

GRADE FIVE SCIENCE AT A GLANCE — THEMATIC CLUSTERS

Cluster 1: Maintaining A Healthy Body

5-1-01	Use appropriate vocabulary related to their investigations of human health. Include: nutrients; carbohydrates; proteins; fats; vitamins; minerals; <i>Canada's Food Guide to Healthy Eating</i> ; food group; serving size; terms related to the digestive, skeletal, muscular, nervous, integumentary, respiratory, and circulatory systems. GLO: B3, C6, D1	5-1-09	Identify components of the human body's defenses against infections, and describe their role in defending the body against infection. Include: tears, saliva, skin, white blood cells. GLO: D1, E2
5-1-02	Interpret nutritional information found on food labels. <i>Examples: ingredient proportions, identification of potential allergens, information related to energy content and nutrients...</i> GLO: B3, C4, C5, C8	5-1-10	Identify the major components of the respiratory and circulatory systems, and describe the role of each system in the human body. Include: the nose, trachea, and lungs take in oxygen and expel carbon dioxide; the heart, blood vessels, and blood transport oxygen, nutrients, and waste products such as carbon dioxide. GLO: D1, E2
5-1-03	Describe the types of nutrients in foods and their function in maintaining a healthy body. Include: carbohydrates, proteins, fats, vitamins, minerals. GLO: B3, D1	5-1-11	Describe how the human body gets rid of waste. Include: kidneys filter blood and dispose of waste as urine; lungs give off waste carbon dioxide; the rectum collects and expels undigested food matter. GLO: D1, E2
5-1-04	Evaluate a daily menu plan and suggest changes to make it align more closely with <i>Canada's Food Guide to Healthy Eating</i> . Include: serving size recommendations according to age for each food group. GLO: B3, C3, C4, C8	5-1-12	Give examples of how systems of the human body work together. <i>Examples: the circulatory system transports nutrients from the digestive system and oxygen from the respiratory system to the muscular system...</i> GLO: D1, E2
5-1-05	Evaluate prepared food products using the design process. <i>Examples: frozen pizza, snack foods, beverages...</i> GLO: B3, C3, C4, C8	5-1-13	Identify and describe factors necessary to maintain a healthy body. Include: daily physical activity, a balanced diet, fluid replacement, adequate sleep, appropriate hygiene practices, regular check-ups. GLO: B3, C4, D1
5-1-06	Identify the major components of the digestive system, and describe its role in the human body. Include: teeth, mouth, esophagus, stomach, and intestines break down food. GLO: D1, E2,	5-1-14	Evaluate information related to body image and health from media sources for science content and bias. <i>Examples: glamorization of smoking in movies, promotion of unrealistic role models in magazines, trivialization of scientific information on television...</i> GLO: B3, C4, C5, C8
5-1-07	Identify the major components of the skeletal, muscular, and nervous systems, and describe the role of each system in the human body. Include: the skeleton provides protection and support; muscles, tendons, and ligaments enable movement; brain, spinal cord, and nerves receive sensory input, process information, and send out signals. GLO: D1, E2	5-1-15	Explain how human health may be affected by lifestyle choices and natural- and human-caused environmental factors. Include: smoking and poor air quality may cause respiratory disorders; unhealthy eating and physical inactivity may lead to diabetes or heart disease; prolonged exposure to the Sun can cause skin cancer. GLO: B3, B5, C4, D1
5-1-08	Identify skin as the major component of the integumentary system, and describe its role in protecting and supporting the human body. GLO: D1, E2		

Cluster 3: Forces and Simple Machines

5-3-01	Use appropriate vocabulary related to their investigations of forces and simple machines. Include: applied force, balanced and unbalanced forces, fulcrum, load, friction, terms related to types of simple machines. GLO: C6, D4	5-3-08	Compare, quantitatively, the force required to lift a load using a pulley system versus a single fixed pulley, and recognize the relationship between the force required and the distance over which the force is applied. Include: a system of pulleys reduces the force required while increasing the distance over which the force is applied; a single fixed pulley requires a greater force but applies it over a shorter distance. GLO: C2, D4, E2
5-3-02	Describe, using diagrams, the forces acting on an object and the effects of increasing or decreasing them. Include: force arrows representing direction and relative strength of forces acting in the same plane, balanced and unbalanced forces. GLO: C6, D4	5-3-09	Identify and make modifications to their own pulley and/or gear systems to improve how they move loads. Include: reducing friction. GLO: C3, D4, E2
5-3-03	Investigate a variety of levers used to accomplish particular tasks in order to compare them qualitatively with respect to fulcrum position, applied force, and load. Include: first-class, second-class, and third-class levers. GLO: C2, D4, E1	5-3-10	Identify and describe types of simple machines. Include: levers, wheel and axle, pulley, gear, inclined plane, screw, wedge. GLO: D4
5-3-04	Identify objects in the school and at home that use wheels and axles, and describe the forces involved. <i>Examples: doorknob, manual pencil sharpener, hinge, bicycle...</i> GLO: B1, D4, E1	5-3-11	Describe the advantage of using simple machines to move or lift a given load. Include: to decrease the force required; to increase the resulting force; to change the direction of the applied force. GLO: D4
5-3-05	Recognize that a gear is a wheel and axle used to turn another wheel and axle. GLO: D4, E2	5-3-12	Investigate to identify advantages and disadvantages of using different simple machines to accomplish the same task. <i>Examples: using a pulley, inclined plane, or lever to move a piano to the second floor...</i> GLO: B1, C2, C4, D4
5-3-06	Identify common devices and systems that incorporate pulleys and/or gears. GLO: A5, B1, D4, E1	5-3-13	Compare devices that use variations of simple machines to accomplish similar tasks. <i>Examples: a short- or long-handled pump, a racing or mountain bicycle...</i> GLO: B1, C3, C4, D4
5-3-07	Explore to determine how the direction and amount of the applied force and the speed of rotation vary within a two-gear system. GLO: C2, D4, E2	5-3-14	Use the design process to construct a prototype containing a system of two or more different simple machines that move in a controlled way to perform a specific function. GLO: C3, D4, E2

Cluster 2: Properties of and Changes in Substances

5-2-01	Use appropriate vocabulary related to their investigations of properties of, and changes in, substances. Include: characteristic, property, substance, matter, volume, state, solid, liquid, gas, reversible and non-reversible changes, physical change, chemical change, chemical product, raw material. GLO: C6, D3	5-2-08	Demonstrate that changes of state are reversible through the addition or removal of heat. Include: melting, freezing/solidification, condensation, evaporation. GLO: D3, E3, E4
5-2-02	Identify characteristics and properties that allow substances to be distinguished from one another. <i>Examples: texture, hardness, flexibility, strength, buoyancy, solubility, colour, mass/weight for the same volume...</i> GLO: D3, E1	5-2-09	Explore to identify reversible and non-reversible changes that can be made to substances. <i>Examples: reversible — folding paper, mixing baking soda and marbles; non-reversible — cutting paper, mixing baking soda and vinegar...</i> GLO: C2, D3, E3
5-2-03	Investigate to determine how characteristics and properties of substances may change when they interact with one other. <i>Examples: baking soda in vinegar produces a gas; adding flour to water produces a sticky paste...</i> GLO: C2, D3, E3	5-2-10	Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties. GLO: D3, E3
5-2-04	Recognize that matter is anything that has mass/weight and takes up space. GLO: D3	5-2-11	Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation. <i>Examples: physical — bending a nail, chopping wood, chewing food; chemical — rusting of a nail, burning wood, cooking food...</i> GLO: C2, D3, E3
5-2-05	Identify properties of the three states of matter. Include: solids have definite volume and hold their shape; liquids have definite volume but take the shape of their container; gases have no definite volume and take the volume and shape of their container. GLO: D3	5-2-12	Identify potentially harmful chemical products used at home, and describe practices to ensure personal safety. Include: use of products with parental supervision, recognition of safety symbols, procedures to follow in case of an emergency, proper storage of chemical products. GLO: B1, C1, D3
5-2-06	Experiment to compare the mass/weight of a substance in its liquid and solid states. <i>Examples: compare the mass of ice cubes with the mass of the liquid that results when they melt...</i> GLO: C2, D3, E3	5-2-13	Evaluate household chemical products using the design process. <i>Examples: glass-cleaner, laundry soap, toothpaste...</i> GLO: B5, C3, C4, C8
5-2-07	Demonstrate that the mass/weight of a whole object is equal to the sum of the mass/weight of its parts. <i>Examples: compare the mass/weight of a pencil case and its contents with that of the individual components weighed separately and added together...</i> GLO: C2, D3, E3	5-2-14	Research and describe how raw materials are transformed into useful products. <i>Examples: food processing, oil refining, paper milling, plastic moulding, gold smelting...</i> GLO: B1, B4, C2, E3

