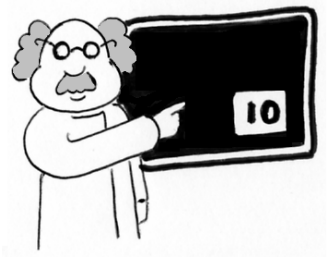


STARTER FOR 10...

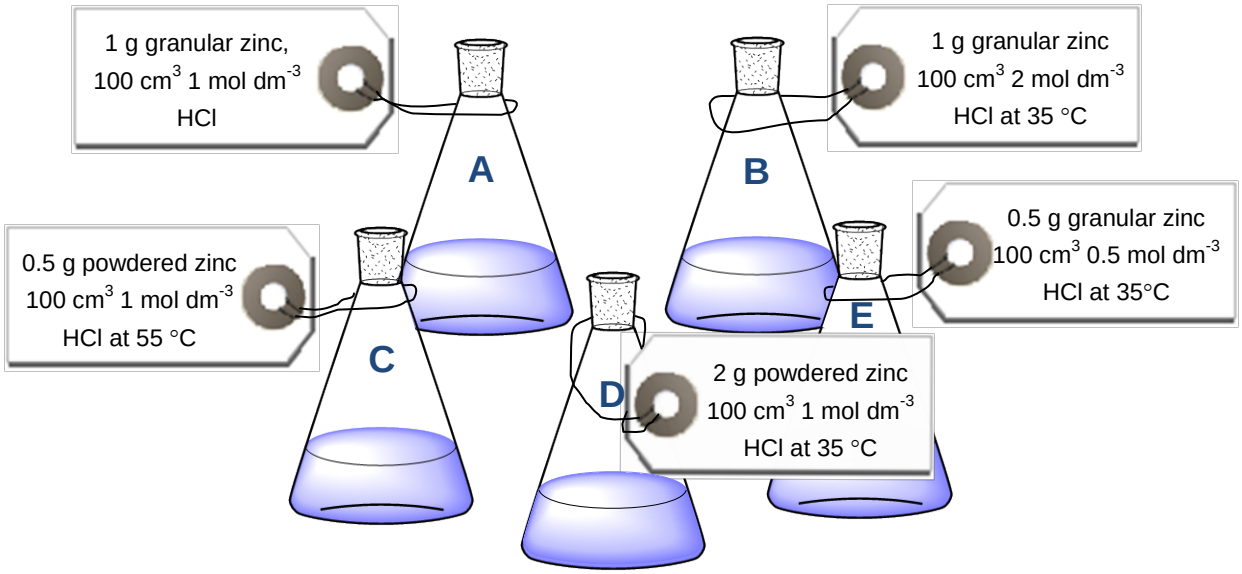
7.1. Collision theory

This question is all about the reaction between zinc metal and hydrochloric acid to produce zinc chloride and hydrogen gas.

1. Write a balanced symbol equation for the reaction that occurs. (1 mark)

.....

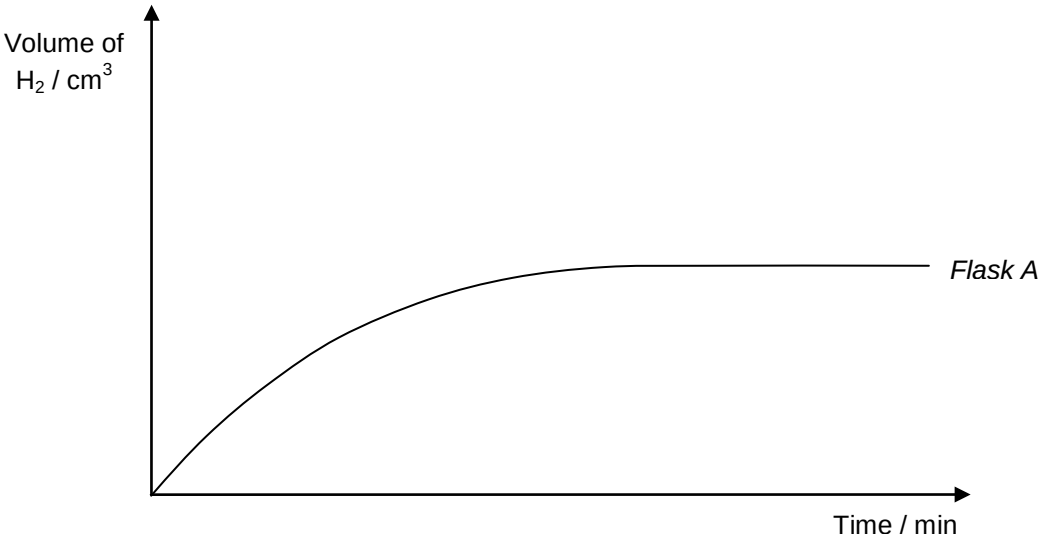
2. The reaction flasks below show the same reaction but under different conditions. The acid is in excess in all five flasks.

