Materials	
EYFS	• Be able to investigate with different materials
Year 1 – Describing Materials	Knowledge Block 1- The big idea about materials • There are many different materials that have different observable **properties** • Materials that have similar properties are grouped into **metals, rocks, fabrics, wood, plastic and ceramics** (including glass).
Year 1 STICKY KNOWLEDGE	• Know a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Know how to compare and group a variety of everyday materials • Know that the properties of materials determines whether they are suitable for a purpose
Year 2 – Changing Materials	Knowledge Block 1- How materials can change • The properties of a material determine whether they are **suitable** for a **purpose**. • Materials can be **changed** by **physical force** (twisting, bending, squashing and stretching). (The purpose of the activities within this learning journey is for children to understand why we choose certain materials to do certain jobs. Children will plan how to test materials (wood, metal, plastic, glass, brick, paper, rock, cardboard))
Year 2 STICKY KNOWLEDGE	• Know why different materials are suitable for different purposes • Know that some materials can be changed by physical force: squashing, bending, twisting and stretching
Year 3 – Solids, liquids and gases	Knowledge Block 1- Properties of solids, liquids and gases • Materials can be divided into solids, liquids and gases. • **Solids** hold their shape unless forced to change. • **Liquids** flow easily but stay in their container because of **gravity**. The more **viscous** a liquid the less runny it is. • **Gases** move everywhere and are not held in containers by **gravity**. Knowledge Block 2- Changing state • **Heating** causes solids to **melt** into liquids and liquids to **evaporate** to gases. • **Cooling** causes gases to **condense** to liquids and liquids to **freeze** to solids. Knowledge Block 3- Melting, freezing, boiling and condensation temperatures • Different substances change **state** at different temperatures but the temperatures at which given substances changes state is always the same.

	Knowledge Block 4- All about the water cycle • The temperature at which a substance **melts** from a solid to a liquid is the same at which it **freezes** from a liquid to a solid. • The temperature at which a substance **boils** from a liquid to a gas is the same at which it **condenses** from a gas to a liquid. • Liquids **evaporate** slowly, even below their boiling temperatures. • The water cycle is the process by which water is continuously transferred between the surface of the earth and the atmosphere. • Liquid water evaporates into water vapor, condenses to form clouds, and precipitates back to earth in the form of rain and snow.
Year 3 – Rocks and soils	Knowledge Block 1- The different types of rocks • A **rock** is a solid material made up of **minerals** forming part of the surface of the Earth • Rocks are exposed on the surface at cliffs, hills and mountains but are also under the surface. • Some rocks, called **ores** contain metals • Some rocks are made of **grains** squashed together and can contain the remains of long-dead organisms, called **fossils**. This type of rock is called **sedimentary** rock, an example would be **limestone**, **sandstone** or **mudstone** • Some rocks are made of **crystals** that are locked tightly together. These are called **igneous** and **metamorphic** rocks; an example of igneous rock is **granite,** and an example of metamorphic rock is **slate** Knowledge Block 2- The properties of rocks • These three types of rocks all have different properties to each other, including **porosity**, **hardness**, reaction to chemicals • The properties of the rock depend on how the rock was formed, e.g. Some igneous rocks form from lava from volcanoes and cool very quickly leading to very small crystals Knowledge Block 3- The structure of soils • **Soil** is made up of small broken-down pieces of rock. • Soil contains a range of different size rock pieces, e.g., sand grains or stones. • Soil also contains **humus** (rotted plant material) • Soil made of very fine rock is called **silt** or **clay**.
Year 3 STICKY KNOWLEDGE	• Know solids, liquids and gases are different states of matter and have different properties • Know the effect heating and cooling has on states of matter • Know what is meant by melting, boiling, freezing, evaporation and condensation • Know different types of rocks on the basis of their appearance and simple physical properties • Know that soil is made from rock and organic matter

	• Know the process of the water cycle
Year 4 – Mixtures and separating them	Knowledge Block 1- What mixtures are • A **substance** is an object with the same properties throughout. • A **mixture** is when more than one substance is present in the same container Knowledge Block 2- What dissolving is • When a substance is added to a liquid the substance can disappear- this is called **dissolving** • A mixture of a substance that has dissolved in a liquid is called a **solution** • Not every substance can dissolve in water Knowledge Block 3- Separating mixtures • Mixtures can be separated if the substances have different properties • This is because the substances in the mixture are still present and are unchanged • There are different techniques for separating mixtures. - Filtration requires the substances be one that does not dissolve in a liquid to work. - Sieving requires the substances to be of different sizes to work - Magnets requires the substances to be some magnetic materials and some non-magnet materials to work. - Evaporation requires a solid substance dissolved in water and the solid has a higher boiling point in water to work. - Floating requires some substances to float and some substances to sink to work.
Year 4 STICKY KNOWLEDGE	• Know a substance is an object with the same properties throughout • Know a mixture is when more than one substance is present in the same container • Know what is meant by dissolving • Know mixtures can be separated if they have different properties • Know there are different techniques for separating mixtures: filtration and sieving, magnets, evaporation and floating
Year 5 – Reversible and Irreversible changes	Knowledge Block 1: Reversible and irreversible changes • All matter, including gas, has **mass**. • Sometimes, mixed substances **react** to make a new substance. These changes are usually **irreversible**. • Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible.

	• Indicators that something new has been made are the properties of the material are different (colour, state, texture, hardness, smell, temperature) • If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)
Year 5 – STICKY KNOWLEDGE	• Know what is meant by a reversible change • Know what is meant by an irreversible change
Year 6 – Making new substances (only for 2022-2023)	Knowledge Block 1: Reversible and irreversible changes • All matter, including gas, has **mass**. • Sometimes, mixed substances **react** to make a new substance. These changes are usually **irreversible**. • Heating can sometimes cause materials to change permanently. When this happens, a new substance is made. These changes are not reversible. • Indicators that something new has been made are the properties of the material are different (colour, state, texture, hardness, smell, temperature) • If it is not possible to get the material back easily it is likely that it is not there anymore and something new has been made (irreversible change)
Year 6 – STICKY KNOWLEDGE	