7Fd/3 A model fire extinguisher 1

Name _____ **Class** _____

Some fire extinguishers work by releasing a stream of carbon dioxide gas. Carbon dioxide is released when sodium hydrogencarbonate powder reacts with dilute sulphuric acid.

You are going to carry out an investigation to find out how much of each chemical is needed to produce the largest amount of carbon dioxide.

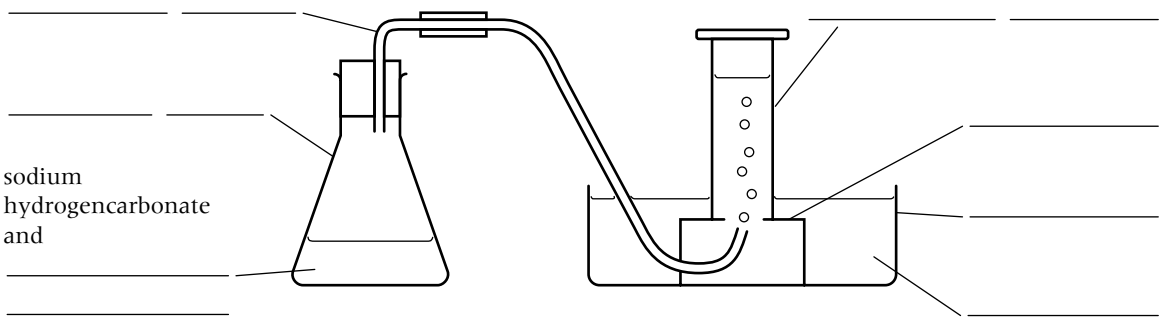
P

Apparatus

- **Sodium hydrogencarbonate**
- **Large measuring cylinder**
- **Small measuring cylinder**
- **Bung and delivery tube**
- **Eye protection**
- **Sulphuric acid**
- **Trough**
- **Shelf**
- **Conical flask**
- **Clamp and stand**

Wear eye protection.

Label the diagram using words from the apparatus list.



Method

1. Measure 0.2 g of sodium hydrogencarbonate, and put it in the conical flask.
2. Set up the rest of the apparatus. Make sure the measuring cylinder is full of water and that it is standing upside down over the hole in the shelf. You may need to hold it in place, or to use a clamp and stand.
3. Measure the volume of sulphuric acid shown in the table on page 2.
4. Pour the acid into the conical flask, and put the bung in the top. Collect the gas produced in the measuring cylinder.
5. Write down the volume of gas produced in the table on page 2.
6. Wash out the conical flask and then repeat steps 1 to 5 for the other volumes of acid in the table.

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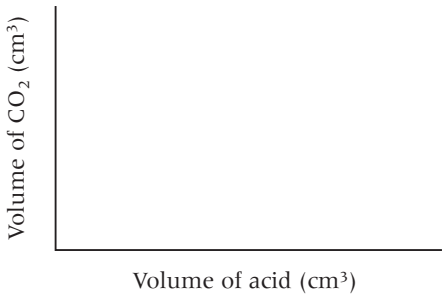
Recording your results

Record your results in this table.

Mass of calcium carbonate used (g)	Volume of acid (cm^3)	Volume of carbon dioxide (cm^3)
0.2 g	5	
0.2 g	10	
0.2 g	15	
0.2 g	20	
0.2 g	25	
0.2 g	30	
0.2 g	35	
0.2 g	40	
0.2 g	45	
0.2 g	50	

Considering your results/conclusion

Plot a graph to show your results. Use axes like this.



Look at your results carefully. Can you see a pattern? If so, what is it?

_____

_____

How much dilute acid should you use with 0.2 g of sodium hydrogencarbonate to make the most carbon dioxide?

_____

_____

Why did you choose this volume of acid?

_____

_____

Evaluation

Is there any way you could have improved your investigation?

_____

_____

S observing, presenting, considering, evaluating