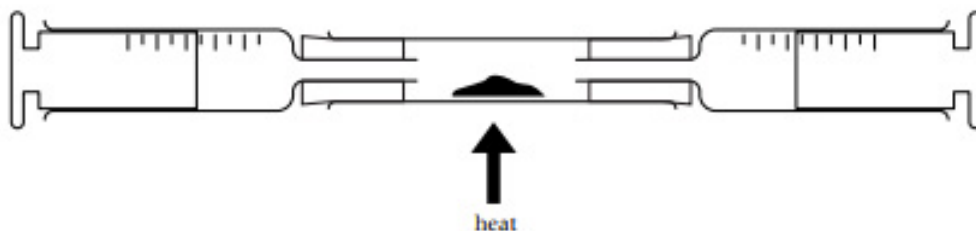
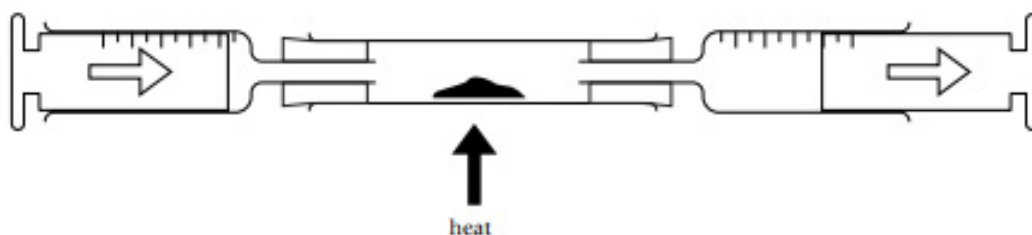


A closer look at a chemical reaction



This experiment was set up to find out what happens when copper is heated in air. Some powdered copper was put into a tube. The mass of the tube was measured. The tube was then heated.

The air in the syringes was passed over the copper while it was being heated like this.



Each time air was passed over the copper, the volume of air in the syringe was measured.

At the end of the experiment the copper had changed colour from brown to black, and the mass of the tube was measured again.

Results

Mass of empty tube = 20.54 g

Mass of tube + copper = 20.66 g

Mass of tube + copper after heating = 20.69 g

Number of passes	Volume of gas (cm ³)
0 (start)	100
1	92
2	87
3	84
4	82
5	81
6	81
7	80
8	80
9	80
10	80

Questions

- ① Suggest two things that tell you a chemical reaction has taken place.
- ② Plot a line graph to show the volume of gas after each pass. Join up the points with a line of best fit.
- ③ Is the reaction finished after four passes of air over the copper? How do you know?
- ④ How do you know that the reaction has finished after 10 passes of air?
- ⑤ The black solid is called copper oxide. Which gas in the air do you think has reacted with the copper to form the copper oxide?
- ⑥ Does the mass of the copper go up or down when it reacts?
- ⑦ Explain why this change occurs