

Measuring Liquid Volume with the Graduated Cylinder

Purpose

To develop skill in: measuring accurately with the graduated cylinder, using the metric system in measuring volume, completing metric conversions, completing conversions using conversion factors along with dimensional analysis (DA), following directions, safety precautions, and lab procedures.

Materials

1 Container of Red Chemical	Water	Tape (for labeling)
1 Container of Blue Chemical	Stir Rod	10 mL Graduated Cylinder
1 Container of Yellow Chemical	Test Tube Rack	6 Test Tubes of Same Size
1 Beaker w/ Water for Rinsing Pipette	1 Pipette	100 mL Graduated Cylinder

Procedure

1. Use tape to label 6 test tubes: A, B, C, D, E, and F.
2. Into test tube A, measure out as accurately as possible 19 mL of red water with the 100 mL graduated cylinder.
3. Into test tube C, measure out as accurately as possible 18 mL of yellow water with the 100 mL graduated cylinder.
4. Into test tube E, measure out as accurately as possible 18 mL of blue water with the 100 mL graduated cylinder.
5. From test tube C, measure out as accurately as possible 4 mL with the 10 mL graduated cylinder and pour it into test tube D.
6. From test tube E, measure out as accurately as possible 7 mL with the 10 mL graduated cylinder and add it to test tube D and mix.
7. From the container of blue water, measure out as accurately as possible 4 mL with the 10 mL graduated cylinder and pour it into test tube F.
8. From the container of red water, measure out as accurately as possible 7 mL with the 10 mL graduated cylinder and add it to test tube F and mix.
9. From test tube A, measure out as accurately as possible 8 mL with the 10 mL graduated cylinder and pour it into test tube B.
10. From test tube C, measure out as accurately as possible 3 mL with the 10 mL graduated cylinder and add it to test tube B and mix.
11. Have your teacher come and check your results.
12. Once the teacher has checked your results, measure the total amount of water in tube A (as accurately as your sense extender allows) by pouring it into the 100 mL graduated cylinder. Write down your results in the data table on the next page. Repeat for tubes B – F.

Data Table

Test Tube	Color of Water	Total Amount of Water
A		
B		
C		
D		
E		
F		

Grading Table (FOR TEACHER USE ONLY)

Safety	-1	-1	-1	-1	Total
Participation	-1	-1	-1	-1	
Accuracy	10 (no problems)	7(1-2 problems)	5 (3 problems)	0 (>3 problems)	30
Clean up	-1	-1	-1	-1	
Completion	Completed =	10	Did Not Finish =	0	

Safety Points:.....Wearing goggles, glassware handling, no horsing around.

Participation Points:.....Contribute to group work, stay at lab station, use class time, follows class directions.

Accuracy Points:.....All colors represented, all volumes correct, colors listed in table, volumes listed, heading.

Clean up Points:.....Clean equipment, desk/sink clean, items replaced, tape off.

Completion Points:.....Lab is completed.