Cluster 4: Weather

5-4-01	Use appropriate vocabulary related to their investigations of weather. Include: weather; properties; volume; pressure; air masses; fronts; weather instrument; severe weather; forecast; accuracy; water cycle; climate; terms related to public weather reports, and cloud formations. GLO: C6, D5	5-4-10	Investigate various ways of predicting weather, and evaluate their usefulness. <i>Examples: weather-related sayings, traditional knowledge, folk knowledge, observations of the natural environment...</i> GLO: A2, A4, B2, C8
5-4-02	Describe how weather conditions may affect the activities of humans and other animals. <i>Examples: heavy rainfall may cause roads to wash out; stormy conditions may prevent a space shuttle launching; in excessive heat cattle may produce less milk...</i> GLO: D5	5-4-11	Contrast the accuracy of short- and long-term weather forecasts, and discuss possible reasons for the discrepancies. Include: long-term forecasts may not be accurate as weather is a complex natural phenomenon that science is not yet able to predict accurately. GLO: A1, C2
5-4-03	Describe properties of air. Include: has mass/weight and volume; expands to fill a space; expands and rises when heated; contracts and sinks when cooled; exerts pressure; moves from areas of high pressure to areas of low pressure. GLO: D3	5-4-12	Describe examples of technological advances that have enabled humans to deepen their scientific understanding of weather and improve the accuracy of weather predictions. <i>Examples: satellites collect data that scientists analyze to increase understanding of global weather patterns; computerized models predict weather...</i> GLO: A2, A5, B1, D5
5-4-04	Recognize that warm and cold air masses are important components of weather, and describe what happens when these air masses meet along a front. Include: in a cold front the cold air mass slides under a warm air mass, pushing the warm air upwards; in a warm front the warm moist air slides up over a cold air mass. GLO: D5, E2	5-4-13	Explain how the transfer of energy from the Sun affects weather conditions. Include: the Sun's energy evaporates water and warms the Earth's land, water, and air on a daily basis. GLO: D4, D5, E4
5-4-05	Use the design process to construct a weather instrument. <i>Examples: an instrument that measures wind direction, wind speed, rainfall...</i> GLO: C3, D5	5-4-14	Explain how clouds form, and relate cloud formation and precipitation to the water cycle. GLO: D5, E2
5-4-06	Observe and measure local weather conditions over a period of time, using student-constructed or standard instruments, and record and analyze these data. GLO: A2, C2, C5, D5	5-4-15	Identify and describe common cloud formations. Include: cumulus, cirrus, stratus. GLO: D5, E1
5-4-07	Identify and describe components of public weather reports from a variety of sources. Include: temperature; relative humidity; wind speed and direction; wind chill; barometric pressure; humidex; cloud cover; ultraviolet index; warm and cold fronts; amount, types, and probability of precipitation. GLO: C6, D5	5-4-16	Differentiate between weather and climate. Include: weather includes the atmospheric conditions existing at a particular time and place; climate describes the long-term weather trend of a particular region. GLO: D5, E1
5-4-08	Describe the key features of a variety of weather phenomena. <i>Examples: wind speed and precipitation of blizzards...</i> GLO: D5, E1, E2	5-4-17	Identify factors that influence weather and climate in Manitoba and across Canada, and describe their impacts. <i>Examples: jet stream, proximity to water, elevation, chinook...</i> GLO: D5, E2
5-4-09	Provide examples of severe weather forecasts, and describe preparations for ensuring personal safety during severe weather and related natural disasters. <i>Examples: tornado, thunderstorm, blizzard, extreme wind chill, flood, forest fire...</i> GLO: B3, C1, D5	5-4-18	Recognize that climates around the world are ever changing, and identify possible explanations. <i>Examples: volcanic eruptions, ozone depletion, greenhouse effect, El Niño, deforestation...</i> GLO: B5, D5, E2, E3



GRADE SIX SCIENCE AT A GLANCE — THEMATIC CLUSTERS

Cluster 1: Diversity of Living Things

6-1-01	Use appropriate vocabulary related to their investigations of the diversity of living things. Include: classification system, classification key, paleontologist, terms related to names of kingdoms and types of vertebrates and invertebrates. GLO: C6, D1	6-1-10	Provide examples of a variety of invertebrates to illustrate their diversity. Include: sponges, worms, molluscs, arthropods. GLO: D1, E1
6-1-02	Describe various kinds of classification systems used in everyday life, and identify related advantages and disadvantages. <i>Examples: organization of phone numbers in a phone book, books in a library, groceries in a supermarket...</i> GLO: B1, B2, E1, E2	6-1-11	Compare and contrast adaptations of common arthropods, and describe how these adaptations enable them to live in particular habitats. GLO: D1, D2, E1
6-1-03	Develop a system to classify common objects or living things into groups and subgroups, and explain the reasoning used in the system's development. GLO: A1, C2, E1, E2	6-1-12	Classify vertebrates as fishes, amphibians, reptiles, birds, and mammals, and provide examples to illustrate the diversity within each group. GLO: D1, E1
6-1-04	Identify living things using an existing classification key, and explain the rationale used. <i>Examples: identification of birds, butterflies, animal tracks, winter twigs...</i> GLO: A1, C2, D1, E2	6-1-13	Compare and contrast the adaptations of closely related vertebrates living in different habitats, and suggest reasons that explain these adaptations. GLO: D1, D2, E1
6-1-05	Identify advantages and disadvantages of having a common classification system for living things, and recognize that the system changes as new evidence comes to light. GLO: A1, A2, D1, E2	6-1-14	Identify, based on evidence gathered by paleontologists, similarities and differences in animals living today and those that lived in the past. <i>Examples: archaeopteryx and modern birds...</i> GLO: A1, A2, E1, E3
6-1-06	Identify the five kingdoms commonly used for the classification of living things, and provide examples of organisms from each to illustrate the diversity of living things. Include: monerans, protists, fungi, plants, animals. GLO: A1, D1, E1, E2	6-1-15	Identify and describe contributions of scientists and naturalists who have increased our understanding of the diversity of living things. GLO: A2, A4, B4, D1
6-1-07	Recognize that many living things are difficult to see with the unaided eye, and observe and describe some examples. GLO: C2, D1, E1		
6-1-08	Observe and describe the diversity of living things within the local environment. Include: fungi, plants, animals. GLO: A1, C2, D1, E1		
6-1-09	Recognize that the animal kingdom is divided into two groups, vertebrates and invertebrates, and differentiate between the two. Include: vertebrates have backbones, invertebrates do not. GLO: D1, E1		

Cluster 2: Flight

6-2-01	Use appropriate vocabulary related to their investigations of flight. Include: fluid, pressure, lift, gravity, thrust, drag, Bernoulli's Principle, propulsion, unbalanced forces. GLO: C6, D4	6-2-10	Identify and diagram the four forces that act on living things or devices that fly through the air. Include: lift, gravity, thrust, drag. GLO: C6, D4
6-2-02	Describe properties of fluids using air and water as examples, and identify manifestations of these properties in daily life. Include: air and water flow and exert pressure; objects can flow through air and water; warm air and water rise. GLO: B1, D3, E1	6-2-11	Compare a variety of propulsion methods that are used to produce thrust in animals and flying devices. <i>Examples: rockets for spacecraft, propellers, or jet engines for aircraft, wings for flying animals...</i> GLO: B1, D1, D4, E4
6-2-03	Identify adaptations that enable living things to propel themselves through air, water, or to be transported by the wind. <i>Examples: the streamlined shape of dolphins and barn swallows, the helicopter-like motion of the winged fruit of maple trees, the parachute-shaped fruit of dandelions...</i> GLO: D1, D4, E1	6-2-12	Describe how unbalanced forces are used to steer aircraft and spacecraft. GLO: A5, D4, D6
6-2-04	Recognize that in order for devices or living things to fly they must have sufficient lift to overcome the downward force of gravity, and that the force of gravity increases as mass increases. GLO: D4	6-2-13	Explain why the design of aircraft and spacecraft differs. GLO: B1, C3, D4, D6
6-2-05	Describe how "lighter-than-air flying devices" are able to achieve lift. Include: hot-air balloons, helium balloons. GLO: D4	6-2-14	Identify milestones in the history of air travel and describe their impacts on daily life. GLO: A4, B1, B2, D4
6-2-06	Test models of aircraft to observe Bernoulli's Principle. Include: the shape of a wing affects the speed of airflow, creating lift in a "heavier-than-air flying device." GLO: C2, C3, D3, D4	6-2-15	Use the design process to construct a prototype that can fly and meet specific performance criteria. <i>Examples: a glider that can loop; a hot-air balloon that can stay aloft for a given time...</i> GLO: C3, D4
6-2-07	Explain how Bernoulli's Principle is applied in a device other than an aircraft. <i>Examples: paint sprayer, perfume mister...</i> GLO: A5, B1, D4		
6-2-08	Provide examples of design features or adaptations that enhance or reduce lift, and explain how they work. <i>Examples: race car spoilers reduce lift; bird wing shapes enhance lift...</i> GLO: A5, B1, D1, D4		
6-2-09	Provide examples of design features or adaptations that enhance or reduce drag, and explain how they work. <i>Examples: pilots use flaps to increase drag when landing aircraft; birds tuck their wings to decrease drag when diving...</i> GLO: A5, B1, D1, D4		

Cluster 3: Electricity

6-3-01	Use appropriate vocabulary related to their investigations of electricity. Include: positive charge, negative charge, current electricity, static electricity, electrical circuit, insulator, conductor, switch, series circuit, parallel circuit, electromagnet, magnetic field, motor, generator, transformation, electrical energy, renewable, non-renewable, energy consumption. GLO: C6, D4, E4	6-3-11	Use the design process to construct an electrical circuit that performs a useful function. <i>Examples: doorbell, alarm, motorized toy, game...</i> GLO: C3, D4
6-3-02	Explain the attraction and repulsion of electrostatically charged materials. Include: negatively and positively charged materials attract one another; materials of like charge repel one another. GLO: D4	6-3-12	Demonstrate, using a simple electromagnet constructed in class, that an electric current can create a magnetic field. GLO: C2, D4
6-3-03	Explain current electricity, and compare the characteristics of current and static electricity by using a model. GLO: A2, D4	6-3-13	Explore motors and generators to determine that electromagnets transform electricity into motion, and motion into electricity. GLO: A5, D4, E2, E4
6-3-04	Identify dangers associated with static and current electricity, and demonstrate and describe appropriate safety precautions. GLO: C1, D4	6-3-14	Identify forms of energy that may result from the transformation of electrical energy, and recognize that energy can only be changed from one form into another, not created or destroyed. Include: light, heat, sound, motion. GLO: D4, E4
6-3-05	List electrical devices used at home, at school, and in the community, and identify the human needs that they fulfill. <i>Examples: heat, light, communication, movement...</i> GLO: B1, B2, D4	6-3-15	Identify the two major sources of electrical energy, and provide examples of each. Include: chemical sources such as batteries; electromagnetic sources such as turbine motion caused by wind, falling water, and steam. GLO: B1, D4, E4
6-3-06	Develop a definition of an electrical circuit, based on classroom explorations. Include: an electrical circuit is a continuous path for charges and must contain a power source and a conductor. GLO: C2, D4	6-3-16	Identify renewable and non-renewable sources of electrical energy, and discuss advantages and disadvantages of each. <i>Examples: renewable sources such as hydroelectric, wind, geothermal, solar; non-renewable sources such as fossil fuels, nuclear fission...</i> GLO: B5, E4
6-3-07	Experiment to classify a variety of materials as insulators or conductors. GLO: C2, D3, D4, E1	6-3-17	Evaluate an electrical device using the design process. <i>Examples: light bulbs, kitchen appliances...</i> GLO: B5, C4
6-3-08	Demonstrate and describe the function of switches in electrical circuits. GLO: D4	6-3-18	Describe factors that affect the consumption of electrical energy, and outline an action plan to reduce electrical energy consumption at home, at school, or in the community. GLO: B5, C4, E4
6-3-09	Construct and diagram simple series circuits and simple parallel circuits. GLO: C2, C6, D4, E1	6-3-19	Describe the ways in which electricity has had an impact on daily life. GLO: B1, B2, B5
6-3-10	Explore to determine factors that affect bulb brightness in simple series and parallel circuits. Include: number of bulbs, number of batteries, placement of bulbs and batteries. GLO: C2, D4		

