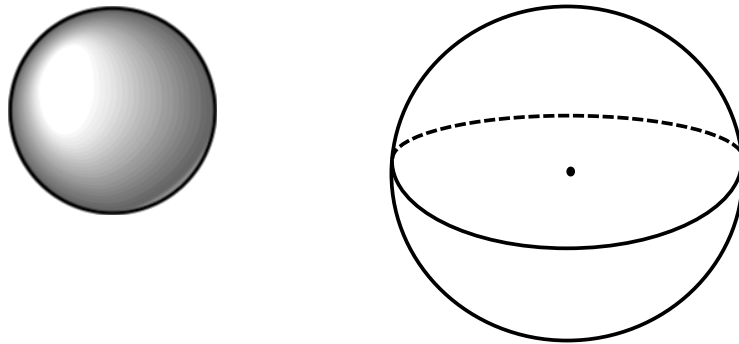
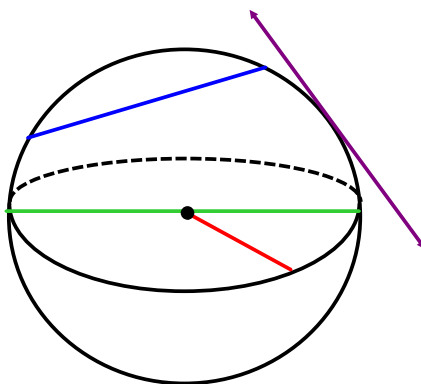


Sphere:

- * A 3-dimensional figure.
- * Appearance of a an orange or tennis ball.
- * In space the set of all points that are the same distance from a given point.

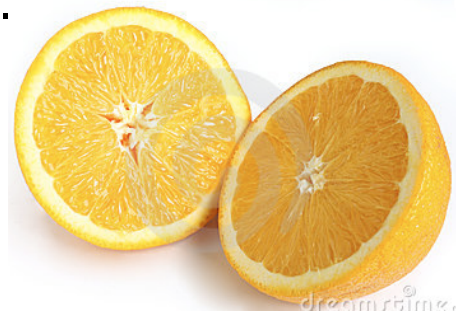
**Special Segments of a Sphere:**

- * **Radius**: the endpoints are at the center and a point on the sphere.
- * **Chord**: The endpoints are on the sphere.
- * **Diameter**: a chord that goes through the center of the sphere.
- * **Tangent of a sphere**: a line that intersects the sphere in exactly one point.



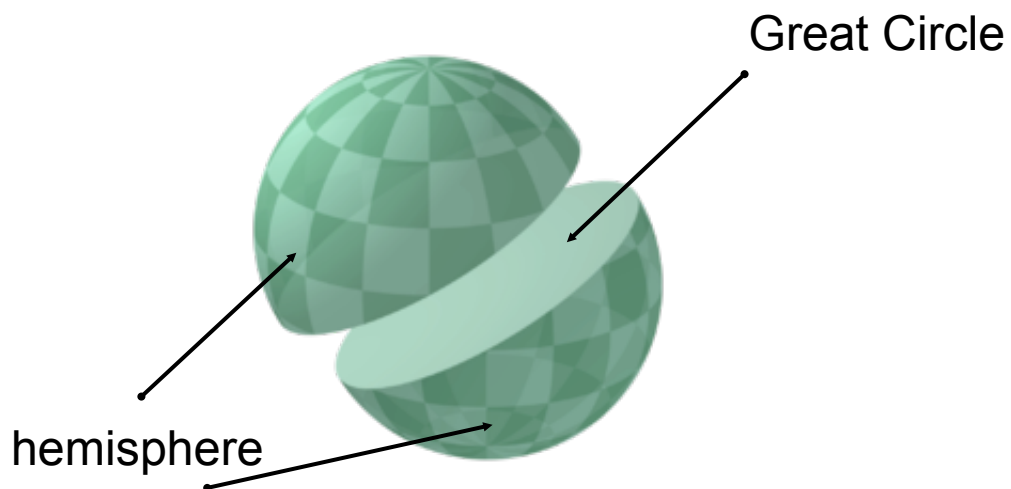
Great Circle:

- * When the cross section goes through the center of the sphere.
- * It is like cutting an orange in half, the shape you see is a circle.
- * Will have the same center as the sphere, as well as the same radii.



Hemisphere:

- * The great circle separates the sphere into two congruent pieces.
- * A half of sphere. (Each half of an orange.)



Surface Area:

- * How much we need to cover.
- * S.A. will indicate that we are looking for the surface area.

$$\text{S.A.} = 4\pi r^2 \quad r = \text{radius}$$

Hemisphere

$$\text{S.A.} = 2\pi r^2 + \pi r^2$$

1. Find the surface area of the sphere given the great circle with an area of 907.9 cm^2 .

$$\text{S.A.} = 4\pi r^2 \quad ; \quad \pi r^2 = 907.9$$

$$\text{S.A.} = 4(907.9)$$

$$\text{S.A.} = 3631.6 \text{ cm}^2$$

2. Find the surface area of a hemisphere with a radius of 3.8 inches.

$$S.A. = 2\pi r^2 + \pi r^2$$

$$S.A. = 2\pi(3.8)^2 + \pi(3.8)^2$$

$$S.A. = 90.72919 + 45.3645$$

$$S.A. = 136.1 \text{ in}^2$$

3. Find the surface area of a ball with a circumference of 24 inches to determine how much leather is needed to make the ball.

$$S.A. = 4\pi r^2$$

$$S.A. = 4\pi(3.8197)^2$$

$$S.A. = 183.3 \text{ in}^2$$

$$C = 24$$

$$C = 2\pi r$$

$$24 = 2\pi r$$

$$\frac{24}{2\pi} = r$$

$$24/(2\pi)$$

$$3.8197 = r$$