AQA
Realising potential

KEY STAGE 3 SCIENCE

Syllabus
An approach to teaching the programme of study

Version 2.2 June 2016

3.8 Organisms

3.8.1 Movement

Explore how the skeletal system and muscular system in a chicken wing work together to cause movement

Know	Apply
The parts of the human skeleton work as a system for support, protection, movement and the production of new blood cells. Antagonistic pairs of muscles create movement when one contracts and the other relaxes. Keywords **Joints**: Places where bones meet. **Bone marrow**: Tissue found inside some bones where new blood cells are made. **Ligaments**: Connect bones in joints. **Tendons**: Connect muscles to bones. **Cartilage**: Smooth tissue found at the end of bones, which reduces friction between them. **Antagonistic muscle pair**: Muscles working in unison to create movement.	Explain how a physical property of part of the skeleton relates to its function. Explain why some organs contain muscle tissue. Explain how antagonistic muscles produce movement around a joint. Use a diagram to predict the result of a muscle contraction or relaxation.

Extend
Predict the consequences of damage to a joint, bone or muscle. Suggest factors that affect the force exerted by different muscles. Consider the benefits and risks of a technology for improving human movement.

3.8.2 Cells

Identify the principal features of a cheek cell and describe their functions

Know	Apply
Multicellular organisms are composed of cells which are organised into tissues, organs and systems to carry out life processes. There are many types of cell. Each has a different structure or feature so it can do a specific job. **Skill** Use a light microscope to observe and draw cells. **Facts** Both plant and animal cells have a cell membrane, nucleus, cytoplasm and mitochondria. Plant cells also have a cell wall, chloroplasts and usually a permanent vacuole. **Keywords** **Cell**: The unit of a living organism, contains parts to carry out life processes. **Uni-cellular**: Living things made up of one cell. **Multi-cellular**: Living things made up of many types of cell. **Tissue**: Group of cells of one type. **Organ**: Group of different tissues working together to carry out a job. **Diffusion**: One way for substances to move into and out of cells. **Structural adaptations**: Special features to help a cell carry out its functions. **Cell membrane**: Surrounds the cell and controls movement of substances in and out. **Nucleus**: Contains genetic material (DNA) which controls the cell's activities. **Vacuole**: Area in a cell that contains liquid, and can be used by plants to keep the cell rigid and store substances. **Mitochondria**: Part of the cell where energy is released from food molecules. **Cell wall**: Strengthens the cell. In plant cells it is made of cellulose.	Explain why multi-cellular organisms need organ systems to keep their cells alive. Suggest what kind of tissue or organism a cell is part of, based on its features. Explain how to use a microscope to identify and compare different types of cells. Explain how uni-cellular organisms are adapted to carry out functions that in multi-cellular organisms are done by different types of cell.

Know	Apply
Chloroplast: Absorbs light energy so the plant can make food. **Cytoplasm**: Jelly-like substance where most chemical processes happen. **Immune system**: Protects the body against infections. **Reproductive system**: Produces sperm and eggs, and is where the foetus develops. **Digestive system**: Breaks down and then absorbs food molecules. **Circulatory system**: Transports substances around the body. **Respiratory system**: Replaces oxygen and removes carbon dioxide from blood. **Muscular skeletal system**: Muscles and bones working together to cause movement and support the body.	

Extend
Make deductions about how medical treatments work based on cells, tissues, organs and systems.
Suggest how damage to, or failure of, an organ would affect other body systems.
Deduce general patterns about how the structure of different cells is related to their function.
Find out how recreational drugs might affect different body systems.

Organisms		Concept			
		Movement	Cells	Breathing	Digestion
Enquiry activity		Explore how the skeletal system and muscular system in a chicken wing work together to cause movement	Identify the principal features of a cheek cell and describe their functions	Investigate a claim linking height to lung volume	Evaluate how well a model represents key features of the digestive system
Analyse	Analyse patterns	●		●	
	Discuss limitations	●		●	
	Draw conclusions	●		●	
	Present data	●		●	
Communicate	Communicate ideas	●	●	●	●
	Construct explanations		●	●	●
	Critique claims	●		●	●
	Justify opinions	●		●	●
Enquire	Collect data				
	Devise questions	●			
	Plan variables	●		●	
	Test hypothesis	●		●	●
Solve	Estimate risks				
	Examine consequences				
	Review theories				
	Interrogate sources			●	