Example: Finding the Volume of a Sphere Given the Surface Area

Problem:

Find the volume of a sphere with a surface area of 1809.5574 square inches.

Solution:

The first thing we need to know is the length of the radius. We are given the surface area, so we can set up and equation for surface area and solve for r.

The surface area of a sphere is 4 times pi times r squared.

We are given that the surface area equals 1809.5574, so we can write the equation 1809.5574 equals 4 times pi times r squared.

Divide both sides by 4 pi.

This leaves 144 equals r squared, which means that 12 equals r. The radius is 12 inches.

Now we can find the volume.

The volume of a sphere is equal to four-thirds times pi times r cubed.

We found the radius is 12, so substitute that in for r.

The volume is 2304 pi.

Our final answer should be labeled. The volume is 2304 pi inches cubed. If you want to multiply it out, this is approximately 7238.23 inches cubed.