K–10 Big Ideas for Science

GRADE	LIFE SCIENCES	CHEMISTRY	PHYSICS	EARTH AND SPACE
K	Plants and animals have observable features.	Humans interact with matter every day through familiar materials.	The motion of objects depends on their properties.	Daily and seasonal changes affect all living things.
1	Living things have features and behaviours that help them survive in their environment.	Matter is useful because of its properties.	Light and sound can be produced and their properties can be changed.	Observable patterns and cycles occur in the local sky and landscape.
2	Living things have life cycles adapted to their environment.	Materials can be changed through physical and chemical processes.	Forces influence the motion of an object.	Water is essential to all living things and, it cycles through the environment.
3	Living things are diverse, can be grouped, and interact in their ecosystems.	All matter is made of particles.	Thermal energy can be produced and transferred.	Wind, water, and ice change the shape of the land.
4	All living things sense and respond to their environment.	Matter has mass, takes up space, and can change phase.	Energy can be transformed.	The motions of Earth and the moon cause observable patterns that affect living and non-living systems.
5	Multicellular organisms have organ systems that enable them to survive and interact within their environment.	Solutions are homogeneous.	Machines are devices that transfer force and energy.	Earth materials change as they move through the rock cycle and can be used as natural resources.
6	Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment.	Everyday materials are often mixtures.	Newton's three laws of motion describe the relationship between force and motion.	The solar system is part of the Milky Way, which is one of billions of galaxies.
7	Evolution by natural selection provides an explanation for the diversity and survival of living things.	Elements consist of one type of atom, and compounds consist of atoms of different elements chemically combined.	The electromagnetic force produces both electricity and magnetism.	Earth and its climate have changed over geological time.
8	Life processes are performed at the cellular level.	The behaviour of matter can be explained by the kinetic molecular theory and atomic theory.	Energy can be transferred as both a particle and a wave.	The theory of plate tectonics is the unifying theory that explains Earth's geological processes.
9	Cells are derived from cells.	The electron arrangement of atoms impacts their chemical nature.	Electric current is the flow of electric charge.	The biosphere, geosphere, hydrosphere, and atmosphere are interconnected, as matter cycles and energy flows through them.
10	DNA is the basis for the diversity of living things.	Chemical processes require energy change as atoms are rearranged.	Energy is conserved and its transformation can affect living things and the environment.	The formation of the universe can be explained by the big bang theory.

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