1) see the sphere sections as nearly pyramidic, as pyramids with curved bases, using the same concept of limit used to establish sectors of circles as approximations of triangles when finding area of a circle;

2) see the volume of a sphere as the sum of a large number of near-pyramidic sectors of a sphere;

3) establish the height of each near-pyramidic section in terms of a key dimension of the sphere;

4) sum the base areas of those pyramid-sectors, with the sum being the surface area of the sphere = $4\pi r$;

5) make appropriate substitutions into the pyramid volume formula to derive the formula for the volume of a sphere.

$$\begin{aligned}\text{Sphere volume} &= \frac{1}{3}\text{(base area)(height)}\\ &= \frac{1}{3}(4\pi r^2)(\text{radius})\\ &= \frac{4}{3}(\pi r^2)(r)\\ &= \frac{4}{3}\pi r^3\end{aligned}$$

Presentation notes

Equipment: Colored blocks, water-bombs in file folder boxes, wooden hemispheres and string, prism/pyramid in wood and handouts for paper version, tennis ball "can", lids and tape, wooden ball with slice etc.

Transparency or poster of tapestry.

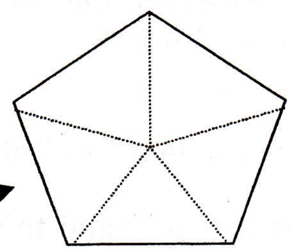
Page 1 Early compass experience w/ dirt.

R D R D P = C

__ __ __ __ ____

Page 3

The regular polygon illustration:



Use "waste" (the dark area below) as a way to emphasize approximating a circle with an *n*-sided regular polygon as *n* grows large: