Measurements Lab

**Purpose**: To learn and practice measurement and calculation of objects while using various methods of measurement.

1. Find the volume of a block of wood.

**Equipment used**:

Vernier caliper and a small block of wood.

**Procedure**:

Using the caliper, find the dimensions of the block, including its thickness, width and height. Use data to calculate the volume of the block.

**Data**:

|  |  |
| --- | --- |
| Height of wooden block | 0.051m |
| Width of wooden block | 0.05m |
| Thickness of wooden block | 0.0203m |

**Calculations**:

V= lwh

V= (0.0203m)(0.05m)(0.051m) = 5.12 x 10-5m3

1. Find the volume of a cylinder.

**Equipment used**:

Graduated cylinder and a Vernier caliper

**Procedure**:

Measure the diameter of the graduated cylinder with the small attachment on the caliper. Use the main part to measure the total height of the graduated cylinder, along with the height of the base. By subtracting the height of the base from the total height, you find the depth of the cylinder.

**Data**:

|  |  |
| --- | --- |
| Diameter of the cylinder | 0.0122m |
| Total height of graduated cylinder | 112.7mm |
| Height of cylinder only | 0.1023m |

**Calculations**:

V= πr2h

V= π(0.0061m)2(0.1023m) = 1.2 x 10-5m3

1. Find the thickness of a sheet of paper.

**Equipment used**:

Vernier caliper and a notebook

**Procedure**:

Since the caliper cannot measure the thickness of a single sheet of paper, measure a group of fifteen sheets and find the average thickness.

**Data**:

|  |  |
| --- | --- |
| Thickness of 15 pages | 0.0011m |
| Average thickness of 1 page | 7.3x 10-5m |

**Calculations**:

Avg. thickness = total thickness/number of pages

Avg. thickness = 0.0011m/15 pages

Avg. thickness =7.3 x 10-5m

1. Find the volume of the classroom.

**Equipment used**:

Meter stick

**Procedure**:

Use the meter stick to find the length, width, and height of the room, ignoring columns and parts of the wall that stick out. To find the height of the room, measure the height of one block and then multiply by the number of blocks going up the wall. Then, use the data to calculate the room’s volume.

**Data**:

|  |  |
| --- | --- |
| Length of classroom | 11.93m |
| Width of classroom | 7.33m |
| Number of blocks/height of blocks | 14 blocks/0.2m |
| Total height of classroom | 2.8m |

**Calculations**:

V= lwh

V= (11.93m)(7.33m)(2.8m)

V= 244.85m3

**Conclusion**:

This lab reinforced basic methods of measurement. In addition to using traditional tools, like the meter stick, we were able to use the Vernier caliper for the first time. For some parts of the lab, we had to think creatively to find the specific measurement needed, like subtracting the height of the graduated cylinder’s base to find only height of the cylinder. We also had to develop a method of using the meter stick to measure the room, since there are so many obstacles going from wall to wall.