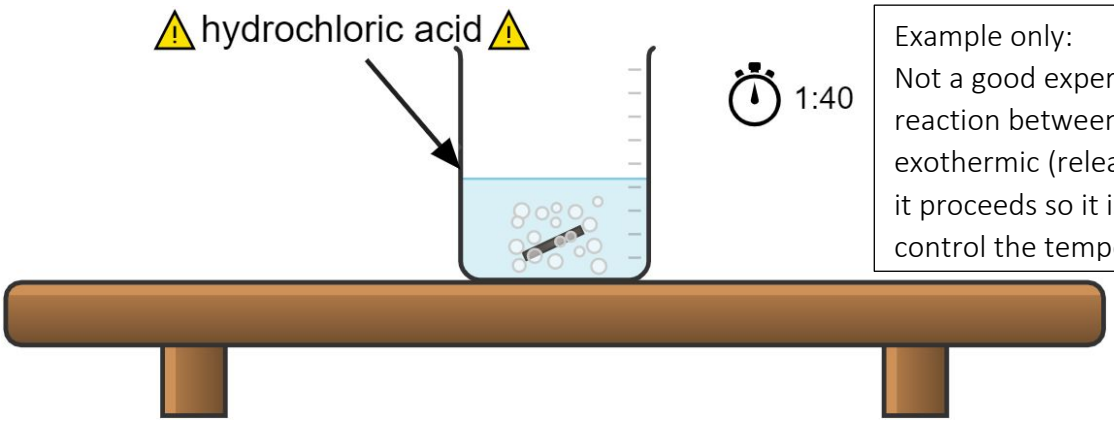
"To make it a fair test…."

Saying just this will get you nothing in the Chemistry 1.1 Assessment



Example only:
Not a good experiment as the reaction between HCl and Mg is exothermic (releases heat energy) as it proceeds so it is very hard to control the temperature.

If you were investigating the effect of concentration on the reaction between hydrochloric acid and magnesium ribbon, you would:

- Change the concentration of the hydrochloric acid (independent variable) by making up different concentrations using the acid and water e.g. 100% - 40%
- Measure the time taken for all the magnesium to react and disappear (dependent variable)

AND you would 'keep everything else the same' which means that you will control any other variables (to make it a fair test). You NEED to say what some of these are:

- The same total volume of HCl in the beaker each time
- The acid at the same temperature every time
- The same length / size / mass of magnesium ribbon used each time
- The same amount of stirring or swirling e.g. drop magnesium in and swirl once
- The same 'end point' – when the last piece of silvery grey magnesium disappeared

You may be able to think of some more.

It is NOT 'the same person measuring the volumes / lengths'. It is NOT 'the same person using the stopwatch'. We hope you can all measure properly and use a stopwatch!

It is NOT 'doing the experiment 3 times'…. This is about checking the RELIABLILTY of your data (results). We do this to spot any outlier results so we can leave them out and repeat this particular experiment.

It is NOT about using appropriately sized measuring cylinders, and reading the meniscus at eye level to avoid parallax error….. This is about being ACCURATE.

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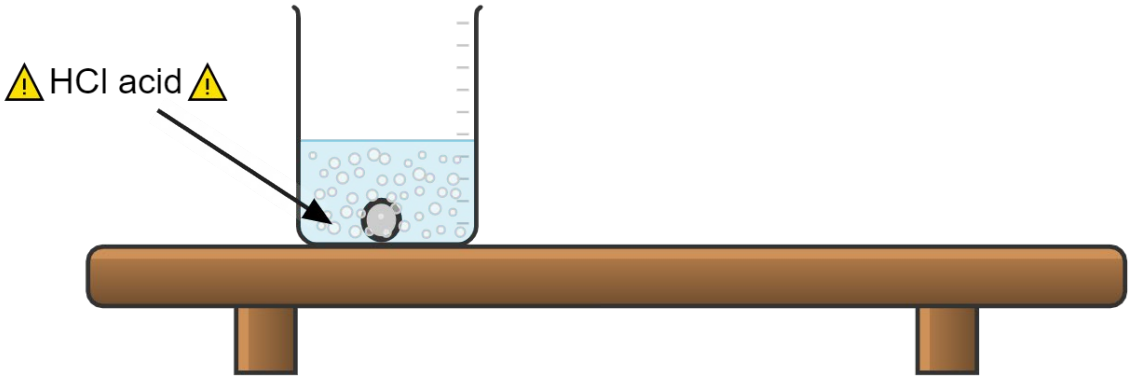

If you were investigating the effect of surface area on the reaction between hydrochloric acid and antacid tablets, you would:

- Change the surface area of the tablets (independent variable) by cutting them carefully – e.g. using whole, half, quarter and 1/8 tablets.
- Measure the time taken for all the antacid tablet to react and disappear (dependent variable)

AND you would 'keep everything else the same' which means that you will control any other variables (to make it a fair test). You NEED to say what some of these are:

- The same total volume of HCl in the beaker each time
- The HCl acid at the same concentration every time
- The HCl acid at the same temperature every time
- The same sized tablet cut up each time (just changing how it is 'cut up')
- The same amount of stirring or swirling e.g. drop tablet in and swirl once
- The same 'end point' – when the last piece of tablet disappeared

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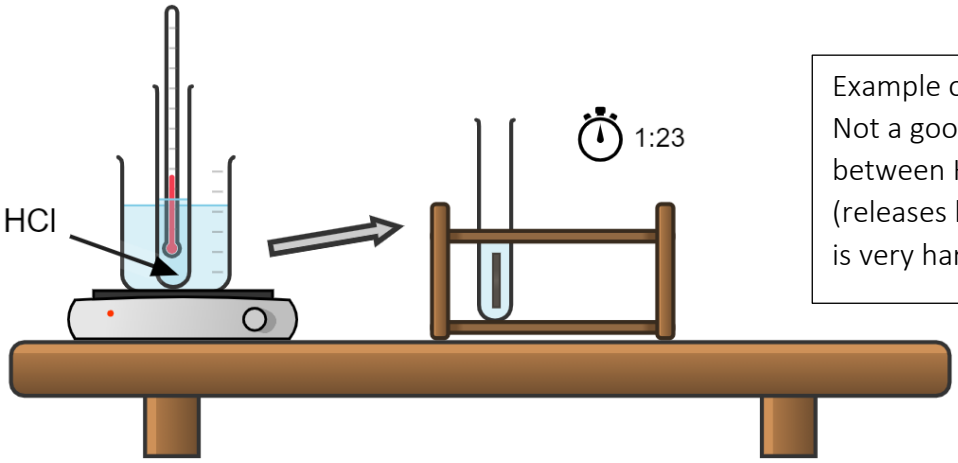

Example only:
Not a good experiment as the reaction between HCl and Mg is exothermic (releases heat energy) as it proceeds so it is very hard to control the temperature.

If you were investigating the effect of temperature on the reaction between hydrochloric acid and magnesium ribbon, you would:

- Change the temperature of the hydrochloric acid (independent variable) by heating the acid (in a water bath) to different temperatures e.g. 20 – 60°C.
- Measure the time taken for all the magnesium to react and disappear (dependent variable)

AND you would 'keep everything else the same' which means that you will control any other variables (to make it a fair test). You NEED to say what some of these are:

- The same total volume of HCl in the beaker each time
- The acid at the same concentration every time
- The same length / size / mass of magnesium ribbon used each time
- The same amount of stirring or swirling e.g. drop magnesium in and swirl once
- The same 'end point' – when the last piece of silvery grey magnesium disappeared

You may be able to think of some more.

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