Cluster 4: Exploring the Solar System

6-4-01	Use appropriate vocabulary related to their investigations of Earth and space. Include: astronauts, communication and remote sensing satellites, solar system, inner and outer planets, asteroid belt, mass, weight, points of reference, apparent movement, celestial objects, astrology, astronomy, rotation, revolution, axis, moon phases, eclipses. GLO: C6, D6	6-4-08	Recognize that the Sun is the centre of the solar system and it is the source of energy for all life on Earth. GLO: D6, E2, E4
6-4-02	Identify technological developments that enable astronauts to meet their basic needs in space. <i>Examples: dehydrated foods, backpacks with an oxygen supply, hermetically sealed cabins with temperature and air controls...</i> GLO: B1, B2, D1, D6	6-4-09	Identify the planets in the solar system and describe their size relative to the Earth and their position relative to the Sun. GLO: D6, E1, E2
6-4-03	Identify Canadians who have contributed to space science or space technology, and describe their achievements. GLO: A4, A5, B1, B4	6-4-10	Classify planets as inner or outer planets, based on their position relative to the asteroid belt, and describe characteristics of each type. Include: inner planets are small and rocky; outer planets (except Pluto) are giant balls of gas. GLO: D6, E1
6-4-04	Investigate past and present space research programs involving astronauts, and explain the contributions to scientific knowledge. <i>Examples: Apollo, Mir, International Space Station...</i> GLO: A1, A2, A5, D6	6-4-11	Recognize that mass is the amount of matter in an object, that weight is the force of gravity on the mass of an object, and that the force of gravity varies from planet to planet. GLO: D3
6-4-05	Describe positive and negative impacts arising from space research programs. <i>Examples: advantages — increased knowledge about space and medicine, the development of technologies such as orange drink crystals and pocket calculators; disadvantages — space pollution and the high cost of research projects...</i> GLO: A1, B1, B5, D6	6-4-12	Explain, using models and simulations, how the Earth's rotation causes the cycle of day and night, and how the Earth's tilt of axis and revolution cause the yearly cycle of seasons. GLO: A2, D6, E2, E4
6-4-06	Identify technological devices placed in space that help humans learn more about the Earth and communicate more efficiently. Include: communication and remote sensing satellites. GLO: B1, B2, D6	6-4-13	Use the design process to construct a prototype that tells the time of day or measures a time span. GLO: C3, D6
6-4-07	Describe how the conception of the Earth and its position in space have been continuously questioned and how our understanding has evolved over time. Include: from a flat Earth, to an Earth-centred system, to a Sun-centred system. GLO: A1, A2, B2, C5	6-4-14	Explain how the relative positions of the Earth, moon, and Sun are responsible for moon phases and eclipses. GLO: D6, E2
		6-4-15	Identify points of reference in the night sky and recognize that the apparent movement of celestial objects is regular, predictable, and related to the Earth's rotation and revolution. <i>Examples: planets, constellations...</i> GLO: D6, E2, E3
		6-4-16	Identify and describe how people from various cultures, past and present, apply astronomy in daily life. <i>Examples: using celestial bodies to navigate; knowing when to plant crops...</i> GLO: A4, A5, B1, B2
		6-4-17	Differentiate between astrology and astronomy, and explain why astrology is considered unscientific. GLO: A1, A2, C5, C8



GRADE SEVEN SCIENCE AT A GLANCE — THEMATIC CLUSTERS

Cluster 1: Interactions Within Ecosystems

7-1-01	Use appropriate vocabulary related to their investigations of interactions within ecosystems. Include: ecosystem, biosphere, abiotic, biotic, organisms, ecological succession, photosynthesis, cellular respiration, ecological pyramid, bioaccumulation, scavengers, decomposers, micro-organisms. GLO: C6, D2	7-1-08	Compare photosynthesis to cellular respiration, and explain how both are part of the cycling of matter and the transfer of energy in ecosystems. Include: photosynthesis: water + carbon dioxide + light energy = sugar + oxygen in the presence of chlorophyll; cellular respiration: sugar + oxygen = water + carbon dioxide + energy. GLO: A2, C6, D2, E4
7-1-02	Define ecosystem, and describe various examples that range from the microscopic to the entire biosphere. Include: a place on Earth where living things interact with other living things as well as non-living things. GLO: D2, E2	7-1-09	Analyze food webs, using ecological pyramids, to show energy gained or lost at various consumer levels. Include: producers; primary, secondary, and tertiary consumers. GLO: C2, C8, D2, E4
7-1-03	Identify abiotic and biotic components of ecosystems that allow particular organisms to survive. GLO: D1, D2, E2	7-1-10	Analyze, using ecological pyramids, the implications of the loss of producers and consumers to the transfer of energy within an ecosystem. GLO: C2, C8, D2, E4
7-1-04	Describe ecological succession and identify signs of succession in a variety of ecosystems. Include: the natural process whereby some species are replaced by other species in a predictable pattern. GLO: D2, E2, E3	7-1-11	Explain, using ecological pyramids, the potential for bioaccumulation within an ecosystem. GLO: D2, E2, E4
7-1-05	Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the makeup of ecosystems. <i>Examples: positive — protecting habitats, reintroducing species; negative — preventing natural fires, introducing non-indigenous species, draining wetlands for agriculture or housing...</i> GLO: B5, D2, E2, E3	7-1-12	Provide examples of scavengers and decomposers, and describe their role in cycling matter in an ecosystem. Include: micro-organisms. GLO: D2, E1, E2, E3
7-1-06	Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems. <i>Examples: habitat preservation, recreation, employment, industrial growth, resource development...</i> GLO: B1, B5, D2, E2	7-1-13	Demonstrate proper use and care of the microscope to observe micro-organisms. Include: preparing wet mounts beginning with the least powerful lens; focussing; drawing specimens; indicating magnification. GLO: C1, C2, C7
7-1-07	Propose a course of action to protect the habitat of a particular organism within an ecosystem. <i>Examples: protect the nesting habitat of a given bird in a local wetland...</i> GLO: B5, C3, D2, E2	7-1-14	Identify beneficial and harmful roles played by micro-organisms. <i>Examples: beneficial — aid in digestion, composting, food and vaccine production; harmful — cause disease, food spoilage...</i> GLO: B3, C2, D2
		7-1-15	Research and describe human food production or preservation techniques that apply a knowledge of micro-organisms. <i>Examples: bread and yogurt making, food drying, sterilization, refrigeration...</i> GLO: A5, B2, B3, D1

Cluster 2: Particle Theory of Matter

7-2-01	Use appropriate vocabulary related to their investigations of the particle theory of matter. Include: boiling and melting points, pure substance, scientific theory, particle theory of matter, temperature, heat, conduction, convection, radiation, mixture, solution, mechanical mixture, homogeneous, heterogeneous, solutes, solvents, solubility, concentration, dilute, concentrated, saturated, unsaturated, terms related to forms of energy. GLO: C6, D3, E4	7-2-13	Differentiate between pure substances and mixtures by using the particle theory of matter. Include: a pure substance is made up of one type of particle; a mixture is made up of two or more types of particles. GLO: A2, D3, E1
7-2-02	Evaluate different types of thermometers using the design process. <i>Examples: materials used, range, sensitivity, durability, scale, cost...</i> GLO: C1, C3	7-2-14	Differentiate between the two types of mixtures, solutions and mechanical mixtures. Include: solutions — homogeneous; mechanical mixtures — heterogeneous mixtures. GLO: D3, E1
7-2-03	Demonstrate the effects of heating and cooling on the volume of solids, liquids, and gases, and give examples from daily life. GLO: A2, C1, D3, E4	7-2-15	Classify a variety of substances used in daily life as pure substances, solutions, or mechanical mixtures. <i>Examples: distilled water, paint thinner, mouthwash, peanut butter, liquid soap, medicines, sunscreens...</i> GLO: B1, E1
7-2-04	Compare the boiling and melting points of a variety of substances and recognize that boiling and melting points are properties of pure substances. Include: water. GLO: C2, D3, E3, E4	7-2-16	Identify solutes and solvents in common solid, liquid, and gaseous solutions. GLO: D3
7-2-05	Explain what scientific theories are, and provide some examples. Include: a scientific theory helps to explain an observation; when this explanation has been repeatedly tested and shown to be consistent it is generally accepted in the scientific world. GLO: A1, A2	7-2-17	Describe solutions by using the particle theory of matter. Include: particles have an attraction for each other; the attraction between the particles of solute and solvent keeps them in solution. GLO: A1, D3, E1
7-2-06	Describe the particle theory of matter and use it to explain changes of state. GLO: A2, C6, D3, D4	7-2-18	Demonstrate different methods of separating the components of both solutions and mechanical mixtures. <i>Examples: distillation, chromatography, evaporation, sieving, dissolving, filtration, decanting, magnetism, sedimentation...</i> GLO: C1, C2
7-2-07	Differentiate between the concept of temperature and the concept of heat. GLO: D3, D4, E4	7-2-19	Identify a separation technique used in industry, and explain why it is appropriate. GLO: B1, C4
7-2-08	Demonstrate how heat can be transmitted through solids, liquids, and gases. Include: conduction, convection, radiation. GLO: C1, D3, D4, E4	7-2-20	Experiment to determine factors that affect solubility. Include: agitation, surface area, temperature. GLO: C2, D3
7-2-09	Plan an experiment to identify materials that are good heat insulators and good heat conductors, and describe some uses of these materials. GLO: B1, D3, D4	7-2-21	Describe the concentration of a solution in qualitative and quantitative terms, and give examples from daily life when the concentration of a solution influences its usefulness. Include: dilute, concentrated, grams of solute per 100 mL. GLO: C6, D3
7-2-10	Use the design process to construct a prototype that controls the transfer of heat energy. <i>Examples: insulated lunch bag, solar oven, home insulation...</i> GLO: A5, B2, C3, C4	7-2-22	Demonstrate the difference between saturated and unsaturated solutions. GLO: C2, C6, D3
7-2-11	Recognize that heat energy is the most common by-product of energy transformations, and describe some examples. <i>Examples: thermal pollution, body heat, friction...</i> GLO: B1, D4, E4	7-2-23	Discuss the potential harmful effects of some substances on the environment, and identify methods to ensure their safe use and disposal. <i>Examples: pollution of groundwater from improper disposal of paints and solvents; pollution of the atmosphere by car exhaust...</i> GLO: B1, B3, B5, C1
7-2-12	Identify different forms of energy that can be transformed into heat energy. Include: mechanical, chemical, nuclear, electrical. GLO: D4, E4		

