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| **Year 7 Biology Curriculum – 2023-24** |
|  | **Autumn Term** | **Spring Term** | **Summer Term** |
|  | **1** | **2** | **1** | **2** | **1** | **2** |
| Key Concepts | Organisms | Ecosystems | Genes |
| National Curriculum Knowledge & Understanding | **The skeletal and muscular systems**\* The structure and functions of the human skeleton, to include support, protection, movement and making blood cells \* Biomechanics the interaction between skeleton and muscles, including the measurement of force exerted by different muscles \* The function of muscles and examples of antagonistic muscles | **Cells and organisation**\* Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope \* The functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts \* The similarities and differences between plant and animal cells \* The role of diffusion in the movement of materials in and between cells \* The structural adaptations of some unicellular organisms\* The hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms. | **Relationships in an ecosystem**\* The interdependence of organisms in an ecosystem, including food webs and insect pollinated crops \* The importance of plant reproduction through insect pollination in human food security \* How organisms affect, and are affected by, their environment, including the accumulation of toxic materials. | **Reproduction**\* Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. | **Inheritance**\* Differences between species\* Heredity as the process by which genetic information is transmitted from one generation to the next\* The variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation. | **Reproduction**\* Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle, gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. |
| Assessment | SKIMP (Southmoor Key Informative Marking Point for each unit of work covered) Movement  | End of Term / Unit Summative Assessment  Organisms | SKIMP  Teacher Assessment  Interdependence  | End of Term / Unit Summative AssessmentInterdependence      | SKIMP  Teacher Assessment  VariationHuman Reproduction | Science Working Scientifically Coursework  |
| Why this?Why now? | Skeletal and muscular systems builds on aspects of KS2 where pupils have learned humans and some other animals have skeletons and muscles for support, protection and movement and vertebrates. It is studied early in the year as it is an opener for Cells and Organisation which requires understanding of forces as pushes and pulls. This is also taught as the first topic in year 7, but the concepts needed have previously been introduced in KS2 which teaches them the concepts of levers.  | In the previous module the concept of cells has been introduced. There is a hierarchical demand, whereby pupils will learn the basic structures of cells of plant and animal cells and adaptations, which then will be applied to Reproduction. Cross curricular links will be made to the chemistry module Particle Model, which is taught as the first module in chemistry in year 7 as it shows how diffusion can take place in cells.  | From KS2 pupils can already describe the life cycles of some organisms, but they will begin to understand why life cycles are important in terms of food security. It is studied at this point as it lays the foundations for the topic of Reproduction and cross curricular to the chemistry module Climate in year 8, whereby human activity and the impact on climate is studied to a greater degree.   | Prior to KS3, pupils have been explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. This topic will build on this and incorporate aspects of learning from Cells and Organisation and Relationships in an Ecosystem such as types of specialised cells and why pollination is so important in the life cycle of plants. These will be followed up later in year 7 as they link into Inheritance as there are differences between species, and Reproduction whereby pupils can study reproduction in animals.  | Inheritance is studied now as pupils have previously looked at KS2 at life cycles and recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. This will underpin the science required for the next module. It will also enable pupils to understand more abstract concepts in year 8 from the topics of Inheritance and Genes such as natural selection and the use of gene banks.  | Reproduction in humans steps up from the KS2 curriculum where human life cycle is studied, but the mechanism has not been investigated. It is studied at this point in the term as aspects of specialised cells, principles of systems from Cells and Organisms and Inheritance have been introduced earlier in the year.Aspects of this topic will be integrated early into year 8 where pupils will learn in more detail the impact of lifestyle on the body in Gas  |
| Skills & Characteristics | **Listening** Pupils will have opportunities to develop their listening skills throughout the academic year, specifically when being given instructions for investigative work. They will also listen to each other throughout group work and opportunities for presenting their work. **Problem Solving** Pupils will use problem solving skills when evaluating the results from investigative processes. They will work collaboratively to explain why anomalous results may occur. **Aiming High** All pupils will set clear, tangible goals and which can especially be met during investigative work and use of level ladders in tasks.**Teamwork:** Pupils will be required to work in a group whilst carrying out practical work or problem-solving activities showing that these skills are necessary in the world of work irrespective of career choice. |
