ADVENT TERM 2 SCIENCE – Year 4 - Medium Term Planning – CHEMISTRY: STATES OF MATTER		
LESSON 1	**LESSON 2**	**LESSON 3**
Communicating Results **LEARNING INTENTION:** To know that materials can be classed as a solid, liquid or gas. **Disciplinary Knowledge:** • Report on findings from enquiries, including oral and written explanations. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of chemistry.	**Using Scientific Evidence** **LEARNING INTENTION:** To know that particles make up all matter. **Disciplinary Knowledge:** • Use scientific evidence to answer questions or to support their findings. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of chemistry.	**Asking Enquiry Questions** **LEARNING INTENTION:** To know that some materials change state of matter when heat is added or removed. **Disciplinary Knowledge:** • Ask relevant questions and use different types of scientific enquiries to answer them. **Aim:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
Key Vocabulary: **solid, liquid, gas, state, matter**, flow, pour, space, fixed, compressed, invisible, particle	**Key Vocabulary:** **matter, particles, close, far, arrangement, pattern,** sold, liquid, gas	**Key Vocabulary:** **change, heat, cool, freeze, melt, evaporate,** evaporation, **condense,** condensation, reversible
Recap & retrieval:	**Recall & retrieval:** • Solids stay in one place and can be held. • Liquids move around (flow) easily and are difficult to hold. • Gases spread out to fill the available space and cannot be held.	**Recall & retrieval:** • Solids stay in one place and can be held. • Liquids move around (flow) easily and are difficult to hold. • Gases spread out to fill the available space and cannot be held. • All matter is made from tiny particles.

Key Knowledge: **Child:** • Solids stay in one place and can be held. • Some solids can be squashed, bent, twisted and stretched. • Liquids move around (flow) easily and are difficult to hold. • Liquids take the shape of the container in which they are held. • Gases spread out to fill the available space and cannot be held. **Teacher:** • Examples of solids include wood, metal, plastic and clay. • Examples of liquids include water, juice and milk. • Examples of gases include oxygen, helium and carbon dioxide. • Air is a mixture of gases.	**Key Knowledge:** **Child:** • All matter is made from tiny particles. • In a solid, the particles are close together and arranged in a regular pattern. • In a liquid, the particles are close together but arranged randomly. • In a gas, the particles are randomly arranged and far apart. **Teacher:** • Particles are single pieces of matter that are too small to be seen. • The arrangement of particles in solids, liquids and gases explains their different properties.	**Key Knowledge:** **Child:** • Heating or cooling materials can bring about a change of state. • This change of state can be reversible or irreversible. • The process of changing from a solid to liquid is called melting. • The reverse process of changing from a liquid to a solid is called freezing. • The process of changing from a liquid to a gas is called evaporation. • The reverse process of changing from a gas to a liquid is called condensation. **Teacher:** • The temperature at which materials change state varies depending on the material. • Water changes state from solid (ice) ⇌ liquid (water) at 0°C. • Water changes state from liquid (water) ⇌ gas (water vapour) at 100°C.

ADVENT TERM 2 SCIENCE – Year 4 - Medium Term Planning – CHEMISTRY: STATES OF MATTER		
LESSON 4	**LESSON 5**	**LESSON 6**
Observing and Measuring **LEARNING INTENTION:** To know that freezing, melting, evaporation and condensation are all reversible changes. **Disciplinary Knowledge:** • Identify differences, similarities or changes related to simple scientific ideas and processes. **Aim:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	**Recording Data** **LEARNING INTENTION:** To know that observations can be made regularly to identify changes over time. **Disciplinary Knowledge:** • Gather, record, classify and present data in a variety of ways to help in answering questions. **Aim:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	**Using Scientific Evidence** **LEARNING INTENTION:** To know that a material's state depends upon the Earth's temperature. **Disciplinary Knowledge:** • Use scientific evidence to answer questions or to support their findings. **Aim:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
Key Vocabulary: **temperature, degrees,** thermometer, **melting point, freezing point, boiling point**, condensing point, evaporation, condensation	**Key Vocabulary:** **data, line, line graph, curved, steep, flat,** straight, shallow, observe, collect, record	**Key Vocabulary:** **liquid, gas,** gaseous, **water vapour, evaporation**, melting point, boiling point
Recall & retrieval: • Solids stay in one place and can be held. • Liquids move around (flow) easily and are difficult to hold. • Gases spread out to fill the available space and cannot be held. • All matter is made from tiny particles. • The process of changing from a solid to liquid is called melting. • The reverse process of changing from a liquid to a solid is called freezing.	**Recall & retrieval:** • Solids stay in one place and can be held. • Liquids move around (flow) easily and are difficult to hold. • Gases spread out to fill the available space and cannot be held. • All matter is made from tiny particles. • The process of changing from a solid to liquid is called melting. • The reverse process of changing from a liquid to a solid is called freezing.	**Recall & retrieval:** • Solids stay in one place and can be held. • Liquids move around (flow) easily and are difficult to hold. • Gases spread out to fill the available space and cannot be held. • All matter is made from tiny particles. • The process of changing from a solid to liquid is called melting. • The reverse process of changing from a liquid to a solid is called freezing. • The process of changing from a liquid to a gas is called evaporation.

• The process of changing from a liquid to a gas is called evaporation. • The reverse process of changing from a gas to a liquid is called condensation.	• The process of changing from a liquid to a gas is called evaporation. • The reverse process of changing from a gas to a liquid is called condensation. • When solid water (ice) is heated to 0°C, it begins to melt. This is called its melting point. • When liquid water is heated to 100°C, it begins to evaporate. This is called its boiling point.	• The reverse process of changing from a gas to a liquid is called condensation. • When solid water (ice) is heated to 0°C, it begins to melt. This is called its melting point. • When liquid water is heated to 100°C, it begins to evaporate. This is called its boiling point. • Many line graphs show changes over time.
Key Knowledge: **Child:** • Temperature is a measure of how hot or cold something is. • It is measured in degrees using an instrument called a thermometer. • When solid water (ice) is heated to 0°C, it begins to melt. This is called its melting point. • When liquid water is heated to 100°C, it begins to evaporate. This is called its boiling point. • The temperature when a liquid begins to freeze is called its freezing point. **Teacher:** • In the United Kingdom, temperature is measured in degrees Celsius. • Freezing, melting, evaporation and condensation are all reversible changes. • The temperature when a gas begins to condense is called its condensing point.	**Key Knowledge:** **Child:** • Observations can be made regularly to identify changes over time. • Many line graphs show changes over time. • Flat lines mean there is no change over time. • The steeper the line, the faster the change. **Teacher:** • An observation involves looking closely at objects, materials and living things. • A line graph is a way of displaying data that shows a relationship between two things, or variables. • The line can be straight or curved and have flat sections or slopes that are shallow or steep.	**Key Knowledge:** **Child:** • Different materials have different melting and boiling points. • A material's state on Earth depends on Earth's temperature. • Water is a liquid on Earth when the temperature is above 0°C and solid when the temperature is below 0°C. • Water vapour forms as part of the water cycle, when the Sun heats liquid water so it evaporates from seas, oceans, rivers and lakes. **Teacher:** • On Earth, temperatures range from around -80°C at their lowest to around 50°C at their highest. • The coldest temperatures are found in the polar climate zones. • The highest temperatures are found in the desert and tropical climate zones.
Assessment Cumulative quiz. Retrieval practice.		