

Name: _____

Hour: _____ Date: _____

Chemistry: Activity – Measurements and Conversions

A. Measure the length, width, and height of a textbook to the nearest 0.1 cm.

| | centimeters (cm) |
|------------|------------------|
| length (L) | |
| width (W) | |
| height (H) | |

B. Using your measurements from Part A, find the length, width, and height of the textbook in millimeters and meters. Use the appropriate conversion factors. **Show your work** in the blank space on the left. Put your answers in the tables on the right.

| | millimeters (mm) |
|------------|------------------|
| length (L) | |
| width (W) | |
| height (H) | |

| | meters (m) |
|------------|------------|
| length (L) | |
| width (W) | |
| height (H) | |

C. Using the data above, find the area of each of the three faces of the book. **Show your work** on the left.

| | cm ² |
|---------|-----------------|
| area LW | |
| area WH | |
| area HL | |

| | mm ² |
|---------|-----------------|
| area LW | |
| area WH | |
| area HL | |

| | m ² |
|---------|----------------|
| area LW | |
| area WH | |
| area HL | |

- D. Find the total surface area of the book in cm^2 , mm^2 , and m^2 . **Show your work** on the left; put your answers in the table on the right.

| | |
|--|--|
| total area (cm^2) | |
| total area (mm^2) | |
| total area (m^2) | |

- E. Find the volume of the book in cm^3 , mm^3 , and m^3 . **Show your work** on the left; put your answers in the table on the right.

| | |
|--|--|
| volume (cm^3) | |
| volume (mm^3) | |
| volume (m^3) | |

- F. Use your data and calculations to answer the following questions. Circle your answer for each question.

1. By what factor do cm and mm differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

2. By what factor do cm and m differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

3. By what factor do m and mm differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

4. By what factor do cm^2 and mm^2 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

5. By what factor do cm^2 and m^2 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

6. By what factor do m^2 and mm^2 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

7. By what factor do cm^3 and mm^3 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

8. By what factor do cm^3 and m^3 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000

9. By what factor do m^3 and mm^3 differ?

10 100 1,000 10,000 100,000 1,000,000 10,000,000 100,000,000 1,000,000,000