



SCIENCE – KEY CONCEPTS

Concept	Key Stage	Descriptor
Know that all living things are made up of cells.	KS3	Recognise the parts of a cell from simple images. Explain how cells work together to carry out a function.
	KS4	Explain how the specialisation of each cell helps the organs and organ systems to function in a multicellular organism.
Know the function of parts of a cell.	KS3	State the function of the different parts of a cell.
	KS4	Explain how the parts of a cell help it to carry out its function.
Describe the differences between animal and plant cells.	KS3	State how animal and plant cells are different.
	KS4	Explain the reasons why animal and plant cells have different organelles.
Understand how living things depend on each other.	KS3	Draw a simple food web. Describe how changes affect other organisms.
	KS4	Explain the impact of a change in the habitat will affect different organisms at different levels in an ecosystem.
Know that everything is made of atoms.	KS3	Draw a simple atom. Recognise the number of sub-atomic particles in different elements from the periodic table. State the properties of the sub-atomic particles.
	KS4	Explain how to draw atoms of different elements. Correctly draw the electrons surrounding different atoms of elements. Describe the differences between isotopes of the same element.
Understand that mass is always conserved in a reaction.	KS3	Recognise that mass does not disappear in a reaction, it is simply rearranged.
	KS4	State how to balance a simple chemical equation to show that mass is always conserved. Calculate the masses before and after a reaction.
Understand the difference between elements, mixtures, and compounds.	KS3	State what an element, mixture and compound is.
	KS4	Explain why the properties differ between elements and their compounds. Describe how to separate different mixtures.
Understand the different types of reaction and the energy changes that occur.	KS3	State what an exothermic and an endothermic reaction is.
	KS4	Explain why a reaction is endothermic or exothermic in terms of bonds.
Know that all matter exists in one of three states.	KS3	State the properties of the three states of matter. State what the process of changing between the different states is called.
	KS4	Explain in terms of energy changes how the states of matter change between each other.
Know that energy cannot be created or destroyed, only transferred.	KS3	State the rule for the conservation of energy.
	KS4	Explain why energy transfers are not 100% efficient and state what happens to the wasted energy.
Understand the motion of particles in different states of matter.	KS3	Recognise the motion of the particles in the three states of matter.
	KS4	Explain why the motion is different in the three states of matter in terms of the energy of the particles.
Appreciate that scientific models change over time considering new evidence.	KS3	State what a scientific model is and recognise when it has changed.
	KS4	Explain why the scientific model changes over time and why this happens.

