

Question 34**(12 marks)**

Consider the reaction between magnesium carbonate, $\text{MgCO}_3(\text{s})$, and dilute nitric acid, $\text{HNO}_3(\text{aq})$.

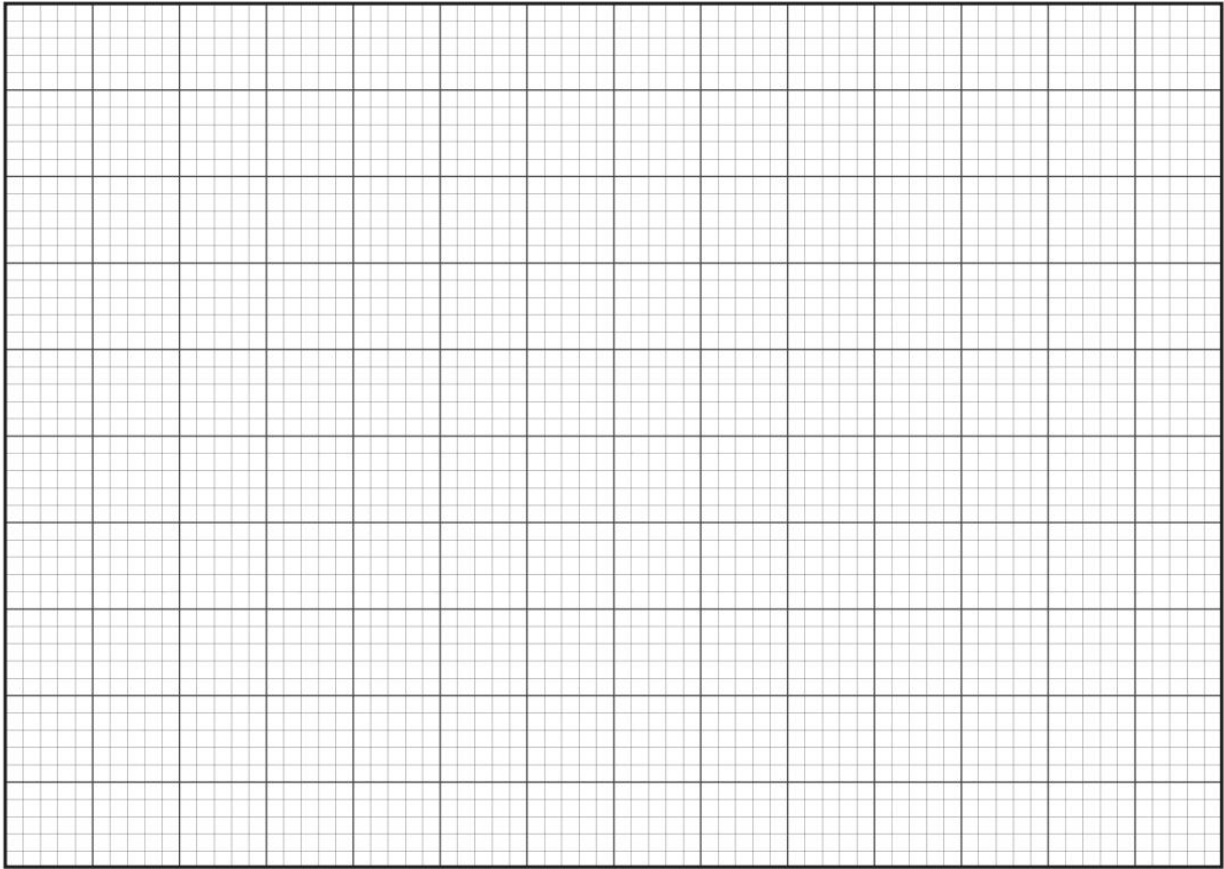


The following data was obtained from the addition of excess 0.500 mol L^{-1} nitric acid to 5.00 g of magnesium carbonate.

Time (min)	0	1.0	2.0	3.0	4.0	5.0	6.0
Volume of gas produced (mL)	0	12	18	25	32	33	33

(a) Draw a labelled graph of the data provided in the grid below.

(4 marks)



(b) Explain the shape of your graph in part (a) by referring to Collision Theory. (6 marks)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- (c) Sketch and label a line on your graph in part (a) that shows the effect of conducting the same experiment at a higher temperature. (2 marks)