Cluster 3: Forces and Structures

7-3-01	Use appropriate vocabulary related to their investigations of forces and structures. Include: frame, shell, solid, centre of gravity, stability, compression, tension, shear, torsion, internal and external forces, stress, structural fatigue, structural failure, load, magnitude, point and plane of application, efficiency. GLO: C6, D4	7-3-07	Investigate to determine that the effect of a force on a structure depends on its magnitude, direction, and point and plane of application. GLO: D4
7-3-02	Classify natural and human-built structures found locally and around the world. Include: frame, shell, solid. GLO: E1	7-3-08	Describe, using diagrams, how common structural shapes and components can increase the strength and stability of a structure. <i>Examples: a triangle distributes the downward force of a load evenly between its two vertices...</i> GLO: C6, D3, D4
7-3-03	Identify the centre of gravity in a model structure, and demonstrate that changes in the location of a structure's centre of gravity affect its stability. GLO: C1, D4	7-3-09	Describe and demonstrate methods to increase the strength of materials. <i>Examples: corrugation of surfaces, lamination of adjacent members, alteration of the shape of components...</i> GLO: C2, C3, D3, E3
7-3-04	Identify internal forces acting on a structure, and describe them using diagrams. Include: compression, tension, shear, torsion. GLO: D4, E4	7-3-10	Determine the efficiency of a structure by comparing its mass with the mass of the load it supports. GLO: C1, C5
7-3-05	Identify external forces acting on a structure, and describe them using diagrams. <i>Examples: snow on a rooftop, wind on a tent, water against a beaver dam...</i> GLO: C6, D4, E4	7-3-11	Evaluate a structure to determine the appropriateness of its design, using the design process. <i>Examples: jacket, foot stool, local building...</i> GLO: C3, C4, C8, D4
7-3-06	Recognize that internal and external forces apply stress to structures, and describe examples in which this stress has led to structural fatigue or structural failure. GLO: D4, E3	7-3-12	Use the design process to construct a structure that will withstand the application of an external force. <i>Examples: a tower that will remain standing during a simulated earthquake...</i> GLO: C3, D3, D4

Cluster 4: Earth's Crust

7-4-01	Use appropriate vocabulary related to their investigations of the Earth's crust. Include: crust, mantle, outer core, inner core, weathering (physical, biological, and chemical), erosion, rock cycle, fossil fuel, geothermal energy, continental drift theory, theory of plate tectonics. GLO: C6, D5	7-4-10	Describe methods used to control soil erosion, and recognize the importance of soil conservation. <i>Examples: economically important to the agri-food industry, important for controlling the flow of water, necessary for plant growth...</i> GLO: A5, B2, B5, E3
7-4-02	Describe the Earth's structure. Include: crust, mantle, outer core, inner core. GLO: C6, D5	7-4-11	Identify environmental, social, and economic factors that should be considered in making informed decisions about land use. GLO: B1, B5, D5
7-4-03	Describe the geological processes involved in rock and mineral formation, and classify rocks and minerals by their method of formation. GLO: D3, D5, E3	7-4-12	Describe evidence used to support the continental drift theory, and explain why this theory was not generally accepted by scientists. GLO: A1, A2, A4, D5
7-4-04	Investigate and describe the processes of weathering and erosion, and recognize that they cause changes in the landscape over time. Include: physical, biological, and chemical weathering. GLO: D3, D5, E3	7-4-13	Describe evidence used to support the theory of plate tectonics, the role technology has played in the development of this theory, and reasons why it is generally accepted by scientists. GLO: A1, A2, A5, D5
7-4-05	Explain how rocks on the Earth constantly undergo a slow process of change through the rock cycle. GLO: D5, E3	7-4-14	Explain geological processes and events using the theory of plate tectonics. Include: mountain formation, earthquakes, volcanoes. GLO: A1, A2, D5, E3
7-4-06	Identify geological resources that are used by humans as sources of energy, and describe their method of formation. Include: fossil fuels, geothermal energy. GLO: D4, D5, E3	7-4-15	Identify specialized careers involving the study of the Earth's crust or the utilization of geological resources, and give examples of technologies used in each. <i>Examples: geophysicist, seismologist, volcanologist, farmer...</i> GLO: A5, B4
7-4-07	Identify geological resources that are present in Manitoba and Canada, and describe the processes involved in their location, extraction, processing, and recycling. Include: fossil fuels, minerals. GLO: A5, B5, D3, D5		
7-4-08	Identify environmental impacts of geological resource extraction, and describe techniques used to address these. GLO: B1, B5, C1, C3		
7-4-09	Recognize that soil is a natural resource, and explain how the characteristics of soil determine its use. GLO: D5, E1		



GRADE EIGHT SCIENCE AT A GLANCE — THEMATIC CLUSTERS

Cluster 1: Cells and Systems

8-1-01	Use appropriate vocabulary related to their investigations of cells and systems. Include: cell theory, osmosis, diffusion, selective permeability, unicellular, multicellular, specialized cells and tissues, organs, systems, arteries, veins, capillaries, terms related to cell structure, heart structure, components of blood, and primary and secondary defense systems. GLO: C6, D1	8-1-10	Describe structural and functional relationships among cells, tissues, organs, and systems. GLO: D1, E2
8-1-02	Identify characteristics of living things, and describe how different living things exhibit these characteristics. Include: composed of cells; reproduce; grow; repair themselves; require energy; respond to the environment; have a lifespan; produce wastes. GLO: D1, E1	8-1-11	Describe the structure and function of the heart and the path of blood to and from the heart through its four chambers. Include: atria, ventricles, septum, valves, aorta, pulmonary artery, pulmonary veins, superior vena cava, inferior vena cava. GLO: D1, E1
8-1-03	Describe cell theory. Include: all living things are composed of one or more cells; cells are the basic unit of structure and function of any organism; all cells come from pre-existing cells; the activity of an organism as a whole depends on the total activity of all its cells. GLO: A2, D1, E2	8-1-12	Compare and contrast the structure and function of arteries, veins, and capillaries. GLO: D1, E1
8-1-04	Identify major events and technological innovations that have enabled scientists to increase our understanding of cell biology. <i>Examples: invention of the light and electron microscopes, works of Robert Hooke, Anton van Leeuwenhoek, Matthias Schleiden and Theodor Schwann...</i> GLO: A2, A4, B1, B2	8-1-13	Identify components of blood and describe the function of each. Include: red blood cells carry oxygen; white blood cells fight infection; platelets clot blood; plasma is the liquid part of blood that transports blood cells, dissolved material, nutrients, and waste products. GLO: D1
8-1-05	Identify and compare major structures in plants and animal cells, and explain their function. Include: cell membrane, cytoplasm, mitochondria, nucleus, vacuoles, cell wall, chloroplasts. GLO: D1, E1	8-1-14	Describe, using examples, how individual systems in the human body function interdependently. GLO: D1, E2
8-1-06	Demonstrate proper use and care of the microscope to observe the general structure of plant and animal cells. Include: preparing wet mounts beginning with the least powerful lens; focussing; drawing specimens; indicating magnification. GLO: C1, C2, D1	8-1-15	Compare heart rate and respiratory rate before, during, and after various physical activities; explain the observed variations; and discuss implications for overall health. GLO: B3, C2, D1, E3
8-1-07	Describe the movement of nutrients and wastes across cell membranes and explain its importance. Include: osmosis, diffusion, selective permeability. GLO: D1	8-1-16	Identify components of the primary and secondary defence systems of the human body, and describe their roles. Include: primary defense system — skin, tears, ear wax, saliva, gastric juices, cilia hairs; secondary defense system — white blood cells, antibodies. GLO: D1, E2
8-1-08	Differentiate between unicellular and multicellular organisms. GLO: D1, E1	8-1-17	Identify medical advances that enhance the human body's defence mechanisms and describe their effects on society. <i>Examples: vaccines, antibiotics...</i> GLO: A5, B1, B2, B3
8-1-09	Describe why cells and tissues are specialized in multicellular organisms, and observe examples. Include: specialization is needed because all cells in a complex organism do not have access to the external environment. GLO: C2, D1	8-1-18	Research and describe disorders/diseases that affect body systems, and identify possible preventative measures. <i>Examples: liver disease, diabetes, multiple sclerosis, heart attack, stroke, high/low blood pressure, leukemia, anemia, high cholesterol...</i> GLO: B3, C6, D1
		8-1-19	Describe functional similarities and differences of comparable structures and systems in different groups of living things. <i>Examples: movement, food intake, and digestion of a unicellular organism, an invertebrate, and a vertebrate; gas exchange in plants versus animals...</i> GLO: D1, E1

