Big Ideas in Science

Big Ideas are the building blocks of subjects.

They are:

- Concepts and ideas that help us make sense of lots of otherwise isolated or disconnected facts.
- Principles, theories, or processes that serve as a focal point of a subject.
- Something that changes the way we think about information or schema.

Our curriculum is based around 17 'big ideas' in science. Five of these big ideas are based around chemistry, five around physics and six around biology. One big idea is based on the scientific process which is the disciplinary knowledge in science. This knowledge should lead into the 'working scientifically' section of the specification.

The big ideas in this subject are:

BIG IDEA	DESCRIPTION
Chemistry - Atomic Structure	All matter is made from tiny particles called atoms
Chemistry - Bonding	Atoms can interact with each other to form chemical bonds. These substances can have different properties to the elements that made them
Chemistry - Chemical reactions	In a chemical reaction chemical bonds are broken and formed
Chemistry - Amount of substance	Chemists need to work out the precise amount of substances that they are working with
Chemistry - Particle Theory	The physical properties of a substance are dependent on the behaviour of tiny particles
Physics - Energy	There is a fixed amount of energy in the Universe, which can be transferred between different stores
Physics - Forces	When a force acts upon an object it can change the object's speed, direction and shape
Physics - Waves	Energy can be transferred between stores via waves
Physics - Space	Our planet is part of a Universe which contains billions of

	other terrestrial bodies
Physics - Electricity	The flow of charged particles is known as electricity
Biology - The Cell	All living organisms are made of cells which carry out biological processes to maintain life
Biology - Transport	Substances are exchanged, into, out of and within organisms. The mechanisms and processes which allow this to happen are essential to life
Biology - Interdependence	Living things do not exist in isolation. Every individual relies on other organisms for everything to do with its survival
Biology - The Gene	All life is dependent on a coded sequence of information that determines every characteristic, fundamentally underlying its ability to survive
Biology - Organisation	Organisms are organised into organ systems which are essential for survival
Biology - Bioenergetics	All life is dependent on a number of biochemical reactions
Science - The Scientific Process	Scientists develop a hypothesis and then design, implement and write up a reliable and valid experiment to test this hypothesis