Exercise 03: Compute solid object volume



Application Development



Name: <your name goes here>

**Purpose**: This exercise introduces the difference between exact and inexact values, and introduces some key issues when measuring values.

You will be divided into separate groups. Each group will be given a group name that is a color.

***ONLY MEASURE THE EDGE OF THE BLOCKS THAT CORRESPONDS TO YOUR GROUP'S COLOR.***

Once you are in your groups please perform the following steps:

1. Perform the measurement issue portion of the exercise:
   * Using the rulers and blocks that you have been given, measure the colored edge of each block that corresponds to your group's color as carefully as you can and record your measurements in the table, below.
   * When the last person in a group is done measuring a block, pass the block to another group for them to measure.
   * When another group hands your group a solid that your group has not yet measured, the process begins again.
   * After everyone in your group has measured your group's colored edge for each block:
   * As a team:
     + Determine the team's minimum (min), maximum (max) and average (avg) value for your colored edge of each block and log those values in the table, below.
   * Identify a spokesperson for your group who will report the min, max and avg values for your colored edge for each block to the instructor. Once your spokesperson has reported these values to the instructor, begin with part 2 of the exercise.
   * When your instructor posts the block volumes using the student provided data, record this data in your data sheet.
2. Perform this portion of the exercise by yourself:
   * Compute the error term for your colored edge for each block. You can do this by:
   * Computing the average length of your edge for each block.
   * Computing the absolute value of the deviation between your average and each measurement. | each measurement - average |. The largest of these is your error term.
   * Record the error term for your colored edge for each block on your data sheet.
   * How many significant digits should there be in your team's colored edge measures? Explain why: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * How many significant digits should there be in your team's error term? Explain why: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Save your work and upload this exercise to the LMS following the instructions given in Exercises 1 and 2.

Congratulations! You have just completed the third exercise.

Record your measurements here:

|  |  |  |  |
| --- | --- | --- | --- |
| **Team Color:** | | | |
|  | **Block 1** | **Block 2** | **Block 3** |
| You |  |  |  |
| Team Member #2 |  |  |  |
| Team Member #3 |  |  |  |
| Team Member #4 |  |  |  |
| Team Member #5 |  |  |  |
| Team Member #6 |  |  |  |
| Team Member #7 |  |  |  |
| Team Member #8 |  |  |  |
| Team Member #9 |  |  |  |
| Team Member #10 |  |  |  |
| Team Member #11 |  |  |  |
|  |  |  |  |
| Team's Min Value |  |  |  |
| Team's Max Value |  |  |  |
| Team's Avg Value |  |  |  |
| Error Term |  |  |  |
| Block Volume - using min values |  |  |  |
| Block Volume - using avg values |  |  |  |
| Block Volume - using max values |  |  |  |