EMPIRICAL FORMULA CALCULATION

Paper: 1C
Question: 13(e)

Question

The ionic equation for the reaction between magnesium and hydrochloric acid is

$$Mg(s) + 2H^+(aq) \rightarrow Mg^{2+}(aq) + H_2(g)$$

Use the information in this equation, and the particle collision theory, to explain why the rate of reaction decreases during each of the experiments.

(3)

Mark Scheme

An explanation that links the following points: **M1** the concentration of the acid/hydrogen ions/H^+ (ions) decreases	**ALLOW** there are fewer hydrogen ions/H^+ (ions) in the same volume **ALLOW** the surface area of the magnesium decreases
M2 therefore there are fewer (successful) collisions (between the hydrogen ions/H^+ ions and the magnesium atoms) **M3** per second/per unit time	less frequent collisions/ slower collision rate scores **M2** and **M3** **M3** dep on **M2** **IGNORE** less chance of collision **MAX 1** if reference to energy of particles changing