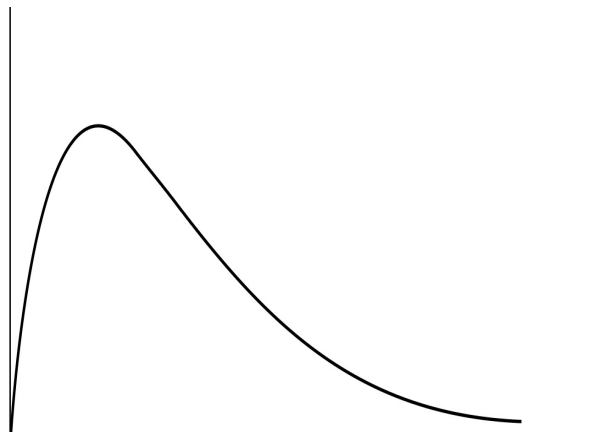**1** The Maxwell-Boltzmann distribution is shown for the particles in a gas at temperature T_1

   a Label both axes.

   b Mark the most probable energy of the molecules at T_1 (label this E_{mp1})

   c Sketch another distribution to show the same sample at a lower temperature T_2

   d Mark the most probable energy of the molecules at T_2 (label this E_{mp2})

2 Magnesium reacts with hydrochloric acid to form hydrogen gas. A graph is shown showing the volume of hydrogen varies with time when 25 cm^3 of 0.500 mol dm^{-3} reacts with an excess of magnesium at 20°C.

   a Sketch a line to show how the volume of hydrogen changes if a similar reaction was carried out but with 50 cm^3 of 0.250 mol dm^{-3} (label this **A**)

   b Sketch a line to show how the volume of hydrogen changes if a similar reaction was carried out but with 25 cm^3 of 0.750 mol dm^{-3} at 40°C (label this **B**)

Volume of H_2

time
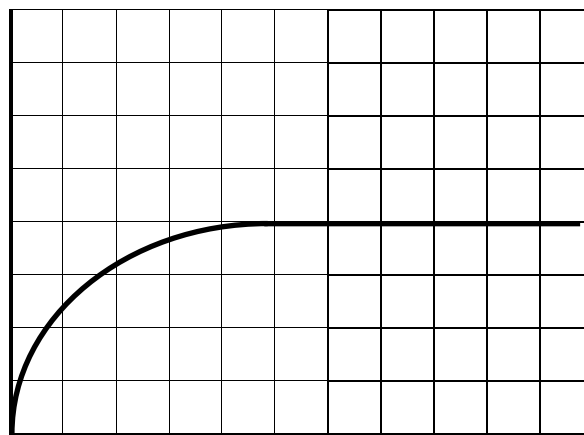
   c Define the term *rate of reaction*. ....

   ....

   d Explain why rate of reaction increases with concentration. ....

   ....

   ....

   ....

   e Explain why rate of reaction increases with temperature. ....

   ....

   ....

   ....