

Assume you and a buddy are standing on the surface of a sphere of unknown size. You are exactly the same latitude, north of the equator, an arbitrary distance apart (x). You each travel north a known distance (y), and then remeasure your distance apart from each other (z). Given those three measurements, would you be able to calculate the circumference and hence the size of the sphere? What would the formula be?

In 3 dimensions, the **volume** inside a sphere (that is, the volume of a **ball**) is given by the formula

$$V = \frac{4}{3}\pi r^3$$

The **surface area** of a sphere is given by the following formula:

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