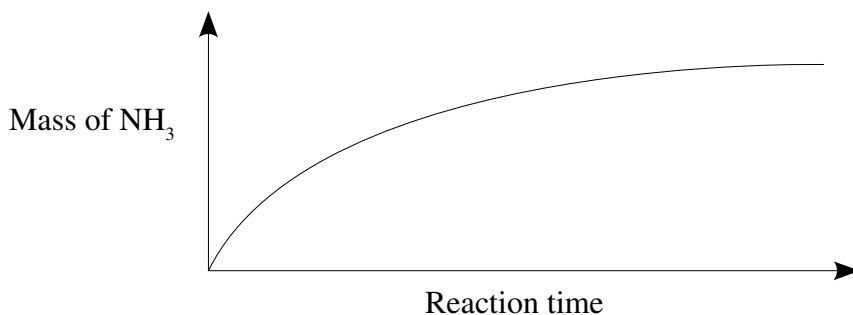


Year 11 Chemistry Assignment Reaction Rate

1. Consider the reaction $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightarrow 2\text{NH}_{3(g)}$ taking place in a sealed container. The graph below shows the mass of product (NH_3) over the time of the reaction.



- (a) Explain why the slope of the graph decreases over time. /2
- (b) Draw and label a second line on the graph to show how the reaction would be different if the container's volume was compressed (pressure increased). /2
- (c) Draw and label a third line on the graph to show how the reaction would be different if the container was placed in a bucket of ice (temperature decreased). /2
- 2.
- (a) Use an analogy to explain activation energy. Activation energy is like... /3
- (b) Draw an example energy profile diagram for an exothermic reaction. /2
- (c) On the energy profile diagram for (b), label ΔH and the activation energy. /2
- (d) State whether ΔH for an endothermic reaction is positive or negative. /1
- (e) Explain how an energy profile diagram is related to the rate of reaction. /2
- 3.
- (a) Use collision theory to explain why crushing a solid reactant into powder increases the rate of reaction. /3
- (b) State whether or not adding a catalyst increases the frequency of collisions. /2
- (c) Describe one example of the use of enzymes. /2

TOTAL MARKS /23