

## 6.1 Collision theory and rates of reaction

### Understandings:

- Species react as a result of collisions of sufficient energy and proper orientation.
- The rate of reaction is expressed as the change in concentration of a particular reactant/product per unit time.
- Concentration changes in a reaction can be followed indirectly by monitoring changes in mass, volume and colour.
- Activation energy ( $E_a$ ) is the minimum energy that colliding molecules need in order to have successful collisions leading to a reaction.
- By decreasing  $E_a$ , a catalyst increases the rate of a chemical reaction, without itself being permanently chemically changed.

### Applications and skills:

- Description of the kinetic theory in terms of the movement of particles whose average kinetic energy is proportional to temperature in Kelvin.
- Analysis of graphical and numerical data from rate experiments.