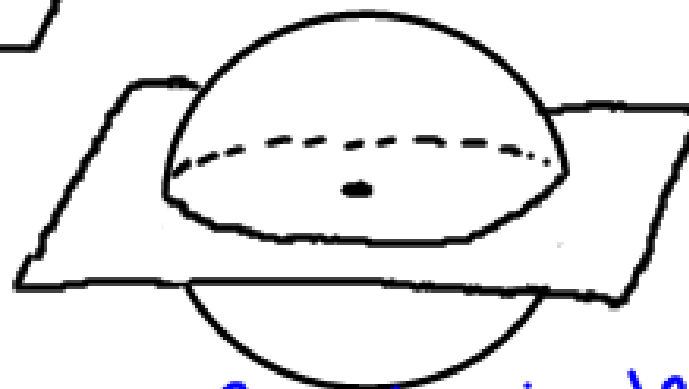# 12 - 7
Surface Area of Spheres

The intersection of a circle and a plane can be a point or a circle.

a point

a circle

a great circle → through center of sphere

great circle: the intersection of a plane and a sphere when the plane contains the center of the sphere

$$(area: \pi r^2)$$

hemisphere: each congruent half separated by a great circle

Surface Area: $4\pi r^2$

Ex: **Find the surface area of a sphere whose great circle has an area of 201.1 in².**

$$\text{great circle} = \pi r^2$$

$$201.1 = \pi r^2$$

$$SA = 4\pi r^2$$

$$SA = 4(201.1)$$

$$\boxed{SA = 804.4 \text{ in}^2}$$

Ex: Find the surface area of a basketball with a circumference of 9 in.

$$circumference = \pi d$$

$$\frac{9}{\pi} = \frac{\pi d}{\pi}$$

$$2.8 = d$$

$$1.4 = r$$

$$SA = 4\pi r^2$$

$$SA = 4\pi (1.4)^2$$

$$\boxed{SA = 25.8 \text{ in}^2}$$

Homework:

p. 675 #17 - 24