Cluster 3: Fluids

8-3-01	Use appropriate vocabulary related to their investigations of fluids. Include: fluid, viscosity, flow, density, particle theory of matter, buoyant force, pressure, compressibility, hydraulic, pneumatic. GLO: C6, D3, E1	8-3-09	Recognize that pressure is the relationship between force and area, and describe situations in which pressure can be increased or decreased by altering surface area. <i>Examples: wearing snowshoes instead of boots to decrease pressure, increase surface area, and stay on top of snow...</i> GLO: B1, B2, D4
8-3-02	Distinguish between fluids and non-fluids. GLO: D3, E1	8-3-10	Explain, using the particle theory of matter, the relationships among pressure, volume, and temperature of liquid and gaseous fluids. GLO: A2, D4
8-3-03	Explore and compare the viscosity of various liquids. <i>Examples: time the fall of a steel ball through various liquids; time the flow rate of different liquids on an incline...</i> GLO: C2, D3, E1	8-3-11	Compare the relative compressibility of water and air, and relate this property to their ability to transmit force in hydraulic and pneumatic systems. GLO: A5, C1, D4, E1
8-3-04	Identify products in which viscosity is an important property, and evaluate different brands of the same product, using the design process. <i>Examples: sauces, lubricating oil, paint, hand lotion...</i> GLO: A5, B2, C1	8-3-12	Identify a variety of natural and constructed hydraulic and pneumatic systems and describe how they function. <i>Examples: heart, lungs, eyedropper, misting bottle, fuel pump, hydraulic lift...</i> GLO: D4, E2
8-3-05	Plan and conduct experiments to determine factors that affect flow within a given system. <i>Examples: temperature, pressure, tube diameter...</i> GLO: C1, C2, D3, E2	8-3-13	Compare hydraulic and pneumatic systems, and identify advantages and disadvantages of each. GLO: B1, D4, E1, E2
8-3-06	Measure, calculate, and compare densities of solids, liquids, and gases. Include: different amounts of the same substance, regularly and irregularly shaped objects. GLO: C2, C5, D3	8-3-14	Use the design process to construct a prototype that uses a pneumatic or hydraulic system to perform a given task. <i>Examples: a prototype that can lift a load a specified distance...</i> GLO: C3, D4
8-3-07	Illustrate, using the particle theory of matter, the effects of temperature change on the density of solids, liquids, and gases. GLO: A2, C6, D3, E4		
8-3-08	Compare fluids of different densities to determine how they alter the buoyant force on an object. GLO: C2, D3		

Cluster 2: Optics

8-2-01	Use appropriate vocabulary related to their investigations of optics. Include: spectrum; additive theory; subtractive theory; frequency; wavelength; refraction; concave and convex mirrors and lenses; terms related to types of light sources, types of electromagnetic radiation, and the law of reflection. GLO: C6, D3	8-2-08	Provide examples of technologies that use electromagnetic radiation, and describe potential positive and negative impacts of their uses. <i>Examples: satellite dish, x-ray machine, light telescopes, motion sensors, microwave ovens...</i> GLO: A5, B1, D4
8-2-02	Differentiate between incandescent and luminescent sources of light. Include: fluorescent, phosphorescent, chemiluminescent, bioluminescent. GLO: D3, D4, E1	8-2-09	Conduct experiments to determine the law of reflection, and provide examples of the use of reflection in daily life. Include: the angle of reflection is the same as the angle of incidence; the incident beam, the normal and the reflected beam are all on the same plane. GLO: A2, C1, C2, D4
8-2-03	Demonstrate that light is a form of energy, that light travels in a straight line, and can be separated into the visible light spectrum. GLO: A1, C1, C2, D4	8-2-10	Conduct experiments to compare the refraction of light through substances of different densities. GLO: C1, C2, D4
8-2-04	Explain, using the additive theory, how colours are produced, and identify applications of this theory in daily life. GLO: A1, A2, B1	8-2-11	Explain how reflection and refraction produce natural phenomena. <i>Examples: sun dogs, rainbows, blue sky...</i> GLO: D4, D5
8-2-05	Explain how the human eye detects colour, and how the ability to perceive colour may vary from person to person. GLO: A2, E1	8-2-12	Investigate to determine how light interacts with concave and convex mirrors and lenses, and provide examples of their use in various optical instruments and systems. GLO: B1, C2, D3, D4
8-2-06	Demonstrate, using the subtractive theory, how colours are produced, and identify applications of this theory in daily life. GLO: A2, B1	8-2-13	Demonstrate the formation of images using a double convex lens, and predict the effects of changes in lens position on the size and location of the image. <i>Examples: magnify or reduce an image by altering the placement of one or more lenses...</i> GLO: C2, C5, D4
8-2-07	Compare and contrast various types of electromagnetic radiation, with respect to relative energy, frequency, wavelength, and human perception. Include: radio waves, microwaves, infrared radiation, visible light, ultra-violet radiation, x-rays, gamma rays. GLO: D4, E1	8-2-14	Compare the functional operation of the human eye to that of a camera in focussing an image. GLO: A5, C4, D1, D4

Cluster 4: Water Systems

8-4-01	Use appropriate vocabulary related to their investigations of water systems. Include: heat capacity, fresh water, salt water, convection, Coriolis effect, global water cycle, drainage system, watershed, continental divide, erosion, deposition, flow rate, tides, terms related to water treatment. GLO: C6, D5	8-4-11	Describe examples of human interventions to prevent riverbank or coastal erosion. <i>Examples: vegetation, reinforcement (concrete, boulders), piers, breakwaters...</i> GLO: B2, B5, D5
8-4-02	Demonstrate that water, as compared to other substances, has a high heat capacity and is able to dissolve a wide variety of solutes. GLO: C1, C2, C5, D3	8-4-12	Identify factors that can cause flooding either individually or in combination. <i>Examples: heavy snow pack, quick thaw, rain in spring, lack of vegetation to remove water through transpiration, frozen ground preventing absorption, agricultural drainage systems, dams, diversions...</i> GLO: C8, D5
8-4-03	Compare and contrast characteristics and properties of fresh water and salt water. <i>Examples: freezing point, density, dissolved materials, global distribution, relative amounts, biologically diverse components of each...</i> GLO: D3, D5, E1	8-4-13	Provide examples of the way in which technology is used to contain or prevent damage due to flooding, and discuss related positive and negative impacts. <i>Examples: floodway, diversion, dike, levee...</i> GLO: A5, B1, D5
8-4-04	Identify factors that can work individually or in combination to affect ocean currents. Include: convection, Coriolis effect, prevailing winds, position of continents. GLO: D5, E2	8-4-14	Identify sources of drinking water and describe methods for obtaining water in areas where supply is limited. <i>Examples: desalination, melting of ice, condensation...</i> GLO: B1, B2, B3, D5
8-4-05	Describe how the heat capacity of large bodies of water and the movement of ocean currents influence regional climates. <i>Examples: Gulf Stream effects, El Niño, lake effect...</i> GLO: D3, D5, E2	8-4-15	Explain how and why water may need to be treated for use by humans. Include: filtration, settling, chlorination, fluoridation. GLO: B1, B3, D5
8-4-06	Describe the components of the global water cycle and explain how it works. GLO: D3, D5, E2	8-4-16	Compare the waste-water disposal system within their communities to one used elsewhere. Include: process involved, environmental impact, cost. GLO: B2, B5
8-4-07	Describe features of the North American drainage system. Include: local and regional watersheds, direction of water flow, continental divide. GLO: C6, D5	8-4-17	Identify substances that may pollute water, related environmental and societal impacts of pollution, and ways to reduce or eliminate effects of pollution. GLO: B2, B3, B5, D5
8-4-08	Describe how erosion and deposition are influenced by the flow rate of a stream or river, and contrast the related characteristics of young and mature streams. <i>Examples: meanders, oxbows, alluvial deposits, sandbars, flood plains, deltas...</i> GLO: C8, D5, E3	8-4-18	Identify environmental, social, and economic factors that should be considered in the management of water resources. <i>Examples: ecosystem preservation, employment, recreation, industrial growth, water quality...</i> GLO: B5, D5
8-4-09	Describe how wave action and ice movement in large bodies of water cause erosion and deposition. GLO: D5, E3	8-4-19	Use the design process to develop a system to solve a water-related problem. GLO: B2, B3, C3, D5
8-4-10	Explain how tides are caused and describe their effects on shorelines. GLO: D5, D6		



CLUSTER 0: OVERALL SKILLS AND ATTITUDES CHART — GRADES 5 TO 8 SCIENCE

Specific student learning outcomes taken from *Grades 5 to 8 Science: Manitoba Curriculum Framework of Outcomes*

Students will...

