

Name _____

Date _____

Silver Carbonate Lab

18/20

Introduction

According to Dalton's atomic theory of matter, the atoms in chemical compounds will always combine in the same ratio. The ratio of the elements in a compound can be determined experimentally. In this experiment, silver nitrate will be combined with sodium carbonate in various ratios to produce the precipitate, silver carbonate. By plotting this data, you will determine the ratio of reactants that produces the most precipitate. From this, you can determine the correct ratio of silver ions to carbonate ions. Once the ratio is known, you can write the chemical formula for silver carbonate.

Pre-Lab

- 1.) Please restate in your own words how the amount of precipitated silver carbonate will help you to determine your chemical formula:

- 2.) Why should you let the reaction stand for 5 minutes before measuring the height of the precipitate?

- 3.) How will the graph help you interpret the data?

- 4.) What is a subscript and what does it mean in the formula of an ionic compound?

Problem? Can you determine the formula of silver carbonate?

Materials

Safety glasses or goggles	1 M AgNO_3	1 M Na_2CO_3
Lab apron	metric ruler	test tube rack
7 small test tubes	2 droppers	

Safety

Wear your goggles and lab apron at all times during this lab.

Silver nitrate will stain skin and clothes!

Procedure

- 1.) Put on goggles and lab apron. Label seven test tubes 1-7 and place them in a test tube rack.
- 2.) Following Table 1, place the indicated number of drops of silver nitrate into each test tube.
- 3.) Following Table 1, add the indicated number of drops of sodium carbonate to each test tube.

Table1

Test Tube	Drops AgNO_3	Drops Na_2CO_3
1	14	2
2	12	4
3	10	6
4	8	8
5	6	10
6	4	12
7	2	14

- 4.) Allow the test tubes to stand for 5 minutes.
- 5.) Measure the height of the precipitate in each test tube. Record the heights in table 2.

- 6.) Dispose of all chemicals according to your teacher's instructions. Clean up your work area and wash your hands before leaving the laboratory.

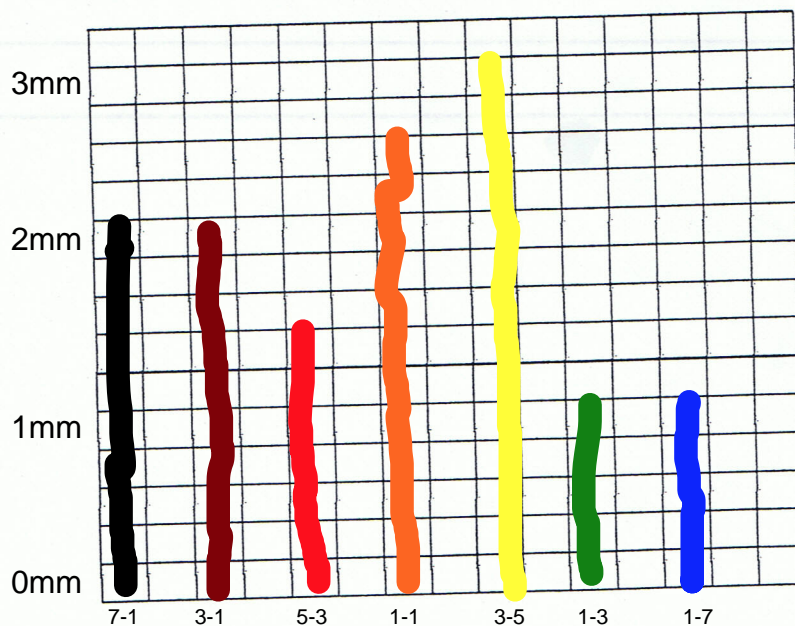
Table 2

Test Tube	Height of Precipitate (mm)	Ratio of drops AgNO_3 to Na_2CO_3
1		
2		
3		1.67:1
4		
5		0.67:1
6		...
7		...

Calculations

1.) Compute the ratio of drops of silver nitrate solution to drops of sodium carbonate solution in each test tube and record the ratios in Table 2. (Hint: Set up a ratio to give the number of drops of silver nitrate to one drop of sodium carbonate.)

2.) Graph your data. Plot the test tube numbers on the horizontal axis and the height in millimeters of the silver carbonate precipitate on the vertical axis. Label your axes. Beside each data point, record the drop ratios for AgNO_3 to Na_2CO_3 .



Critical Thinking

1.) Which reactant ratio(s) yielded the greatest amount of precipitate?

2.) What can you conclude from your graph of precipitate heights and reactant ratios?

3.) Based on the ratio that you determined in response to Question 1, what is the correct formula for silver carbonate?

4.) Why is it important that the proper ratio be used when writing the formula of a substance?
