

## Surface Area of a Sphere

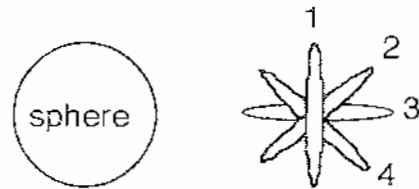
**Prerequisites:** The area of a circle.

**Materials:**

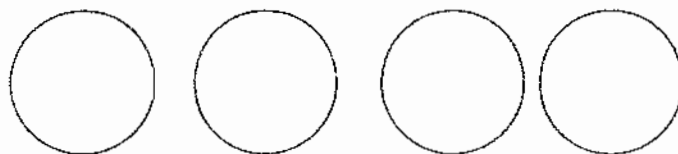
- Sphere
- Frame from largest circle of Geometric cabinet
- Packet of Volume of sphere material
- Geometry notebook

**Presentation:**

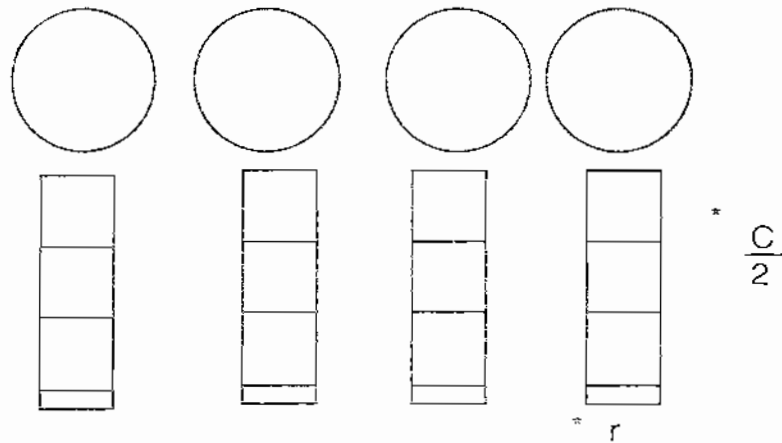
1. Pass the frame over the sphere. Note that it passes in any direction. Pass over horizontally vertically two obliques.



2. We have made the "Four Great Circles" named by Archimedes.
3. These "Four Great Circles", according to Archimedes equal the surface area of the sphere. This was discovered by placing a hollow leaf of iron on one pan and four great circles of the same material on the other pan. They balanced.
4. Lay the four circles from the Volume packet out on the rug.



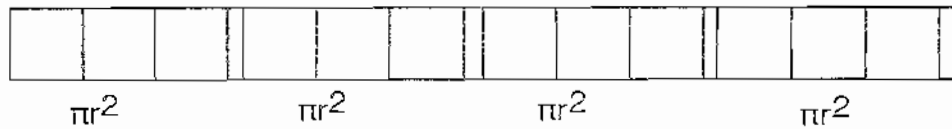
5. Recall that each circle makes a rectangle. (see page 72) Lay out the corresponding rectangle.



6. Recognize each rectangle as being  $\pi r^2$ . Label

7. Rearrange the rectangles into a long rectangle.

Now we see  $4\pi r^2$ .



8. The spherical surface area is  $4\pi r^2$

\* We remember that the base of each small special rectangle is equal to half of the circumference of the circle and the height of the rectangle is equal to the radius of the circle.