More practice:

Convert to scientific notation:

1. 0.00004502 _____

2. 0.0000912×10^{-9} _____

3. 1350000×10^{9} _____

4. 256×10^{-34} _____

Convert to centimeters:

5. 1389 mm _____

6. 3.90×10^{-7} km _____

7. 9.2×10^{6} m _____

8. Convert 1.234×10^{-12} meter to nm

Do the math, then round using Sig dig Rules - include units in answers

9. $123{,}000 \text{ cm} + 1.5 \times 10^{6} \text{ cm} =$ _____ (Un rounded) $\approx$ _____ (Rounded)

10. $55.7 \times 10^{-12} \text{ m} - 2.12 \times 10^{-11} \text{ m} =$ _____ (Un rounded) $\approx$ _____ (Rounded)

11. $2.3 \text{ cm} \times 1.57 \times 10^{6} \text{ cm} =$ _____ (Un rounded) $\approx$ _____ (Rounded)

12. $8.7 \text{ g} \div 1.5 \times 10^{-6} \text{ cm}^3 =$ _____ (Un rounded) $\approx$ _____ (Rounded)

13. Professor Hawking measures a rectangular block's dimensions as:

L: 18.39 cm ± .02 cm W: 4.11 cm ± .03 cm H : 3.96 cm ± .02 cm

Showing steps, determine the correctly rounded volume and its uncertainty, using the worst-case scenario technique

USE NOTE SHEET TO HELP

Worst case scenario uncertainty

1. Mr. Rocco measures the dimension of his classroom.

Length: 12.32 meters ± 0.02 m
Width : 10.71 meters ± 0.01 m
Height: 3.09 meters ± 0.02 m

Determine the volume of his room using the worst-case scenario method. Round correctly.

a. Volume unrounded _____

b. Worst case volume (unrounded) _____

c. The difference between a and b (this is the unrounded uncertainty in volume) _____

d. Round the uncertainty to one significant figure (unless it's start with a one)_____

e. Now state the volume from a, rounded to the same place as the rounded uncertainty

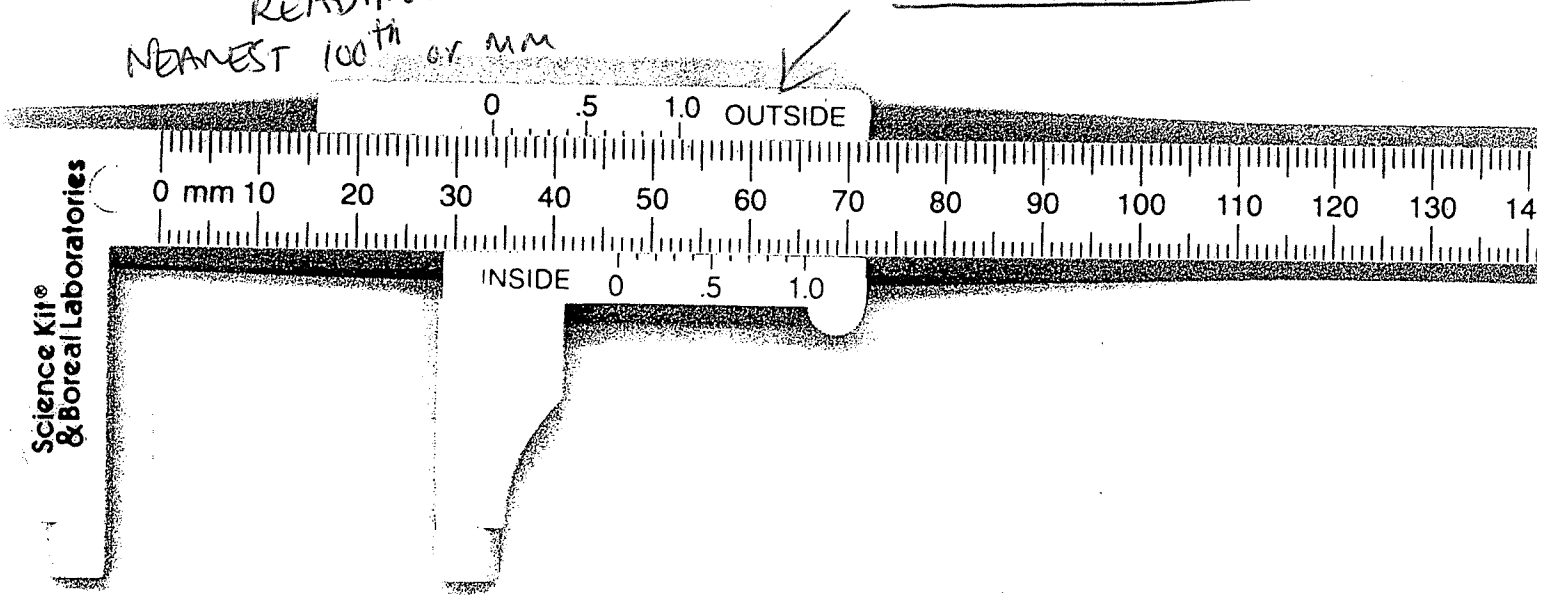
_____ ± _____
Rounded Volume — rounded uncertainty (with unit labels!)

