

Assessment Descriptors at KS3 Biology

Year 7

Unit 1: Cells

	Knowledge	Skills
Strong	Analyse how cell structure relates to function in specialised cells. Evaluate the differences between animal and plant cells in detail.	Justify the choice of magnification for a given specimen, calculate magnification using the formula (magnification = image size ÷ actual size) and evaluate sources of error in microscope practical work, suggesting improvements.
Confident	Explain the function of each organelle and compare prokaryotic and eukaryotic cells.	Accurately calculate magnification and actual/image size using the magnification formula, and draw a labelled scientific diagram from a microscope slide with correct proportions.
Developing	Distinguish between animal and plant cells and identify organelles including cell wall, vacuole and chloroplasts. Describe the process of diffusion.	Use a light microscope to observe and focus a prepared slide, and calculate magnification using the formula when given image and actual sizes.
Emerging	Name the basic parts of a cell (cell membrane, nucleus, cytoplasm). Name some substances that move in and out of cells.	Identify the parts of a light microscope and describe how to prepare a slide, stating what magnification means.

Unit 2: Humna Reproduction

	Knowledge	Skills
Strong	Explain the processes of fertilisation and implantation in detail Analyse how the placenta supports foetal development Explain the hormonal and physical changes of puberty in both sexes, linking them to reproductive function.	Using data from a table to draw conclusions about reproductive trends.
Confident	Explain how sperm and egg cells are adapted for their function Describe the journey from fertilisation to implantation Explain how the foetus develops and is supported in the uterus Describe the key changes during adolescence and puberty, explaining why they occur.	Calculate the difference between values in a data table, describe the overall trend seen in the data.

Developing	Identify the main organs of the male and female reproductive systems and state their functions Describe the structure of sperm and egg cells Describe the stages of fertilisation and implantation; List the physical changes that occur during puberty in males and females.	Calculate the difference between two values from a data table and describe a simple trend using comparative language e.g. 'higher than', 'increased between'.
Emerging	Name the parts of the male and female reproductive systems State that fertilisation is the fusion of a sperm and an egg cell Identify some changes that happen to the body during puberty.	Read values from a data table and identify whether a value is the highest or lowest.

Unit 3: Movement and Breathing

	Knowledge	Skills
Strong	Evaluate how the skeleton, joints, muscles and breathing system work together as an integrated system; Explain how antagonistic muscle pairs produce movement at synovial joints with reference to the roles of cartilage and ligaments Draw conclusions about the effect of exercise or smoking on lung capacity Explain gas exchange at the alveoli in terms of surface area Diffusion gradients and adaptations Evaluate the long-term effects of smoking on the lungs, airways and gas exchange efficiency.	Calculate breathing rate from raw data Analyse a table of breathing data to identify patterns, Explain anomalous results and draw a conclusion supported by specific values from the data.
Confident	Explain the functions of the main bones of the skeleton Describe how synovial joints allow movement and explain the roles of cartilage and ligaments Explain how muscles work as antagonistic pairs (e.g. bicep and tricep) and describe their different roles Explain how the diaphragm and intercostal muscles bring about inhalation and exhalation How a bell jar model represents this Describe how lung volume can be measured by water displacement Explain what the results show Explain how the alveoli are adapted for gas exchange Describe how smoking damages the lungs and affects breathing.	Calculate breathing rate (breaths per minute) accurately from a given data set and describe the trend shown, using comparative language; Describe the pattern in a table of breathing data, Identifying whether values increase, decrease or stay the same, and suggest a biological reason for the pattern.

Developing	Name the main bones of the skeleton and state their functions (support, protection, movement); identify types of joint and describe how cartilage and ligaments contribute to joint function; describe muscles as a tissue that can contract and relax, and give an example of an antagonistic pair; describe the roles of the diaphragm and intercostal muscles in breathing, using a bell jar model as a reference; describe how lung volume is measured using water displacement; identify the features of alveoli that make them good for gas exchange; and state the harmful substances in cigarette smoke and name the conditions they cause.	Calculate breathing rate using the formula (number of breaths ÷ number of minutes) when given the raw data; Read values from a table of breathing data and state whether breathing rate went up or down, using at least two values as evidence.
Emerging	Name some bones in the human skeleton and state why the skeleton is important; state that joints are where bones meet and that they allow movement; state that muscles are a type of tissue that can contract and relax to move bones; state that breathing involves the chest moving in and out; identify the alveoli as the site of gas exchange in the lungs; and state that smoking is harmful to the lungs.	Count and record breaths over a set time period; Read a value from a table of breathing data and state whether it is higher or lower than another given value.

Unit 4: Interdependence and evolution

	Knowledge	Skills
Strong	Construct and interpret complex food webs, predicting and explaining the consequences of removing or adding a species; evaluate the impact of human activity on ecosystems using data from quadrat sampling; explain how competition and adaptation drive natural selection, linking this to Darwin's theory of evolution by natural selection; analyse the causes of extinction and evaluate strategies for preserving biodiversity, including their effectiveness; and explain how variation and inheritance underpin evolutionary change over time.	Explain the time lag between predator and prey population changes with reference to food availability and reproduction rates;

Confident	Construct food chains and food webs, explaining the flow of energy and the roles of producers, consumers and decomposers; explain how disruption to a food web (e.g. removal of a species) affects other organisms; describe the key features of an ecosystem and explain how organisms interact within it; explain how quadrat sampling is used to estimate population size and describe how to carry out a fair sample; explain how organisms are adapted to their environment and how this leads to competition; describe the causes of extinction and explain why biodiversity should be preserved; and explain Darwin's theory of natural selection and the evidence that supports it.	Use data from a predator–prey graph to explain how changes in prey population drive changes in predator numbers, and vice versa; cite specific values from the graph to support each point made; and describe the cyclical pattern of both populations, explaining why the peaks and troughs are offset from each other.
Developing	Construct a food chain using correct terminology (producer, primary/secondary consumer) and use it to describe feeding relationships; describe how a change in one population in a food web affects others; describe what an ecosystem is and give examples of biotic and abiotic factors; describe how to use quadrats to sample organisms in a habitat; describe how organisms are adapted to survive in their environment and give examples of competition for resources; state what extinction means and give examples of threats to biodiversity; and describe the key ideas of Darwin's theory of natural selection.	Read values from a predator–prey graph and describe the relationship between the two populations; use at least two pieces of evidence from the graph to support a simple conclusion about how one population affects the other; and identify where both populations are at their highest and lowest points.

Emerging

Construct a simple food chain and identify the producer and consumers; state that all organisms in a food web depend on each other; state that an ecosystem includes living and non-living things; state that quadrats are used to count organisms in a small area; give examples of how animals and plants are adapted to their habitat; state that extinction means a species has died out; and state that Darwin proposed the theory of evolution.

Identify which line on a predator–prey graph represents the predator and which represents the prey; read a value from the graph at a given point in time; and state what happens to one population when the other increases, using the graph to support the answer.