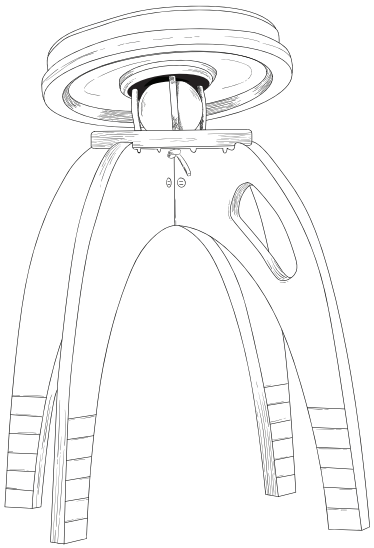
S.T.E.M.

Project Based Learning with the ButtOn Chair

CALCULATING THE VOLUME OF A SPHERE

CCSS.MATH.CONTENT.8.G.C.9
Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Developed by Instructor Phil Young
Essex Middle School, Essex, VT
2021



the button chair by QOR360®

BUTTONCHAIRS.ORG

Calculating the Volume of a Sphere Using the ButtOn Chair

Name:
Date:
Class:

Directions

- Show as much work as possible.
- Type your equations into the document.
- You are allowed to use a calculator.

The ButtOn Chair has a lacrosse ball between the 7 inch circle and the 10 inch circle. This creates the pivot joint in the seat.

For this mini lesson, we will measure the height of the lacrosse ball.

1. If the lacrosse ball was cut into hemispheres, it would be relatively simple to measure the height. The height would be equal to the diameter of the hemisphere. Unfortunately, we can not cut the lacrosse ball in half. Come up with another strategy for measuring the height. Draw a diagram of your work in the space to the right.

2. Use the height of the lacrosse ball to find the radius. This measurement would be from the center of the sphere to an outer edge. Draw a diagram of your work, below.

3. Finally, use the equation for calculating the volume of a sphere to calculate the volume of the lacrosse ball.

volume= (4/3) π r^3