(C indicates an outcome that appeared in a previous grade)

	GRADE 5		GRADE 6		GRADE 7		GRADE 8	
	SCIENTIFIC INQUIRY	DESIGN PROCESS	SCIENTIFIC INQUIRY	DESIGN PROCESS	SCIENTIFIC INQUIRY	DESIGN PROCESS	SCIENTIFIC INQUIRY	DESIGN PROCESS
Initiating	<p>5-0-1a Formulate, with guidance, specific questions that lead to investigations. Include: rephrase questions to a testable form; focus research questions. GLO: A1, C2 (ELA Grade 5, 3.1.1; Math: SP-I.1.5)</p> <p>5-0-1b Identify various methods for finding the answer to a specific question and, with guidance, select one to implement. Examples: generating experimental data; accessing information from a variety of sources... GLO: C2 (ELA Grade 5, 3.2.2; Math: SP-II.1.5)</p>	<p>5-0-1c Identify practical problems to solve. Examples: How can I determine the mass of air? Which prepared pizza should I buy?... GLO: C3</p> <p>5-0-1d Identify various methods to solve a practical problem, and select and justify one to implement. Examples: constructing and testing a prototype; evaluating consumer products; accessing information from a variety of sources... GLO: C3 (Math: SP-II.1.5)</p>	<p>6-0-1a Formulate specific questions that lead to investigations. Include: rephrase questions to a testable form; focus research questions. GLO: A1, C2 (ELA Grade 6, 3.1.2; Math: SP-I.1.6)</p> <p>6-0-1b Identify various methods for finding the answer to a specific question and select one to implement. Examples: generating experimental data; accessing information from a variety of sources... GLO: C2 (ELA Grade 6, 3.2.2; Math: SP-I.2.6, SP-II.1.6)</p>	<p>6-0-1c Identify practical problems to solve. Examples: How can I make a hot-air balloon? Which type of light bulb should I buy?... GLO: C3</p> <p>6-0-1d C Identify various methods to solve a practical problem, and select and justify one to implement. Examples: constructing and testing a prototype; evaluating consumer products; accessing information from a variety of sources... GLO: C3 (Math: SP-I.2.6, SP-II.1.6)</p>	<p>7-0-1a C Formulate specific questions that lead to investigations. Include: rephrase questions to a testable form; focus research questions. GLO: A1, C2 (ELA Grade 7, 3.1.2; Math: SP-I.1.7)</p> <p>7-0-1b Select and justify a method to be used in finding the answer to a specific question. GLO: C2 (ELA Grade 7, 3.2.3; Math: SP-II.1.7)</p>	<p>7-0-1c Identify practical problems to solve. Examples: How can I keep my soup hot? Which type of sunscreen should I buy?... GLO: C3</p> <p>7-0-1d Select and justify a method to be used in finding a solution to a practical problem. GLO: C3 (Math: SP-II.1.7)</p>	<p>8-0-1a C Formulate specific questions that lead to investigations. Include: rephrase questions to a testable form; focus research questions. GLO: A1, C2 (ELA Grade 8, 3.1.2; Math: SP-I.1.8)</p> <p>8-0-1b C Select and justify a method to be used in finding the answer to a specific question. GLO: C2 (ELA Grade 8, 3.2.3; Math: SP-II.1.8)</p>	<p>8-0-1c Identify practical problems to solve. Examples: How can I make water flow uphill? Which type of bottled water should I buy?... GLO: C3</p> <p>8-0-1d C Select and justify a method to be used in finding a solution to a practical problem. GLO: C3 (Math: SP-II.1.8)</p>
Researching	<p>5-0-2a Access information using a variety of sources. Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet... GLO: C6 (ELA Grade 5, 3.2.3; Math: SP-II.3.1)</p> <p>5-0-2b Review information to determine its usefulness, using predetermined criteria. GLO: C6, C8</p> <p>5-0-2c Record information in own words and reference sources appropriately. GLO: C6 (ELA Grade 5, 3.3.2)</p>	<p>6-0-2a C Access information using a variety of sources. Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet... GLO: C6 (ELA Grade 6, 3.2.2; Math: SP-II.1.6; TFS 2.2.1)</p> <p>6-0-2b C Review information to determine its usefulness, using predetermined criteria. GLO: C6, C8 (ELA Grade 6, 3.2.3)</p> <p>6-0-2c Make notes on a topic, combining information from more than one source and referencing sources appropriately. GLO: C6 (ELA Grade 6, 3.3.2)</p>	<p>7-0-2a C Access information using a variety of sources. Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet... GLO: C6 (ELA Grade 7, 3.2.2; TFS 2.2.1)</p> <p>7-0-2b Evaluate the usefulness, currency, and reliability of information, using predetermined criteria. GLO: C6, C8 (ELA Grade 7, 3.2.3; TFS 2.2.2)</p> <p>7-0-2c Make notes using headings and subheadings or graphic organizers appropriate to a topic and reference sources. GLO: C6 (ELA Grade 7, 3.3.2)</p>	<p>8-0-2a C Access information, using a variety of sources. Examples: libraries, magazines, community resource people, outdoor experiences, videos, CD-ROMs, Internet... GLO: C6 (ELA Grade 8, 3.2.2)</p> <p>8-0-2b Develop and use criteria for evaluating information sources. Include: distinguish between fact and opinion. GLO: C6, C8 (ELA Grade 8, 3.2.2, 3.2.3; TFS 2.2.2)</p> <p>8-0-2c Make notes in point form, summarizing major ideas and supporting details and referencing sources. GLO: C6 (ELA Grade 8, 3.3.2)</p>				
Planning	<p>5-0-3a Formulate, with guidance, a prediction/hypothesis that identifies a cause and effect relationship. GLO: A2, C2 (Math: SP-I.1.5)</p> <p>5-0-3b Identify variables that might have an impact on their experiments and, with guidance, variables to hold constant to ensure a fair test. GLO: A2, C2</p> <p>5-0-3c Create a written plan to answer a specific question. Include: apparatus, materials, safety considerations, steps to follow. GLO: C2 (ELA Grade 5, 3.1.4)</p>	<p>5-0-3d Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, use of recycled materials, cost, reliability. GLO: C3</p> <p>5-0-3e Create a written plan to solve a problem. Include: materials, safety considerations, labelled diagrams of top and side views, steps to follow. GLO: C1, C3, C6</p>	<p>6-0-3a Formulate a prediction/hypothesis that identifies a cause and effect relationship. GLO: A2, C2 (Math: SP-I.1.6)</p> <p>6-0-3b Identify variables that might have an impact on their experiments, and variables to hold constant to ensure a fair test. GLO: A2, C2</p> <p>6-0-3c C Create a written plan to answer a specific question. Include: apparatus, materials, safety considerations, steps to follow. GLO: C1, C2 (ELA Grade 6, 3.1.4)</p>	<p>6-0-3d C Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, use of recycled materials, cost, reliability. GLO: C3</p> <p>6-0-3e C Create a written plan to solve a problem. Include: materials, safety considerations, labelled diagrams of top and side views, steps to follow. GLO: C1, C3, C6</p>	<p>7-0-3a Formulate a prediction/hypothesis that identifies a cause and effect relationship between the dependent and independent variables. GLO: A2, C2 (Math: SP-I.1.7)</p> <p>7-0-3b Identify, with guidance, the independent and dependent variables in an experiment. GLO: A2, C2</p> <p>7-0-3c Create a written plan to answer a specific question. Include: apparatus, materials, safety considerations, steps to follow, and variables to control. GLO: C2 (ELA Grade 7, 3.1.4)</p>	<p>7-0-3d Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, environmental considerations, cost, efficiency. GLO: C3</p> <p>7-0-3e Create a written plan to solve a problem. Include: materials required, three-dimensional sketches, steps to follow. GLO: C1, C3, C6</p>	<p>8-0-3a C Formulate a prediction/hypothesis that identifies a cause and effect relationship between the dependent and independent variables. GLO: A2, C2 (Math: SP-I.1.8)</p> <p>8-0-3b Identify the independent and dependent variables in an experiment. GLO: A2, C2</p> <p>8-0-3c C Create a written plan to answer a specific question. Include: apparatus, materials, safety considerations, steps to follow, and variables to control. GLO: C2 (ELA Grade 8, 3.1.4)</p>	<p>8-0-3d C Develop criteria to evaluate a prototype or consumer product. Include: function, aesthetics, environmental considerations, cost, efficiency. GLO: C3</p> <p>8-0-3e C Create a written plan to solve a problem. Include: materials, safety considerations, three-dimensional sketches, steps to follow. GLO: C3, C6</p>

