PENTECOST TERM 2 SCIENCE – Year 6 - Medium Term Planning – BIOLOGY: LIVING THINGS AND THEIR HABITATS		
LESSON 1	**LESSON 2**	**LESSON 3**
LEARNING INTENTION: To know that Carl Linnaeus was a scientist famous for classifying animals and plants. **Disciplinary Knowledge:** • Give reasons for classifying plants and animals based on specific characteristics. • Identify scientific evidence that has been used to support or refute ideas or arguments. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**LEARNING INTENTION:** To know that there are five kingdoms used in classification. **Disciplinary Knowledge:** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**LEARNING INTENTION:** To know that animals can be classified. **Disciplinary Knowledge:** • Give reasons for classifying animals based on specific characteristics. • Identify scientific evidence that has been used to support or refute ideas or arguments. **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: **classification, scientist, kingdom**, groups, characteristics, living	**Key Vocabulary:** **classification, kingdom, characteristics,** features, **common**	**Key Vocabulary:** **animals, sub-groups,** vertebrates, invertebrates, **features**
Recap & retrieval	**Recap & retrieval** • Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today.	**Recap & retrieval** • Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today. • Members of each kingdom have features in common.

Key Knowledge:

Child:

- Grouping living things based on their characteristics is called classification.
- The first classification system was developed by the Swedish scientist Carl Linnaeus (1707–1778).
- Carl Linnaeus divided all living things into two kingdoms, animals and plants.
- Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today.

Teacher:

- Today, scientists classify all living things into **five** kingdoms: animals, plants, fungi, protists and monerans.
- The members of each kingdom have specific features in common.
- Linnaeus was a Swedish scientist who developed a system of organising living things.
- By comparing the features of different plants and animals, each of the kingdoms can be divided into smaller groups, then these groups can be divided into smaller groups and so on.
- Each level of group has a special name:

Kingdom: 5 widely accepted kingdoms for classification: monera, protists, fungi, plants and animals.

Phylum: Divisions based on shared physical characteristics among organisms.

Key Knowledge:

Child:

- There are five kingdoms: animals, plants, fungi, protists and monerans.
- Members of each kingdom have features in common.

Teacher:

Animal kingdom includes amphibians, birds, fish, invertebrates, mammals and reptiles.

- multicellular
- cannot make food
- can move from place to place
- live on land or in water
- reproduce sexually

Plant kingdom includes vascular (flowering, cone-bearing and spore-producing) and non-vascular plants.

- multicellular
- make food using sunlight
- cannot move from place to place
- live on land or in water
- reproduce sexually or asexually

Fungus kingdom includes mushrooms, moulds and yeasts.

- unicellular or multicellular
- cannot make food
- cannot move from place to place
- live on land or in water
- reproduce sexually or asexually

Protista kingdom includes algae and slime moulds.

- unicellular or multicellular

Key Knowledge:

Child:

- Animals are broadly divided into vertebrates and invertebrates.
- There are further sub-groups within each of these.
- Animals that belong to the sub-groups all share observable features of that group.

Teacher:

- Animal species do not always fit neatly within the groups.
- There can be a wide range of differences within one species.

Vertebrates

- **Mammals, birds, reptiles, amphibians and fish.**
- **Fish** can be divided into 2 groups: bony and cartilaginous.

Invertebrates

- There are about 30 million species of invertebrates in the world.
- Many of these can be divided into 6 basic groups.

Arthropods - Over 1,000,000 species have already been identified, but scientists estimate there could actually be as many as 10,000,000 species alive today. They can be divided into four groups - insects, arachnids, myriapods and crustaceans.

Insects - the largest group of invertebrates

Arachnids

Myriapods

Classes: Classes are based on very important, and more detailed, similarities. **Order:** Orders are based on characteristics listed on a taxonomy key. **Family:** Groups of organisms that share certain adaptive traits. They have a common ancestry. **Genus:** A way to describe the generic name for an organism. **Species:** Species is the specific name given to a living organism. https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification	• some make food, others can not • most can move from place to place • live in water • reproduce sexually and asexually **Monera kingdom** includes mostly different types of bacteria. • unicellular • make food • most can move from place to place • live on land or in water • reproduce asexually https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification	**Crustaceans** **Worms -** can actually be divided into three different phyla of their own (annelida , nematoda and platyhelminthes). **Molluscs** - Around 98,000 species. Found on land, in oceans and freshwater. **Echinoderms** - Over 6,000 species. Range of shapes but all have pentaradial symmetry (can divide body into 5 parts). **Cnidarians** - About 9,000 species. Most have a ring of tentacles surrounding their mouth. **Sponges** - About 10,000 species and the simplest of multi-cellular animals. Found in oceans and freshwater. Feed by filtering small pieces of food from the water around them. https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification

