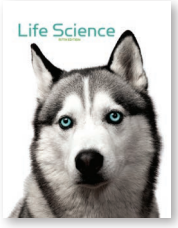
# Science

## Grade 7
## Life Science
5th Edition




### The Pattern of Life
- Definition of science, science and worldview, biblical vs. naturalistic worldviews, science and biblical ethics, characteristics of life, homeostasis, design of life, modeling, thinking scientifically, limitations of science, classification of life
- Cell theory, cell structure and function, cellular respiration, photosynthesis
- Genes, DNA replication, RNA transcription, protein synthesis, cell division, mitosis and meiosis
- Mendelian genetics, genetic crosses, variations on simple genetics, population genetics
- Biblical creationism vs. evolutionism, change in nature, worldview and change

### Microorganisms and Plants
- Archaebacteria vs. eubacteria, bacterial structure, reproduction, and importance; antibiotic resistance in bacteria; viruses
- Protist movement, nutrition, classification, and reproduction; structure, nutrition, and importance of fungi
- Plant structure and classification
- Plant hormones, tropisms, and photoperiodism, plant reproduction and life cycles

### The Animal Kingdom
- Characteristics of animals, characteristics and classifications of invertebrates; sponges, cnidarians, worms, mollusks, echinoderms, arthropods; characteristics and classifications of vertebrates; endotherms vs. ectotherms; fish, amphibians, reptiles, birds, and mammals
- Nutrition, transport, support, movement, and control systems of animals
- Animals reproduction and behavior, external and internal fertilization, egg structure and development, and placental reproduction; innate and learned behavior

### The Human Body
- Structure and function of skin, bones, joints, and muscles; types of muscles
- Digestive system structure and function; food and nutrition; chemical vs. mechanical digestion; alimentary canal organs; accessory organs; urinary system structure and function
- Respiratory system structure and function; connection between the respiratory and circulatory systems; circulatory system structure and function; heart, blood cells and plasma; blood vessels; flow of blood through the heart and lungs; connection between the circulatory and lymphatic systems; lymphatic system and immunity; lymph vessels and nodes
- Components of the immune system; nonspecific vs. specific immunity; vaccines; active vs. passive immunity; parts of the nervous system; central nervous system vs. peripheral nervous system; nerves, reflex arc, and nerve impulses; sense organs structure and function; eyes, ears, touch, smell, and taste
- Hormones and endocrine glands; puberty; human reproduction and biblical sexuality; human growth and development

### Interacting with the Biosphere
- Ecology; abiotic vs. biotic factors; ecosystems and biomes
- Cycles of matter; water cycle, oxygen and carbon cycles, and nitrogen cycle; food chains, energy pyramids, and food webs; relationships between organisms; symbiosis; succession
- Managing and protecting the environment; pollution classification and solutions; substance vs. energy pollution; using natural resources; renewable vs. nonrenewable resources; management philosophy; conservation vs. preservation; management principles

## Grade 8
## Earth Science
5th Edition


- **Introduction to earth science:** earth science and exercising biblical dominion; worldviews and science; the structure of science; scientific models; what earth science is; maps and cartography; geographic information systems (GIS); introduction to physical science, matter, forces, energy, and measuring
- **The restless earth:** the earth as a special place designed for life; a brief history of geology; operational and historical geology; the earth's interior structure; natural resources; old- and young-earth origin theories of the earth; evidences for catastrophic changes in the earth's history; models for geologic tectonics; tectonic forces, faults and earthquakes; earthquakes and seismology; effects of earthquakes; mountains and hills; tectonic mountains and landforms; nontectonic mountains and landforms; volcanic emissions, volcano activity and classification; intrusive volcanism
- **Earth's rocky materials:** describing minerals; identifying and classifying minerals; minerals as resources; classifying rocks; igneous rocks, sedimentary rocks, and metamorphic rocks; critiquing the uniformitarian rock cycle; the process of fossilization; paleontology, fossil fuels; weathering, erosion, and deposition; soils and soil formation
- **The water world:** ocean basins and landforms; seawater composition; ocean environments: tides, currents, and waves; history of oceanography, methods and instruments; deep-sea exploration; underwater habitats; research vehicles; stream characteristics; lakes and ponds; limnology; groundwater reservoirs and groundwater chemistry; water

as a resource; solution caves and karst topography

- **The atmosphere:** composition and thermal structure of the atmosphere; special regions; energy in the atmosphere; measurable weather data; causes of wind; global wind patterns; sources of local winds; cloud formation; classifying clouds; precipitation, dew, and frost; air masses and weather fronts; causes of precipitation; winter storms, thunderstorms, tornadoes, and hurricanes; weather forecasting, weather maps and applications of GIS in weather modeling; describing climate and climate zones; climate data and interpretation; observed short-term climate changes from volcanism and oceanic cycles; climate models, worldviews and long-term climate change; environmentalism and biblical stewardship of the environment
- **The heavens:** the sun-earth-moon system; the sun's structure, composition, and energy; the solar spectrum; the moon's structure and surface, and origin theories; Earth's orbit; seasons, and timekeeping; lunar phases; eclipses, and tidal effects; models of the solar system; Kepler's laws; classification and brief description of the planets; dwarf planets and small solar system bodies; evidences for a young solar system; constellations and star properties; stellar classification and the H-R diagram; stellar aging; classification of galaxies; nonstellar objects; cosmology and worldviews; challenges of space exploration; rocketry; satellites and space probes; challenges and need for manned space exploration

## Grade 9
## Physical Science
6th Edition


- **Structure of matter:** presents science as the development of models to explain and describe phenomena in a fallen and broken world; biblical versus secular worldview aspects of science; definition of key elements of scientific knowledge—laws, theories, and hypotheses; scientific study and application of scientific knowledge as a key aspect of obedience to the Creation Mandate; methodologies of science; scientific measurement; the metric system; accuracy, precision, and repeatability in measurements; introduction to the nature and classification of matter and energy; changes matter undergoes; historical development of the atomic model; structure of the atom; origin of the periodic table; elements and their symbols; classification of the elements; periodic trends; electronegativity and valence electron structure; covalent, ionic, and metallic bonds; compounds classified according to bond-type; chemical formulas and equations; oxidation numbers; introduction to organic chemistry and biochemistry
- **Changes in matter:** types of chemical reactions; radiation and nuclear changes; classifying mixtures; solutions and the solution process; measuring concentration; acids and bases; salts from acid-base reactions; pH system and measurement
- **Matter in motion:** describing motion; frames of reference; momentum; Newton's laws of motion; gravity; free-fall; mechanical work; levers and other simple machines; mechanical advantage and efficiency; kinetic and potential energy; energy transformations and conservation; thermodynamics—thermal energy, temperature, and heat; basic hydraulic theory; gas laws; fluid mechanics
- **Waves and energy:** description of periodic motion; waves and wave phenomena; sound and its properties; the human voice and hearing; applications of sound; static electricity; electric fields; electric current and Ohm's law; circuits and electrical safety; magnets and magnetism; AC and DC generators and motors; transformers; electromagnets and their uses; bands of the electromagnetic spectrum; the properties of visible light; the nature of color; reflection and mirrors; refraction and lenses