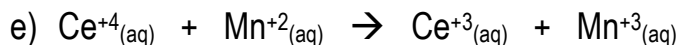
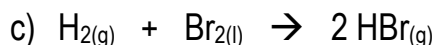
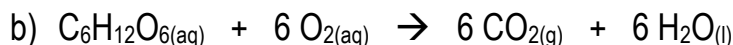
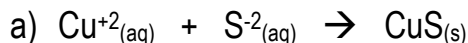


Reaction Rate Review

1. $\text{C}_5\text{H}_{12(g)}$ is burned in air. All products are gases. If 28.8 g of pentane are consumed in 30. seconds, give the reaction rate in moles/s for all four participants.
2. 112 Litres of nitrogen gas at STP combine with hydrogen gas in 10. seconds to produce gaseous ammonia. Determine the reaction rate in g/s for all the chemicals involved.
3. Gaseous carbon monoxide and water vapour are produced when ethane gas, C_2H_6 , is combusted with oxygen. If 96 grams of ethane are consumed in 10. minutes, calculate the reaction rate in g/s for all the chemicals involved.
4. In 20. minutes, 858 litres of oxygen gas at RTP react with gaseous ammonia to yield nitrogen dioxide gas and liquid water. Determine the reaction rate in litres/min for each gas.
5. 38.9 g of magnesium is added to 600. ml of 2.33 M HCl. The reaction is complete in 5 minutes. Calculate, assuming RTP conditions, the reaction rate in litres of H_2 /min.
6. $\text{S}_{(s)} + \text{H}_{2(g)} + 2 \text{O}_{2(g)} \rightarrow \text{H}_2\text{SO}_{4(l)}$ **THIS is a CHALLENGING Question.**
Suggest a reaction mechanism involving sulphur dioxide and sulphur trioxide intermediates. Why is the equation shown an improbable reaction mechanism?
7. Categorise each of the following reactions as fast, slow, etc. Explain your choice...



~~a) If rate = $k [\text{A}]^2 [\text{B}] [\text{C}]^{-1}$, give the reaction order.~~

~~b) If rate = $k [\text{A}]^{1/2} [\text{B}]^x$ and the reaction is first order, find "x".~~

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9. Examine the graph and draw the curve. Is A a reactant or a product? Determine the reaction rate at 40 seconds and 140 seconds. Explain this trend in terms of reaction kinetics.

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