**Activity Sheet Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lesson 4**

 **Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Measuring Volume**

**Part 1 – Measuring Volume of a Liquid**

**Purpose:** To practice measuring volume using a graduated cylinder with accuracy and precision.

**Procedure:**

1. Make sure your graduated cylinder and your test tubes are clean.
2. Set up the six test tubes in the test tube rack and label them A,B,C,D,E, and F using a piece of second chance paper/or your science journal.
3. Measure 19 ml of Red solution. Use a clean pipette for accurate measuring. Put into test tube **A**. **RINSE GRADUATED CYLINDER!**
4. Measure 18 ml of Yellow solution. Use a clean pipette for accurate measuring. Put into test tube **C**, **RINSE GRADUATED CYLINDER!**
5. Measure 18 ml of Blue solution. Use a clean pipette for accurate measuring.Put into test tube **E**, **RINSE GRADUATED CYLINDER!**
6. From **Test Tube C**, **remove** 4 ml and add it to test tube **D**. **RINSE GRADUATED CYLINDER!**
7. From **Test Tube E**, **remove** 7 ml and add it to test tube **D**. Mix by swirling GENTLY. **RINSE GRADUATED CYLINDER!**
8. From the **Beaker** of Blue solution, measure 4 ml and pour into test tube **F**. **RINSE GRADUATED CYLINDER!**
9. From the **Beaker** of Red solution, measure 7 ml and pour into test tube **F**.Mix by swirling GENTLY. **RINSE GRADUATED CYLINDER!**
10. From **Test Tube A**, remove 8 ml and pour into to test tube **B**. **RINSE GRADUATED CYLINDER!**
11. From **Test Tube C**, remove 3 ml and add it to test tube **B**. Mix by swirling GENTLY. **RINSE GRADUATED CYLINDER!**
12. Draw and color what you observe in the test tubes. Under each test tube drawing record the volume contained in the represented test tube.

Volume:

Volume:

Volume:

Volume:

Volume:

Volume:

**Part 2 - Measuring Volume of a Solid Using the Water Displacement Method**

The animation showed you how to find the volume of a sample using the water displacement method.

1. Look at the illustrations showing the water level in a graduated cylinder before and after a solid rod is submerged in water. What does this difference in water level tell you about the volume of the rod?
2. How much would the water level rise if you submerged a cube with a volume of 1 cm3 in a graduated cylinder filled with 40 mL of water?
3. Use the table below to record your measurements for the volume of three different size solid cylinders of the same material. Be sure to use the same size and material (color) rods you measured the mass of in the last lesson.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Color of Solid Cylinder** | **Length of Cylinder** | **Initial water level (mL)** | **Final water level (mL)** | **Change in water level (mL)** | **Volume of solid cylinder (cm3)** |
|  | \_\_\_\_\_\_cm |  |  |  |  |
|  | \_\_\_\_\_\_cm |  |  |  |  |
|  | \_\_\_\_\_\_cm |  |  |  |  |

**Part 3 – Measuring Volume with a Metric Ruler**

1. **Calculate the volume of Sample A.**

1. **If you cut Sample A in half and looked at only one half, you would have Sample B. What is the volume of this Sample B?**
2. **If you cut Sample B in half and looked at only one half, you would have Sample you would have Sample C.**

**What is the volume of Sample C?**

1. **Calculate the volume of a textbook or box using a metric ruler.**

**Record a description of the book or box and its volume.**

**Take it Further!**

In the last lesson (Lesson 3) you looked at the *mass*, and in this lesson (Lesson 4), you explored *volume*.

**How much mass an object or substance has compared to its volume is a quantity called “density”. For example, a rock is pretty dense, and a piece of balsa wood is much less dense. Do you think the density of the blob material might affect the way they move in the Lava Lamp?**