| Aspirations & Careers | The science involved in this area correlates with:-\* Physiotherapy\* Occupational therapy\* Radiography \* Sports Science\* Engineering | The science involved in this area correlates with:-\* Cytology\* Biotechnology\* Laboratory \* Botany | The science involved in this area correlates with:-\* Farming and agriculture\* Beekeeper\* Environmental protectionConservationist | The science involved in this area correlates with:-\* Gardener\* Chemical engineering\* Horticulture | The science involved in this area correlates with:-\* Zookeeper \* Geneticist\* Animal breeder\* Food technologist  | The science involved in this area correlates with:-\* Midwife\* Health and Social Care\* Care worker |
| **CEIAG**Medical Experience daysCareers FairsWork Experience**Cultural Capital**Pupils are encouraged to make links between current events, like plastic pollution and biodiversity and our biology learning in the classroom. All pupils take advantage of our excellent links with the Science Ambassadors and through trips and in class activities. **Extracurricular**Stem ClubJeans for Genes assembliesYoung Health Champions |

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| **Year Group**  | **Basic** **(Lower Ability End Points)**  | **Clear** **(Middle Ability End Points)**  | **Detailed** **(Higher Ability End Points)**  |
| **7**  | Pupils use knowledge and understanding of organisms, their behaviour and the environment, such as the basic life processes of growth and reproduction, to describe similarities, differences and changes in the plants, animals, and non-living things they observe. They use simple scientific ideas with evidence they have collected to give explanations of their observations, linking cause and effect, for example lack of light or water affecting plant growth and the ways in which animals or plants are suited to their environments. **Working Scientifically**Pupils respond to prompts to suggest practical ways to find answers to questions. They make observations about features of objects, living things and events. They communicate their findings in ways such as talking about their work in everyday terms, or through drawings or by completing pictograms.  | Pupils describe some processes and phenomena related to organisms, their behaviour and the environment, drawing on scientific knowledge and understanding and using appropriate terminology, for example using food chains to describe feeding relationships between plants and animals in a habitat. They use questions based on their own ideas and evidence such as finding different types of plants and animals in different places. They identify science in everyday contexts and say whether it is helpful, for example ways of growing vegetables for food. They recognise that evidence can support or refute scientific ideas, such as in the identification and grouping of living things. They recognise some applications and implications of science, such as the use of predators to control pest populations. **Working Scientifically**Pupils respond to suggestions and make their own suggestions, with help, about how to collect relevant data and answer questions. They find information by using texts, with help. They follow direct instructions in order to stay safe. They make observations and measurements to compare living things, objects and events, using equipment provided for them. They record findings using prepared tables and communicate observations using scientific vocabulary. They say whether what happened was what they expected and, when prompted, suggest different ways they could have done things.  | Pupils describe processes and phenomena related to organisms, their behaviour and the environment, drawing on abstract ideas and using appropriate terminology, for example the main functions of plant and animal organs and how these functions are essential. They explain processes and phenomena, in more than one step or using a model, such as the main stages of the life cycles of humans and flowering plants. They apply and use knowledge and understanding in familiar contexts, such as different organisms being found in different habitats because of differences in environmental factors. They recognise that both evidence and creative thinking contribute to the development of scientific ideas, such as the classification of living things. **Working Scientifically**Pupils respond to suggestions and put forward their own ideas about how to investigate an idea or find answers to questions. They recognise why it is important to collect data to investigate ideas and answer questions, and use texts to find information. They begin to recognise risks with help. They make relevant observations and measure quantities, such as length or mass, selecting and using a range of simple equipment. They carry out fair tests with some help, recognising and explaining what makes them fair. They record findings in a variety of ways, including tables or charts. They give explanations for observations and for patterns in measurements they have made and recorded. They communicate in a scientific way what they have found out and suggest improvements in their work.  |