Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Science Ms. Hanna

**Colors of the Rainbow Lab**



|  |  |
| --- | --- |
| **Objectives**1. to measure chemicals with a graduated cylinder. 2. to use the metric system. 3. to follow directions. 4. to practice lab safety procedures.  | **Materials*** 3 beakers, each with a different color of

 water (red, yellow and blue) 5 drops of color per 100 ml of water* 6 test tubes, ~ 30 ml
* Test tube stand
* 100 ml and 10 ml graduated cylinders
 |

**Procedure: Part 1 :**

1. Label 6 test tubes in order: **A, B, C, D, E & F. (If you are not able to label the test tubes, imagine that they have labels and are in the rack in order from A-F)**



1. Measure the following amounts of water and pour into the test tubes listed

|  |  |  |
| --- | --- | --- |
| **Water Color** | **Amount** | **Test Tube** |
| RED | 19 ml | A |
| YELLOW | 18 ml | C |
| BLUE | 18 ml | E |
| RED | 7 ml | F |
| BLUE | 4 ml | F |

**Procedure: Part 2:**

Measure the following amounts of water from the ‘FROM’ test tubes, and pour them into the ‘TO’ test tubes:

|  |  |  |  |
| --- | --- | --- | --- |
| **Step** | **Amount** | **FROM Test Tube** | **TO Test Tube** |
| 1 | 4 ml | C | D |
| 2 | 7 ml | E | D-swirl |
| 3 | 8 ml | A | B |
| 4 | 3 ml | C | B-swirl |

7. **SAVE** your results (*do not dump them out yet*!). **Measure** the contents of each test tube and record how many mL were found in each test tube in table 1 (on back).

8. **AFTER** you have recorded all data (colored the test tubes and measured in the data section) empty the contents of each test tube and rinse with water.

9. Answer questions.

**Data:**

Draw what your 6 test tubes look like below. Make sure you use the correct color and draw the estimated level of liquid in each test tube.



**Table 1: Test Tube results**



**Results/Conclusions:**

1) Are your tubes about the same volume? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (± 2 ml)

2) If not, please give some sources of error that might have occurred. (Be specific! – Think of things you could do differently if you conducted this lab again that might give you better results)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) What instrument did you use in this activity to make measurements? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) What unit of the metric system did you use? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) Why is it important to follow directions **exactly**?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) Why is correctly measuring so important in a job like being a pharmacist? What could be some of the consequences (problems) of incorrectly measuring drugs and/or chemicals?

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7) Look at your hands. Do you have any stains on your hands? How about your lab papers? Why might this be a problem if the colors were harmful chemicals rather than just food coloring?

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