Torus Encyclopedia Article

Torus

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Torus

A torus is a doughnut-shaped, three-dimensional figure formed when a **circle** is rotated through 360° about a line in its plane, but not passing through the circle itself. Imagine, for example, that the circle lies in **space** such that its **diameter** is parallel to a straight line. The figure that is formed is a hollow, circular tube, a torus. A torus is sometimes referred to as an anchor ring.

The surface **area** and **volume** of a torus can be calculated if one knows the radius of the circle and the radius of the torus itself, that is, the **distance** from the furthest part of the circle from the line about which it is rotated. If the former **dimension** is represented by the letter *r,* and the latter dimension by *R,* then the surface area of the torus is given by 4^2Rr, and the volume is given by 2^2Rr_2.

Problems involving the torus were well known to and studied by the ancient Greeks. For example, the formula for determining the surface area and volume of the torus came about as the result of the work of the Greek mathematician **Pappus of Alexandria**, who lived around the third century a.d. Today, problems involving the torus are of special interest to topologists.