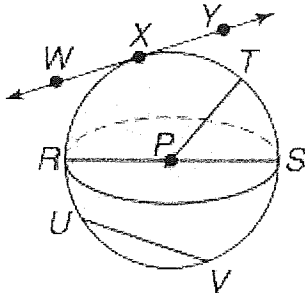


12-6: Surface Area of Spheres

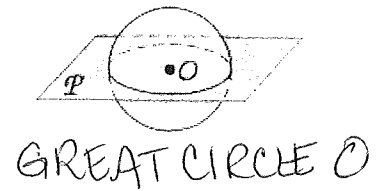
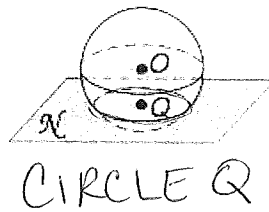
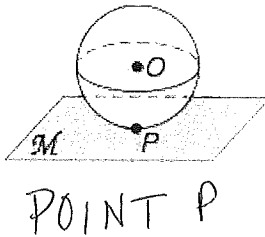


A **sphere** is the locus of all points that are a given distance from the center.

- A **radius** is a segment from the center to a point on the sphere. $\overline{PT}, \overline{PS}, \overline{PR}$
- A **chord** is a segment whose endpoints on the sphere. $\overline{UV}, \overline{RS}$
- A **diameter** is a chord that contains the sphere's center. \overline{RS}
- A **tangent** is a line that intersects the sphere in exactly one point. \overline{YW}
- A **great circle** is the intersection of a sphere and a plane that contains the center of the sphere. $\odot P$
- A **hemisphere** is one-half of a sphere. Each great circle of a sphere determines two hemispheres.

Example:

Determine the shapes you get when you intersect a plane with a sphere.

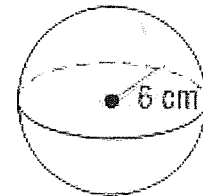


The equation for the **surface area** of a sphere is $SA = 4\pi r^2$ with a radius of r .

Example:

Find the surface area of this sphere to the nearest tenth if the radius of the sphere is 6 centimeters.

$$\begin{aligned}
 SA &= 4\pi r^2 \\
 &= 4\pi(6^2) \\
 &= 4\pi(36) \\
 &= 452.2 \text{ cm}^2
 \end{aligned}$$



Name _____ Hour _____

Int. Geometry

Ferrington

21-6 Homework:

Describe each object as a model of a *circle*, a *sphere*, a *hemisphere* or *none of these*.

1. a baseball
2. a pancake
3. the Earth
4. a kettle grill cover
5. a basketball rim
6. a cola can

Find the surface area of the each sphere with the given radius or diameter. Round to the nearest tenth.

7. $r = 8$ cm

8. $r = 2\sqrt{2}$ ft

9. $r = \pi$ cm

10. $d = 10$ in.

11. $d = 6\pi$ cm

12. $d = 16$ yd

13. Find the surface area of a sphere with a radius of the great circle 8 yards.

14. Find the surface area of a sphere with the area of the great circle 28.6 inches.

15. Find the radius of a sphere if the surface area of the sphere is 16π ft².