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LESSON 4	**LESSON 5**	**LESSON 6**
LEARNING INTENTION: To know that plants can be classified. **Disciplinary Knowledge:** • Give reasons for classifying plants based on specific characteristics. • Identify scientific evidence that has been used to support or refute ideas or arguments. **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.	**LEARNING INTENTION:** To know that classification keys can be very useful for separating closely related plants and animals. **Disciplinary Knowledge:** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. **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.	**LEARNING INTENTION:** To know that microorganisms are microscopic and can be classified. **Disciplinary Knowledge:** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. **Aim:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.
Key Vocabulary: **plants, ferns, mosses, conifers, flowering**, seeds, roots, leaves, classify, common	**Key Vocabulary:** **classification key,** separation, grouping, **identification, questions, answers**	**Key Vocabulary:** **microorganism,** microscope, **bacteria,** virus, **beneficial, harmful**

Recap & retrieval • Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today. • Members of each kingdom have features in common. • Animals that belong to the sub-groups all share observable features of that group.	**Recap & retrieval** • Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today. • Members of each kingdom have features in common. • Animals that belong to the sub-groups all share observable features of that group. • Plants can be classified into 4 main groups: flowering, conifers, ferns and mosses.	**Recap & retrieval** • Linnaeus' system has seven levels and forms the basis of the classification and naming system we use today. • Members of each kingdom have features in common. • Animals that belong to the sub-groups all share observable features of that group. • Plants can be classified into 4 main groups: flowering, conifers, ferns and mosses. • A classification key can be very useful for separating closely related plants and animals.
Key Knowledge: **Child:** • There are many different groups of plants, each with different ways of living and reproducing. • Plants can be classified in different ways. • Plants can be classified into 4 main groups: flowering, conifers, ferns and mosses. **Teacher:** • Plants can be found almost anywhere. • All plants have a pigment called chlorophyll which gives them their green colour. • They also use it to collect energy from the light of the sun and then use this energy to create food through a process called photosynthesis. • **Conifers** - seeds are housed inside woody protective structures called cones. • **Ferns** - have neither seeds nor flowers, but reproduce via miniature cells called spores. • **Mosses** - do not produce seeds or carry flowers. Reproduce by releasing spores. Mosses do not have true stems, leaves or roots.	**Key Knowledge:** **Child:** • A classification key is a set of questions and answers for identifying something or deciding which group it belongs to. • A classification key can be very useful for separating closely related plants and animals. **Teacher:** • A classification key often looks like a flow chart and is also called a branching database. • It can be thought of as a "key" for unlocking the identification of an object or a living thing. https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification	**Key Knowledge:** **Child:** • A micro-organism is a living thing that is too small to be seen without a microscope. • They are part of the fungus, protista and monera kingdoms. • Micro-organisms populate all places on Earth. **Teacher:** • Micro-organisms can be found all around us. They can live on and in our bodies, in the air, in water and on the objects around us. They can be found in almost every habitat. • Most micro-organisms are useful and beneficial for us and our environment. • A small number of micro-organisms are harmful and can cause disease in animals and plants. **Beneficial microorganisms** • Cyanobacteria make oxygen from sunlight, water and carbon dioxide and oxygenated the Earth's atmosphere 3.4 billion years ago.

https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification		• Trillions of bacteria live in our digestive system and help to digest food. • Yeast is a unicellular fungus that is added to bread dough to make it rise. **Harmful microorganisms** • Microorganisms called pathogens can cause disease. • The bacteria *Borrelia burgdorferi* is passed to humans through tick bites and causes Lyme disease. Infected people can have flu-like symptoms and a rash. • Black spot is a plant disease caused by a fungus. **Viruses** • Viruses are not included in the kingdoms as they are not living and need a host to survive and reproduce • Viruses are microscopic, infectious particles, which are often thought of as micro-organisms. • There are viruses that can infect living things in all of the kingdoms, and like microorganisms, some viruses can be beneficial and others harmful. • For example, the illness COVID-19 is caused by the virus SARS-CoV-2. https://ypte.org.uk/lesson-plans/living-things-and-their-habitats-year-6-classification
Assessment Cumulative quiz. Retrieval practice.		