A

Attach sheet B here

A

Implementing a Plan	<p>5-0-4a Carry out, with guidance, procedures that comprise a fair test. Include: controlling variables, repeating measurements to increase accuracy and reliability. GLO: C2</p>	<p>5-0-4b Construct a prototype. GLO: C3</p>	<p>6-0-4a Carry out procedures that comprise a fair test. Include: controlling variables; repeating measurements to increase accuracy and reliability. GLO: C2</p>	<p>6-0-4b Construct a prototype. GLO: C3</p>	<p>7-0-4a Carry out procedures that comprise a fair test. Include: controlling variables, repeating experiments to increase accuracy and reliability. GLO: C2</p>	<p>7-0-4b Construct a prototype. GLO: C3</p>	<p>8-0-4a Carry out procedures that comprise a fair test. Include: controlling variables, repeating experiments to increase accuracy and reliability. GLO: C2</p>	<p>8-0-4b Construct a prototype. GLO: C3</p>
	<p>5-0-4c Work cooperatively with group members to carry out a plan, and troubleshoot problems as they arise. GLO: C7 (ELA Grade 5, 5.2.2)</p> <p>5-0-4d Assume various roles and share responsibilities as group members. GLO: C7 (ELA Grade 5, 5.2.2)</p> <p>5-0-4e Use tools and materials in a manner that ensures personal safety and the safety of others. Include: keeping an uncluttered workspace; putting equipment away after its use; handling glassware with care. GLO: C1</p>	<p>6-0-4c Work cooperatively with group members to carry out a plan, and troubleshoot problems as they arise. GLO: C7 (ELA Grade 6, 5.2.2)</p> <p>6-0-4d Assume various roles to achieve group goals. GLO: C7 (ELA Grade 6, 5.2.2)</p> <p>6-0-4e Use tools and materials in a manner that ensures personal safety and the safety of others. Include: keeping an uncluttered workspace; putting equipment away after its use; handling glassware with care. GLO: C1</p>	<p>7-0-4c Work cooperatively with team members to carry out a plan, and troubleshoot problems as they arise. GLO: C7 (ELA Grade 7, 5.2.1)</p> <p>7-0-4d Assume various roles to achieve group goals. GLO: C7 (ELA Grade 7, 5.2.2)</p> <p>7-0-4e Demonstrate work habits that ensure personal safety, the safety of others, and consideration for the environment. Include: keeping an uncluttered workspace; putting equipment away after use; handling glassware with care; wearing goggles when required; disposing of materials safely and responsibly. GLO: C1</p> <p>7-0-4f Identify WHMIS hazard symbols that provide information on the safety of substances. GLO: C1</p>	<p>8-0-4c Work cooperatively with team members to carry out a plan, and troubleshoot problems as they arise. GLO: C7 (ELA Grade 8, 5.2.2)</p> <p>8-0-4d Identify and assume various roles to achieve group goals. GLO: C7 (ELA Grade 8, 5.2.2)</p> <p>8-0-4e Demonstrate work habits that ensure personal safety, the safety of others, and consideration for the environment. Include: keeping an uncluttered workspace; putting equipment away after use; handling glassware with care; wearing goggles when required; disposing of materials safely and responsibly. GLO: C1</p> <p>8-0-4f Identify WHMIS hazard symbols that provide information on the safety of substances. GLO: C1</p>				
Observing, Measuring, Recording	<p>5-0-5a Make observations that are relevant to a specific question. GLO: A1, A2, C2</p>	<p>5-0-5b Test a prototype or consumer product, using predetermined criteria. GLO: C3, C5</p>	<p>6-0-5a Make observations that are relevant to a specific question. GLO: A1, A2, C2</p>	<p>6-0-5b Test a prototype or consumer product, using predetermined criteria. GLO: C3, C5</p>	<p>7-0-5a Make observations that are relevant to a specific question. GLO: A1, A2, C2</p>	<p>7-0-5b Test a prototype or consumer product, using predetermined criteria. GLO: C3, C5</p>	<p>8-0-5a Make observations that are relevant to a specific question. GLO: A1, A2, C2</p>	<p>8-0-5b Test a prototype or consumer product, using predetermined criteria. GLO: C3, C5</p>
	<p>5-0-5c Select and use tools and instruments to observe, measure, and construct. Include: balance, thermometer, spring scale, weather instruments. GLO: C2, C3, C5</p> <p>5-0-5d Evaluate the appropriateness of units and measuring tools in practical contexts. GLO: C2, C5 (Math: SS-I.1.5)</p> <p>5-0-5e Estimate and measure mass/weight, length, volume, and temperature using SI and other standard units. GLO: C2, C5 (Math: SS-IV.1.5, SS-III.1.5, SS-I.1.5, SS-VIII.4.3)</p> <p>5-0-5f Record and organize observations in a variety of ways. Examples: point-form notes, sentences, labelled diagrams, charts, ordered lists of data, frequency diagrams, spread sheets... GLO: C2, C6 (ELA Grade 5, 3.3.1; Math: SP-III.2.5)</p>	<p>6-0-5c Select and use tools and instruments to observe, measure, and construct. Examples: hand lens, telescope, binoculars... GLO: C2, C3, C5</p> <p>6-0-5d Evaluate the appropriateness of units and measuring tools in practical contexts. GLO: C2, C5 (Math: SS-I.1.6)</p> <p>6-0-5e Estimate and measure accurately using SI and other standard units. GLO: C2, C5 (Math: SS-IV.1.6, SS-III.1.5, SS-I.1.5)</p> <p>6-0-5f Record and organize observations in a variety of ways. Examples: point-form notes, sentences, labelled diagrams, charts, ordered lists of data, frequency diagrams, spread sheets... GLO: C2, C6 (ELA Grade 6, 3.3.1; Math: SP-III.2.6)</p>	<p>7-0-5c Select and use tools to observe, measure, and construct. Include: microscopes, a variety of thermometers, graduated cylinders, glassware, balance. GLO: C2, C3, C5</p> <p>7-0-5d Make conversions among commonly used SI units. GLO: C2, C3 (Math: SS-IV.3.6, SS-I.3.6, SS-III.3.6)</p> <p>7-0-5e Estimate and measure accurately using SI and other standard units. Include: determining volume by displacement of water. GLO: C2, C5 (Math: SS-IV.1.6, SS-III.1.5, SS-III.1.6, SS-I.1.5)</p> <p>7-0-5f Record, compile, and display observations and data, using an appropriate format. GLO: C2, C6 (ELA Grade 7, 3.3.1; Math: SP-III.2.7)</p>	<p>8-0-5c Select and use tools to observe, measure, and construct. Include: microscope, concave and convex mirrors and lenses, chemical indicators. GLO: C2, C3, C5</p> <p>8-0-5d Make conversions among commonly used SI units. GLO: C2, C5 (Math: SS-IV.3.7, SS-I.3.6, SS-III.3.7)</p> <p>8-0-5e Estimate and measure accurately using SI and other standard units. Include: determining volume by displacement of water. GLO: C2, C5 (Math: SS-IV.1.6, SS-III.1.5, Math: SS-III.1.6, SS-I.1.5)</p> <p>8-0-5f Record, compile, and display observations and data, using an appropriate format. GLO: C2, C6 (ELA Grade 8, 3.3.1; Math: SP-III.2.8)</p>				
Analyzing and Interpreting	<p>5-0-6a Construct graphs to display data, and interpret and evaluate these and other graphs. Examples: bar graphs, frequency tallies, line plots, broken line graphs... GLO: C2, C6 (ELA Grade 5, 3.3.1; Math: SP-II.1.5, SP-III.2.5, SP-IV.1.5; TFS: 4.2.2-4.2.6)</p>	<p>5-0-6d Identify and make improvements to a prototype, and explain the rationale for the changes. GLO: C3, C4</p>	<p>6-0-6a Construct graphs to display data, and interpret and evaluate these and other graphs. Examples: frequency tallies, histograms, double-bar graphs, stem-and-leaf plots... GLO: C2, C6 (ELA Grade 6, 3.3.1; Math: SP-II.2.5, SP-III.2.6, SP-IV.1.6; TFS: 4.2.2-4.2.6)</p>	<p>6-0-6d Identify and make improvements to a prototype, and explain the rationale for the changes. GLO: C3, C4</p>	<p>7-0-6a Construct graphs to display data, and interpret and evaluate these and other graphs. Examples: frequency tallies, histograms, double-bar graphs, stem-and-leaf plots... GLO: C2, C6 (ELA Grade 7, 3.3.1; Math: SP-III.2.6; TFS: 4.2.2-4.2.6)</p> <p>7-0-6b Interpret patterns and trends in data, and infer and explain relationships. GLO: A1, A2, C2, C5</p>	<p>7-0-6d Identify and make improvements to a prototype, and explain the rationale for the changes. GLO: C3, C4</p>	<p>8-0-6a Construct graphs to display data, and interpret and evaluate these and other graphs. Examples: circle graphs... GLO: C2, C6 (ELA Grade 8, 3.3.1; Math: SP-III.2.7; TFS: 4.2.2-4.2.6)</p> <p>8-0-6b Interpret patterns and trends in data, and infer and explain relationships. GLO: A1, A2, C2, C5</p>	<p>8-0-6d Identify and make improvements to a prototype, and explain the rationale for the changes. GLO: C3, C4</p>
	<p>5-0-6c Identify and suggest explanations for patterns and discrepancies in data. GLO: A1, A2, C2, C5</p>	<p>5-0-6e Evaluate the strengths and weaknesses of a consumer product, based on predetermined criteria. GLO: C3, C4</p>	<p>6-0-6c Identify and suggest explanations for patterns and discrepancies in data. GLO: A1, A2, C2, C5</p>	<p>6-0-6e Evaluate the strengths and weaknesses of a consumer product, based on predetermined criteria. GLO: C3, C4</p>	<p>7-0-6c Identify strengths and weaknesses of different methods of collecting and displaying data, and potential sources of error. GLO: A1, A2, C2, C5 (ELA Grade 7, 3.3.3)</p>	<p>7-0-6e Evaluate the strengths and weaknesses of a consumer product, based on predetermined criteria. GLO: C3, C4</p>	<p>8-0-6c Identify strengths and weaknesses of different methods of collecting and displaying data, and potential sources of error. GLO: A1, A2, C2, C5 (ELA Grade 8, 3.3.3)</p>	<p>8-0-6e Evaluate the strengths and weaknesses of a consumer product, based on predetermined criteria. GLO: C3, C4</p>
	<p>5-0-6f Evaluate the methods used to answer a question or solve a problem. GLO: C2, C3 (ELA Grade 5, 3.3.4)</p>	<p>6-0-6f Evaluate the methods used to answer a question or solve a problem. GLO: C2, C3 (ELA Grade 6, 3.3.4)</p>	<p>7-0-6f Identify how the original plan evolved and justify the changes. GLO: C2, C3 (ELA Grade 7, 3.3.4)</p>	<p>8-0-6f Identify how the original plan evolved and justify the changes. GLO: C2, C3 (ELA Grade 8, 3.3.4)</p>				

