# Planning a reaction rate investigation – assessment grid

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You should have a plan for an investigation into how the size of marble chips affects the rate of their reaction with hydrochloric acid. Use this assessment grid to mark the plan.

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|  | **Poor**  | **Adequate** | **Good**  | **Excellent**  |
| **Organisation of ideas**  | Ideas are disorganised. It is difficult to follow the practical method suggested.  | There is a clear title. It is possible to understand the method intended. **(1 mark)** | There is a clear main title. The aim, diagram and method are separated. The method is clear and easy to follow. **(2 marks)** | The title gives the reader the key information about the plan. The aim, diagram and method are separated and labelled with sub-headings. The method is precise and concise. **(3 marks)** |
| **Diagram** | No diagram is provided.  | The diagram is messy. Labelling is incomplete. **(1 mark)** | The diagram is neatly drawn with a pencil and ruler. Labels are all correct. **(3 marks)** | The diagram clearly shows key information about how to carry out the practical. It complements the method given. **(4 marks)** |
| **Fair test** | Fair testing is mentioned vaguely, but no suggestions of how to improve the experiment are given.  | One suggestion for making the experiment fair is given. **(1 mark)** | Two or three suggestions for conducting a fair test are given. **(3 marks)** | Four or more distinct suggestions for carrying out a fair investigation are given. **(4 marks)** |
| **Method for comparing the rate of reaction** | The method is incomplete. There is no description of how to compare the rate of reaction in each case. | The method described would work. A **qualitative** method for comparing the rate of reaction is suggested. **(4 marks)** | The method described would work well. A **quantitative** method of comparing the rate of reaction, such as by measuring the decrease in mass or volume of carbon dioxide produced, is given. **(7 marks)** | The method described would work well and give **reliable** results. The volume of carbon dioxide released in a given time is measured using a suitable method. **(8 marks)** |
| **Safety** | The method is unsafe.  | The method is safe. **(1 mark)** | Suitable safety information is given. **(3 marks)** | Chemical safety information sheets have been used to research the potential hazards of the chemicals selected. **(5 marks)** |
| **Prediction**  | No prediction is given.  | A prediction is stated and explained. **(1 mark)** | A prediction is stated and the reasons for the prediction are explained in terms of collisions between particles. **(4 marks)** | A prediction is stated and explained. Evidence of research into how surface area affects the rate of reaction and a clear explanation in terms of collision theory is given. **(6 marks)** |