## Rates of reaction

| Topic | We are learning to: | 😊 | 😭 |
|---|---|---|---|
| **Chemical reactions** | What is the rate of a reaction | | |
| | Explain what happens in a reaction in terms of collisions (Collision Theory) | | |
| **Recall how Factors change the rate of a reaction** | changing the **temperature** of a solution<br>At higher temperatures, particles can collide more often and with more energy, which makes the reaction take place more quickly | | |
| | changing the **concentration** of a solution<br>More reactant particles moving together allow more collisions to happen and so the reaction rate is increased. | | |
| | changing the **surface area** of a solid<br>more particles are exposed to the other reactant. there is a greater chance of particles colliding, which leads to more successful collisions per second. the rate of reaction increases. | | |
| | adding **a catalyst** to a reaction<br>increased the frequency of successful collisions as more particles have enough energy to take part in the reaction, therefore there are more successful collisions. | | |
| **Experiments** | Be familiar with the experiments in this booklet<br>(how rate was measured each time) | | |
| **variables** | Define control variable, Independent variable, and dependent variable and be able to identify each one in an investigation. | | |
| **Graph drawing skills** | Label X and Y axis, Draw suitable scale, continuous data -plot points accurately, join points together with a suitable line.<br><br>Be able to draw a Bar Chart for discrete data | | |

## On the move

| Topic | We are learning to: | 😊 | 😭 |
|---|---|---|---|
| Speed Trap | State the equation for Average Speed, distance travelled and time taken. | | |
| | Use the equations (above) to carry out calculations. | | |
| | State the units of Speed. | | |
| Journey Graphs | Interpret a Distance – time graph. | | |
| | Draw a distance – time graph from information given. | | |
| | Use information from a Distance–time Graph to calculate speed. | | |
| | Use a Distance – time graph to describe an objects journey. | | |
| | State the units of Speed. | | |

| | | | |
|---|---|---|---|
| Journey Graphs | Interpret a Distance – time graph. | | |
| | Draw a distance – time graph from information given. | | |
| | Use information from a Distance – time Graph to calculate speed. | | |
| | Use a Distance – time graph to describe an objects journey. | | |
| Braking News | State the definition of Thinking Distance. | | |
| | State the definition of Braking Distance. | | |
| | State how to calculate the total braking distance. | | |
| | Write down how total stopping distance can be increased. | | |
| | Interpret a thinking distance/braking distance chart. | | |

## Healthy Body

| Topic | We are learning to: | 😊 | 😭 |
|---|---|---|---|
| **Food** | Know the 7 nutrients necessary for good health | | |
| | Food tests –Protein<br>Sugar<br>Starch<br>Fat<br><br>Recall the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases<br><br>Careers – know the work or a dietician | | |
| **Digestion** | Digestive system – know the main organs and their function | | |
| | chemical digestion - know the definition of an enzyme, the names of 3 digestive enzymes and their role. | | |
| | Mechanical Digestion – Know the structure of teeth<br>Know the different types of teeth and their roles | | |
| **Exercise** | know the importance of exercise to health | | |
| | the interaction between skeleton and muscles | | |
| | the function of muscles and examples of antagonistic muscles | | |
| | the structure and functions of the human skeleton, to include support, protection, movement and making blood cells | | |
| **Drugs** | the effects of recreational drugs (including substance misuse) on behaviour, health and life processes. | | |

## Atoms and elements

| Lesson | What we learned | 😊 | 😭 |
|---|---|---|---|
| **Elements and compound** | Sort substances into elements and compounds. | | |
| | Interpret chemical formulae and relate the numbers to the number of atoms involved. | | |
| | Understand energy change during compound formation | | |
| | The formation of iron sulfide from Iron and Sulfur. | | |
| **Chemical reactions** | Describe how elements can react with the substances around them. | | |
| | Explain that metals often react with the elements in the air to form compounds. | | |
| | Explain that thermal decomposition means to break down a compound using heat energy. | | |
| **How do compounds react with each other?** | Evidence for a chemical reaction has taking place. | | |
| | Recognise that reactions can take place between elements or compounds. | | |
| | Explain observations in terms of reacting particles. | | |
| **mixtures** | Classify materials as elements, compounds and mixtures. | | |
| | Explain that mixtures do not have a fixed composition and cannot be represented by a chemical formula | | |
| | Know that particles in a mixture are not chemically joined together. | | |
| **What is a pure substance?** | Know that elements and compounds melt and boil at a particular temperature. | | |
| | Explain how the melting and boiling points can be used to identify substances. | | |
| | Know that mixtures do not melt or boil at a fixed temperature. | | |
| **Solutions** | What a solvent is. | | |
| | What a solute is. | | |
| | What a solution is. | | |
| | What dissolving means. | | |
| | What soluble means. | | |
| **Separation techniques** | How to separate miscible liquids.<br>How to separate pigments. | | |
| | How to separate a soluble substance from an insoluble substance. | | |
| | How to separate pure water from salt water. | | |
| | What a Liebig Condenser is. | | |
| | How to separate Immiscible liquids. | | |

Gas exchange

| Topic | Respiration and Breathing | 😊 | 😭 |
|---|---|---|---|
| respiration | Recall (Aerobic) Respiration word equation glucose + oxygen → carbon dioxide + water + energy | | |
| breathing | The structure and function of gas exchange system in humans (lungs, trachea, bronchi, bronchioles, alveoli, diaphragm, ribs and intercostal muscles) | | |
| | The mechanism of breathing to move air in and out of the lungs | | |
| | Compare inhaled and exhaled air | | |
| | Describe the mechanism of ventilation in terms of changes in volume and pressure | | |
| | Simple measurements of lung volume | | |
| smoking | Describe the consequences of Smoking | | |
| | The impact of exercise, smoking and vaping on the human gas exchange system | | |
| exercise | The effects of exercise on the circulatory system | | |
| | The relationship between heart beat, breathing rate and exercise | | |

## Electricity

| Topic | We are learning to: | 😊 | 😭 |
|---|---|---|---|
| **Electric Circuits** | Describe electric current as the flow of electrons. | | |
| | Describe electric circuits. | | |
| | Recognise a complete working circuit. | | |
| | Recall circuit symbols for common components | | |
| **Electric Current** | Relate bulb brightness to current. | | |
| **Conductors and Insulators** | Define the terms conductor and insulator | | |
| | Design and build a circuit to test if a material conducts electricity. | | |
| | Categorize materials as conductors and insulators. | | |
| **Resistance** | Describe resistance. | | |
| | State the unit and symbol of resistance. | | |
| | Define conductors and insulators in terms of resistance. | | |
| | Give examples of variable resistors in everyday life. | | |