Concluding and Applying	<p>5-0-7a Draw, with guidance, a conclusion that explains investigation results. Include: explaining patterns in data; supporting or rejecting a prediction/hypothesis. GLO: A1, A2, C2 (ELA Grade 5, 3.3.4)</p> <p>5-0-7b Base conclusions on evidence rather than pre-conceived ideas or hunches. GLO: C2, C4</p> <p>5-0-7c Identify, with guidance, a new prediction/hypothesis, based on investigation results. GLO: A1, C2 (ELA Grade 5, 3.3.4)</p>	<p>5-0-7d Propose and justify a solution to the initial problem. GLO: C3</p> <p>5-0-7e Identify new practical problems to solve. GLO: C3</p>	<p>6-0-7a Draw a conclusion that explains investigation results. Include: explaining patterns in data; supporting or rejecting a prediction/hypothesis. GLO: A1, A2, C2 (ELA Grade 6, 3.3.4)</p> <p>6-0-7b Base conclusions on evidence rather than pre-conceived ideas or hunches. GLO: C2, C4</p> <p>6-0-7c Identify a new prediction/hypothesis based on investigation results. GLO: A1, C2 (ELA Grade 6, 3.3.4)</p>	<p>6-0-7d Propose and justify a solution to the initial problem. GLO: C3</p> <p>6-0-7e Identify new practical problems to solve. GLO: C3</p>	<p>7-0-7a Draw a conclusion that explains investigation results. Include: explaining the cause and effect relationship between the dependent and independent variables; identifying alternative explanations for observations; supporting or rejecting a prediction/hypothesis. GLO: A1, A2, C2 (ELA Grade 7, 3.3.4)</p> <p>7-0-7b Critically evaluate conclusions, basing arguments on fact rather than opinion. GLO: C2, C4</p> <p>7-0-7c Identify a new prediction/hypothesis based on investigation results. GLO: A1, C2 (ELA Grade 7, 3.3.4)</p>	<p>7-0-7d Propose and justify a solution to the initial problem. GLO: C3</p> <p>7-0-7e Identify new practical problems to solve. GLO: C3</p>	<p>8-0-7a Draw a conclusion that explains investigation results. Include: explaining the cause and effect relationship between the dependent and independent variables; identifying alternative explanations for observations; supporting or rejecting a prediction/hypothesis. GLO: A1, A2, C2 (ELA Grade 8, 3.3.4)</p> <p>8-0-7b Critically evaluate conclusions, basing arguments on fact rather than opinion. GLO: C2, C4</p> <p>8-0-7c Identify a new prediction/hypothesis based on investigation results. GLO: A1, C2 (ELA Grade 8, 3.3.4)</p>	<p>8-0-7d Propose and justify a solution to the initial problem. GLO: C3</p> <p>8-0-7e Identify new practical problems to solve. GLO: C3</p>
	<p>5-0-7f Use prior knowledge and experiences selectively to make sense of new information in a variety of contexts. GLO: A2, C4 (ELA Grade 5, 1.2.1)</p> <p>5-0-7g Communicate methods, results, conclusions, and new knowledge in a variety of ways. Examples: oral, written, multimedia presentations... GLO: C6 (ELA Grade 5, 4.4.1; TFS: 3.2.2, 3.2.3)</p> <p>5-0-7h Identify, with guidance, potential applications of investigation results. GLO: C4</p>	<p>6-0-7f Reflect on prior knowledge and experiences to construct new understanding, and apply this new knowledge in other contexts. GLO: A2, C4 (ELA Grade 6, 1.2.1)</p> <p>6-0-7g Communicate methods, results, conclusions, and new knowledge in a variety of ways. Examples: oral, written, multimedia presentations... GLO: C6 (ELA Grade 6, 4.4.1; TFS: 3.2.2, 3.2.3)</p> <p>6-0-7h Identify potential applications of investigation results. GLO: C4</p>	<p>7-0-7f Reflect on prior knowledge and experiences to construct new understanding and apply this new knowledge in other contexts. GLO: A2, C4 (ELA Grade 7, 1.2.1)</p> <p>7-0-7g Communicate methods, results, conclusions, and new knowledge in a variety of ways. Examples: oral, written, multimedia presentations... GLO: C6 (ELA Grade 7, 4.4.1)</p> <p>7-0-7h Identify and evaluate potential applications of investigation results. GLO: C4</p>	<p>8-0-7f Reflect on prior knowledge and experiences to construct new understanding and apply this new knowledge in other contexts. GLO: A2, C4 (ELA Grade 8, 1.2.1)</p> <p>8-0-7g Communicate methods, results, conclusions, and new knowledge in a variety of ways. Examples: oral, written, multimedia presentations... GLO: C6 (ELA Grade 8, 4.4.1)</p> <p>8-0-7h Identify and evaluate potential applications of investigation results. GLO: C4</p>				
Reflecting on Science and Technology	<p>5-0-8a Recognize that science is a way of answering questions about the world and that there are questions that science cannot answer. GLO: A1, A3</p> <p>5-0-8b Identify examples of scientific knowledge that have developed as a result of the gradual accumulation of evidence. GLO: A2</p>	<p>5-0-8c Recognize that technology is a way of solving problems in response to human needs. GLO: A3, B2</p> <p>5-0-8d Provide examples of technologies from the past and describe how they have evolved over time. GLO: B1</p>	<p>6-0-8a Recognize that science is a way of answering questions about the world, and that there are questions that science cannot answer. GLO: A1, A3</p> <p>6-0-8b Identify examples of scientific knowledge that have developed as a result of the gradual accumulation of evidence. GLO: A2</p>	<p>6-0-8c Recognize that technology is a way of solving problems in response to human needs. GLO: A3, B2</p> <p>6-0-8d Provide examples of technologies from the past and describe how they have evolved over time. GLO: B1</p>	<p>7-0-8a Distinguish between science and technology. Include: purpose, procedures, products. GLO: A3</p> <p>7-0-8b Describe examples of how scientific knowledge has evolved in light of new evidence, and the role of technology in this evolution. GLO: A2, A5, B1</p> <p>7-0-8d Describe examples of how technologies have evolved over time in response to changing needs and scientific advances. GLO: A5, B1, B2</p>	<p>8-0-8a Distinguish between science and technology. Include: purpose, procedures, products. GLO: A3</p> <p>8-0-8b Describe examples of how scientific knowledge has evolved in light of new evidence, and the role of technology in this evolution. GLO: A2, A5, B1</p> <p>8-0-8d Describe examples of how technologies have evolved over time in response to changing needs and scientific advances. GLO: A5, B1, B2</p>		
	<p>5-0-8e Describe hobbies and careers related to science and technology. GLO: B4</p> <p>5-0-8f Recognize that science is organized into specialized disciplines. GLO: A1, B4</p> <p>5-0-8g Describe positive and negative effects of scientific and technological endeavours. Include: effects on themselves, society, the environment, and the economy. GLO: A1, B1, B3, B5</p>	<p>6-0-8e Describe hobbies and careers related to science and technology. GLO: B4</p> <p>6-0-8f Recognize that science is organized into specialized disciplines. GLO: A1, B4</p> <p>6-0-8g Describe positive and negative effects of scientific and technological endeavours. Include: effects on themselves, society, the environment, and the economy. GLO: A1, B1, B3, B5</p>	<p>7-0-8e Provide examples of Canadian institutions and individuals who have contributed to science and technology, and describe their contributions. GLO: A1, A4, B1, B4</p> <p>7-0-8f Relate personal activities in formal and informal settings to specific scientific disciplines. GLO: A1, B4</p> <p>7-0-8g Discuss societal, environmental, and economic impacts of scientific and technological endeavours. Include: local and global impacts. GLO: A1, B1, B3, B5</p>	<p>8-0-8e Provide examples of Canadian institutions and individuals who have contributed to science and technology, and describe their contributions. GLO: A1, A4, B1, B4</p> <p>8-0-8f Relate personal activities in formal and informal settings to specific scientific disciplines. GLO: A1, B4</p> <p>8-0-8g Discuss societal, environmental, and economic impacts of scientific and technological endeavours. Include: local and global impacts. GLO: A1, B1, B3, B5</p>				
Demonstrating Scientific and Technological Attitudes	<p>5-0-9a Appreciate that women and men of diverse cultural backgrounds can contribute equally to science. GLO: A4</p> <p>5-0-9b Show interest in the activities of individuals working in scientific and technological fields. GLO: B4</p> <p>5-0-9c Demonstrate confidence in their ability to carry out investigations. GLO: C5</p> <p>5-0-9d Appreciate the importance of creativity, accuracy, honesty, and perseverance as scientific and technological habits of mind. GLO: C5</p> <p>5-0-9e Be sensitive to and develop a sense of responsibility for the welfare of other humans, other living things, and the environment. GLO: B5</p> <p>5-0-9f Frequently and thoughtfully evaluate the potential consequences of their actions. GLO: B5, C4</p>	<p>6-0-9a Appreciate that women and men of diverse cultural backgrounds can contribute equally to science. GLO: A4</p> <p>6-0-9b Show interest in the activities of individuals working in scientific and technological fields. GLO: B4</p> <p>6-0-9c Demonstrate confidence in their ability to carry out investigations. GLO: C5</p> <p>6-0-9d Appreciate the importance of creativity, accuracy, honesty, and perseverance as scientific and technological habits of mind. GLO: C5</p> <p>6-0-9e Be sensitive to and develop a sense of responsibility for the welfare of other humans, other living things, and the environment. GLO: B5</p> <p>6-0-9f Frequently and thoughtfully evaluate the potential consequences of their actions. GLO: B5, C4</p>	<p>7-0-9a Appreciate and respect that science has evolved from different views held by women and men from a variety of societies and cultural backgrounds. GLO: A4</p> <p>7-0-9b Express interest in a broad scope of science and technology related fields and issues. GLO: B4</p> <p>7-0-9c Demonstrate confidence in their ability to carry out investigations. GLO: C5</p> <p>7-0-9d Value skepticism, accuracy, precision, and open-mindedness as scientific and technological habits of mind. GLO: C5</p> <p>7-0-9e Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment. GLO: B5</p> <p>7-0-9f Consider both immediate and long-term effects of their actions. GLO: B5, C4, E3</p>	<p>8-0-9a Appreciate and respect that science has evolved from different views held by women and men from a variety of societies and cultural backgrounds. GLO: A4</p> <p>8-0-9b Express interest in a broad scope of science and technology related fields and issues. GLO: B4</p> <p>8-0-9c Demonstrate confidence in their ability to carry out investigations. GLO: C5</p> <p>8-0-9d Value skepticism, accuracy, precision, and open-mindedness as scientific and technological habits of mind. GLO: C5</p> <p>8-0-9e Be sensitive and responsible in maintaining a balance between the needs of humans and a sustainable environment. GLO: B5</p> <p>8-0-9f Consider both immediate and long-term effects of their actions. GLO: B5, C4, E3</p>				