

SCIENCE YEAR 9 - TERM 2.1



I ANALYSE

(Identifying patterns, relationships, and evaluating data)

1. I can analyse how changes in temperature, surface area, and concentration affect reaction rates.
2. I can interpret graphs showing changes in rate over time.
3. I can compare how conduction, convection, and radiation transfer thermal energy.
4. I can analyse experimental results involving heat transfer and energy changes.



I SOLVE PROBLEMS

(Applying logic, equations, and scientific reasoning)

1. I can use the rate of reaction formula to solve problems from experimental data.
2. I can apply the formula for specific heat capacity to calculate energy changes.
3. I can reason how catalysts influence the rate of chemical reactions.
4. I can use particle theory to explain how different materials transfer heat.



I PRACTISE

(Developing practical skills and conducting investigations)

1. I can carry out controlled experiments to measure the effect of concentration or temperature on reaction rate.
2. I can safely measure the volume of gas released or change in mass over time in reactions.
3. I can investigate heat transfer through solids, liquids, and gases using lab equipment.
4. I can measure temperature changes in specific heat capacity investigations.



I APPLY

Transferring scientific ideas to new contexts and real-world examples

1. I can apply my understanding of heat transfer to real-life scenarios like insulation and cooking.
2. I can explain how industries control rate of reaction for efficiency and safety.
3. I can use knowledge of catalysts in real-world applications like catalytic converters.
4. I can apply concepts of radiation to thermal energy transfer in space or buildings.

I READ

BBC BITESIZE - [Rate of Reaction](#), [Heat Transfer](#)

I LEARN

CHEMISTRY - RATE OF REACTIONS

Rates of reactions, Surface area and temperature affecting the rate of reaction, Effect of concentration and catalyst on Rate of reaction, Measuring rates of reactions, Rate experiments.

PHYSICS - HEAT TRANSFER

Specific heat capacity, Conduction, Convection, Radiation

SCIENTIFIC
SKILLS

SCIENCE YEAR 9 - TERM 2.2



I ANALYSE

(Best fit for anatomical systems and nervous function analysis)

1. I can analyse how the skeletal and muscular systems interact to enable movement.
2. I can analyse how changes in heart rate relate to exercise and lifestyle.
3. I can explore the structure and function of the brain and how it processes information.
4. I can analyse how the eye focuses light and detects changes in the environment.



I EVALUATE

(Best fit for comparing reaction conditions, judging methods, and drawing conclusions)

1. I can evaluate the effects of catalysts, concentration, and temperature on reaction rate.
2. I can evaluate the efficiency and accuracy of titration experiments.
3. I can judge whether a reaction is exothermic or endothermic based on energy profiles.
4. I can evaluate the practicality of electrolysis for different compounds.



I SOLVE PROBLEMS

(Best fit for titration, combustion, energy change and balancing equations)

1. I can solve problems using titration data to find unknown concentrations.
2. I can calculate energy changes in reactions using bond energy data.
3. I can balance chemical equations and predict products of combustion.
4. I can use ionic equations to represent neutralisation and electrolysis.



I PRACTISE

(Procedural skills and scientific techniques)

1. I can practise setting up and performing a titration safely and accurately.
2. I can observe and record physical signs of combustion and neutralisation reactions.
3. I can carry out a simulation or practical to investigate muscle movement or reflexes.
4. I can practise using indicators and apparatus to measure chemical change.

I READ

BBC BITESIZE - [More about the body](#), [The Eye and the Brain](#), [The Heart](#), [Titration](#), [Electrolysis](#), [Bond Energy Calculations](#)

I LEARN

BIOLOGY - MORE ABOUT THE BODY

1. Skeletal and Muscular systems
2. The Heart
3. The brain

CHEMISTRY - CHEMICAL REACTIONS

1. Combustion
2. Electrolysis of molten compounds
3. Neutralisation
4. Titration
5. Calculating energy change - Bond energy

SCIENTIFIC SKILLS