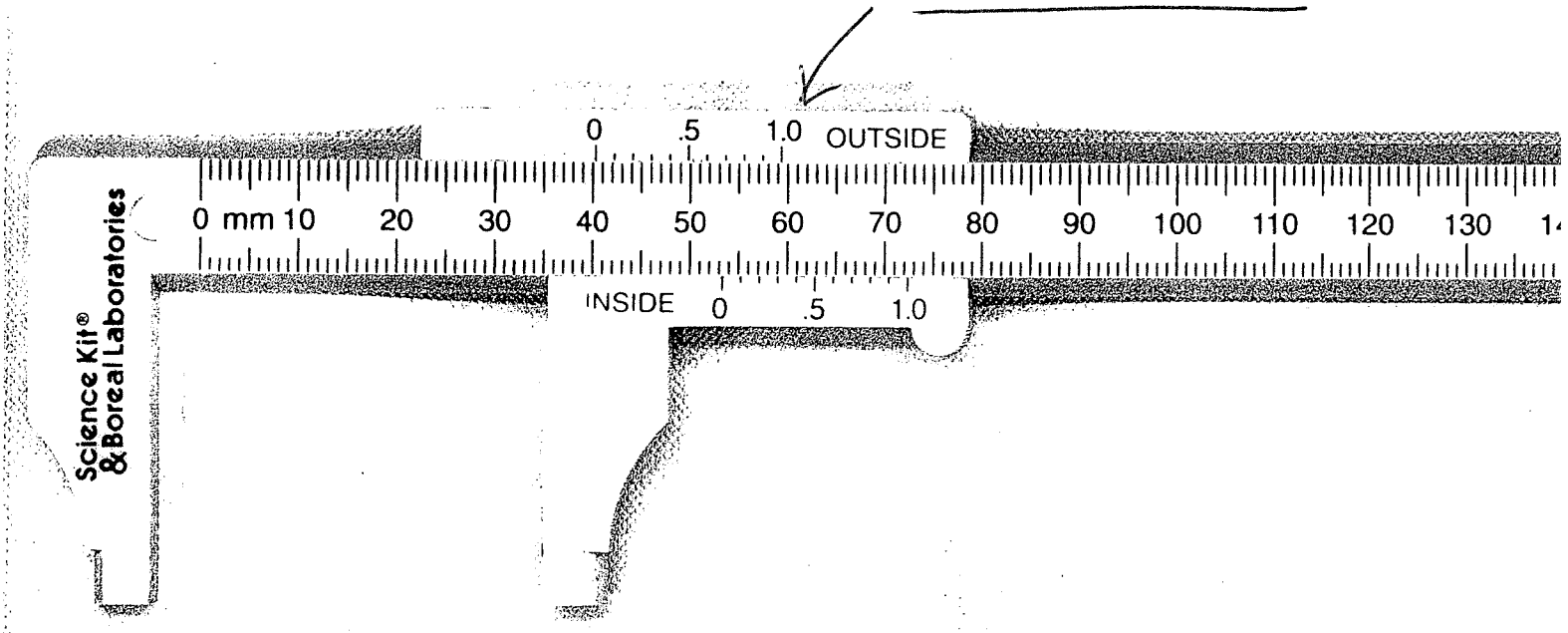
2. Mr. Stevenson measures a rectangular block to have the dimensions of:
L: 23.12 cm ± .02 cm W: 9.39 cm ± .03 cm H: 4.22 cm ± .04 cm

Go through the whole process and find the correctly rounded volume with rounded uncertainty **(remember: if uncertainty start with a one, round to two sig figs)**

_____ ± _____
Rounded Volume — rounded uncertainty (with unit labels!)

DETERMINE OUTSIDE READINGS NEAREST 100th OR MM





from maroon book chapter 2

16. Given the equation $F = mv^2/R$, what relationship exists between
   a. F and R?
   b. F and m?
   c. F and v?

17. Based on the equation in problem 16, what type of graph would be drawn for
   a. F versus R?
   b. F versus m?
   c. F versus v?

34. State the number of significant digits in each of the following measurements.
   a. 0.000 03 m **c.** 80.001 m
   b. 64.01 fm **d.** 0.720 μg

35. State the number of significant digits in each of the following measurements.
   a. 2.40×10^6 kg
   b. 6×10^8 kg
   c. 4.07×10^{16} m

38. Using a calculator, Chris obtained the following results. Give the answer to each operation using the correct number of significant digits.
   a. 5.32 mm + 2.1 mm = 7.4200000 mm
   b. 13.597 m × 3.65 m = 49.62905 m^2
   c. 83.2 kg − 12.804 kg = 70.3960000 kg

41. A lawn is 33.21 m long and 17.6 m wide.
   a. What length of fence must be purchased to enclose the entire lawn?
   b. What area must be covered if the lawn is to be fertilized?

44. **Figure 2–14** shows the mass of three substances for volumes between 0 and 60 cm^3.
   a. What is the mass of 30 cm^3 of each substance?
   b. If you had 100 g of each substance, what would their volumes be?
   c. In one or two sentences, describe the meaning of the steepness of the lines in this graph.

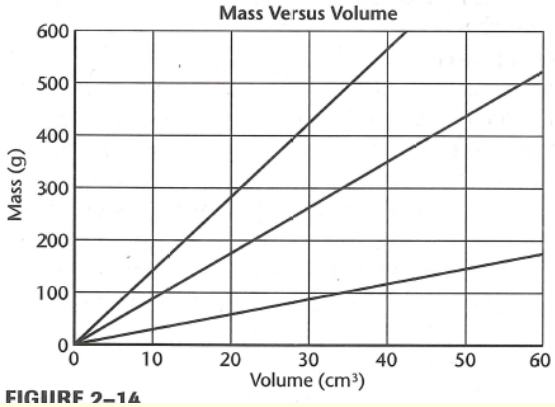


FIGURE 2–14