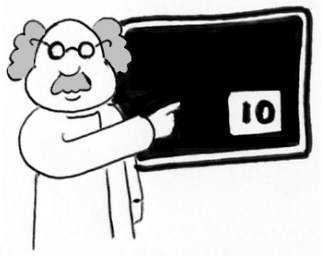


(a) In which flask is the reaction rate the slowest? ..... (1 mark)

(b) The graph below shows how the volume of hydrogen given off changed with time for the reaction that occurred in flask A. Sketch on the same set of axes, the curves you would expect to get if you repeated the measurements for *flasks B, C, D* and *E*.

(8 marks)





STARTER FOR 10...

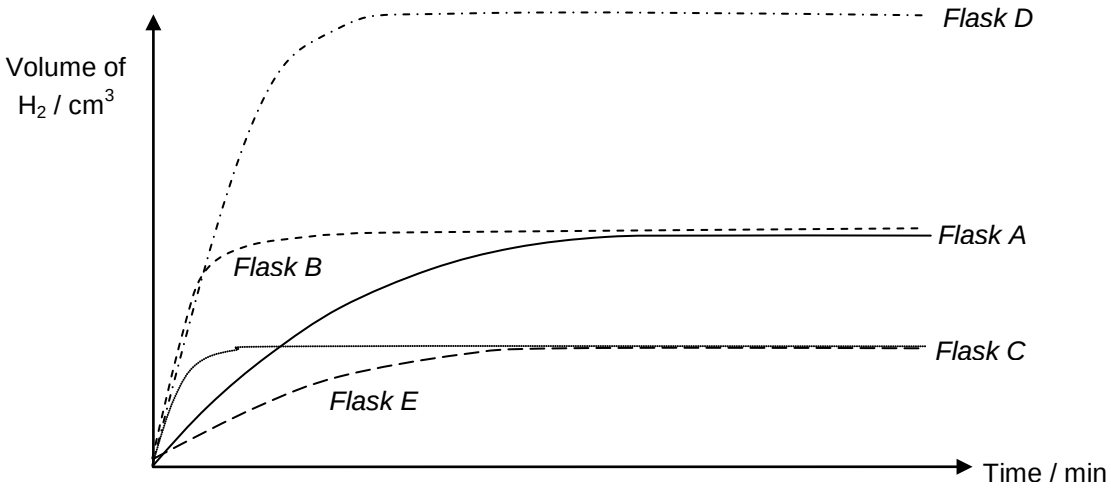
7. Kinetics answers

7.1. Collision theory

1. $Zn + 2\,HCl \rightarrow ZnCl_2 + H_2$ (1 mark)

2. (a) Flask E would go the slowest. (1 mark)

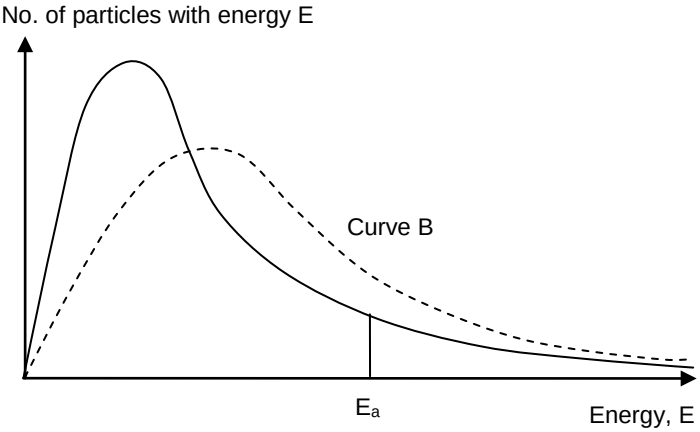
(b)



(2 marks for each of the curves for flasks B, C, D and E; 1 for the correct initial gradient, 1 for the correct finishing point)

7.2.1. Sketching Maxwell-Boltzmann

1.



1 mark – both axes correctly labelled

1 mark – curve starts at origin

1 mark – curve never touches x-axis

1 mark – correct shape

1 mark – drawing of E_a

2. For the drawing of curve B above;

1 mark – peak to the right of original curve

1 mark – peak height is lower

1 mark – approximately the same area under the two curves