

Curriculum Correlation

Nelson B.C. Science Probe 7

GRADE 7 PROCESSES OF SCIENCE

Key Elements

Hypothesizing	Section
examine previous predictions	4.2, 4.6, 8.5
formulate questions that can be answered by scientific investigations	1.5
suggest possible explanation based upon a number of inferences	4.2, 4.6, 6.7
identify the independent and dependent variables	1.5, 6.7
determine if the key variables can be isolated for testing	1.5, 6.7, 7.7
predict cause and effect, and state a testable hypothesis	1.5, 3.3, 4.2, 4.6, 6.7, 7.7, 8.5
determine limits for the controls	1.5, 6.7, 7.7
design the experiment	1.5, 6.5, 6.7, 7.7
conduct the experiment and collect data	1.2, 1.5, 2.6, 3.3, 4.2, 4.4, 4.6, 5.3, 6.5, 6.7, 6.9, 7.2, 7.7, 8.5
analyze the results	1.2, 1.5, 2.6, 3.3, 4.2, 4.4, 4.6, 5.3, 6.7, 6.9, 7.2, 7.7, 8.5
communicate by reporting the result	1.2, 1.5, 2.6, 3.3, 4.2, 4.4, 4.6, 5.3, 6.5, 6.7, 6.9, 7.2, 7.7, 8.5, 9.2
repeat and retest if necessary	1.5, 2.6, 3.3, 4.4, 4.6, 5.3, 6.7, 6.9, 7.2, 7.7

Developing Models	Section
determine the appropriateness (and scale) of a model in answering the question	2.3, 8.3
identify the specifics of the problem observed, and select possible solutions	2.3, 7.9, 8.3
problem solve creatively, and plan a set of procedures	2.3, 8.3
determine available materials or equipment	8.3
build a prototype or model (drawings help)	8.3, 9.2
test and evaluate the model	2.3, 8.3, 9.2
communicate and present a product	8.3, 9.2
evaluate the results	2.3, 7.9, 8.3, 9.2

Prescribed Learning Outcomes

Prescribed Learning Outcome	Suggested Achievement Indicator	Section
test a hypothesis by planning and conducting an experiment that controls for two or more variables	supply relevant supporting evidence for hypotheses presented	1.5, 3.3, 4.2, 6.7, 7.7, 8.5
	develop a testable question that considers the variables involved based on previous inferences	1.5
	communicate precisely the question under observation so others can review the plan and procedures	1.5
	question the relevance of the hypothesis by checking the control and the accuracy of the testing methods (fair test)	1.5, 3.3, 4.2, 6.7, 7.7, 8.5
	communicate the results of an experiment, using graphs and charts	4.2, 3.3, 4.4, 6.5, 6.7, 7.7
create models that help to explain scientific concepts and hypotheses	observe a problem situation, and formulate a plan for investigating a solution	7.9, 9.2
	plan in detail all of the steps necessary to build or make a product, and prepare a written outline showing the order of events	8.3
	identify key components of the system or process being modelled	1.1, 2.3, 9.2
	develop a testable question that considers the variables involved (independent and dependent)	1.5
	build a relevant and appropriate model based on the available materials and constraints of the problem	2.3, 7.9, 8.3, 9.2
	apply all appropriate safety measures when building a model	7.9, 8.3, 9.2

LIFE SCIENCE

Key Elements

Vocabulary Term	Section
ecosystem	1.1
biosphere	1.3
organisms	1.1
cycle	2.7
food chain	2.2
food web	2.2
photosynthesis	2.1
sustainability	3.1
stewardship	3.7
producer	2.1
consumer	2.1
decomposer	2.1
micro-organisms	1.1

Vocabulary Term	Section
niche	2.1
population	1.1
species	1.1
community	1.1
biomes	1.3
detrivores	2.1
herbivores	2.1
carnivores	2.1
omnivores	2.1
predator	1.6
prey	1.6
habitat	1.4

Knowledge	Section
living things interact with each other and their physical environment	Ch. 1, 3.4
organisms are influenced by environmental forces, and each organism influences the environment to some extent	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3.3, 3.8
ecosystems are entire systems formed by interactions among the different living and non-living parts of the environment (e.g., forests, deserts)	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.7, 3.1
non-living physical characteristics of an ecosystem include: soil, landforms, water, sunlight, temperature	1.1, 1.2, 1.3, 1.4, 1.5
organisms interact with each other and use and recycle chemicals from the environment	1.2, 1.4, 1.5, 1.6, Awesome Science, 2.4, 2.5, 2.6, 2.7
living things need energy to carry out their activities; the flow of energy from one organism to another is part of an energy web	1.4, 2.1, 2.2, 2.4, 2.5
producers of food such as plants are related to consumers (e.g., animals) and decomposers (e.g., bacteria and fungi) in webs of interdependence called food chains and food webs	2.1, 2.2, 2.3, Awesome Science, 2.4, 2.5, 2.6
food webs are individual food chains that are linked	2.2, 2.3, 2.4, 2.5
populations are groups of the same kinds of organisms (species) living together because they share common environmental needs	1.1
populations in ecosystems tend to be regulated by predation and competition	1.6, 3.6
human activity such as logging, farming, fishing, and building can impact the living (biotic) and physical (abiotic) components of an ecosystem	Ch. 3, Unit A Making Connections

Skills and Attitudes	Section
observe and record the biotic and abiotic components in a local ecosystem	1.2, 1.3, 2.6, 3.3, 3.5
analyze limiting factors in an ecosystem	1.4, 1.5, 1.6, 2.4, 3.3
design and conduct a simulation to demonstrate control of one or more variables in an ecosystem	1.5, 3.3
create models to show large scale ecosystems	2.3, 2.4, 3.3
show respect for the environment	1.2, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7, 3.8, Unit A Making Connections

Ecosystems: Prescribed Learning Outcomes

Prescribed Learning Outcome	Suggested Achievement Indicator	Section
analyze the roles of organisms as part of interconnected food webs, populations, communities, and ecosystems	identify populations of organisms in communities and ecosystems according to simplified food webs	1.1, 1.2, 1.3, 1.6, 2.2, 2.3, 2.5
	explain how habitats provide basic needs for the organisms living in them (e.g., food, water, light)	1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.5, 2.6, 2.7
	identify factors that are critical for healthy populations and ecosystems, including air and water quality (e.g., acid rain, greenhouse gases, turbidity), and explain their significance	1.4, 3.2, 3.6
assess survival needs and interactions between organisms and the environment		3.1, 3.2, 3.6
	identify interactions between decomposers, producers, and consumers, according to the food pyramid	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.3, 2.7
	describe in detail how decomposers recycle nutrients within ecosystems, and how plants, animals, and decomposers depend on each other (composting)	Awesome Science, 2.5, 2.6, 2.7
	explain how energy is transferred through food webs and food chains within an ecosystem	2.2, 2.3, 2.4
assess the requirements for sustaining healthy local ecosystems		3.1, 3.2, 3.3, 3.6, 3.8
	create and justify a description of a suitable environment for a specific organism, taking into account the limiting factors (e.g., food, water, light, living space)	1.4, 1.5
	explain relationships between living (biotic) and non-living (abiotic) things within an ecosystem (e.g., soil, bacteria, plants, animals), with reference to several examples	1.1, 1.2, 1.3, 1.4, 1.6, 2.2, 2.6, 2.7
	evaluate the likely effects of habitat loss for certain species	3.4, 3.5
evaluate human impacts on local ecosystems		1.2, 1.3, 1.6, 3.3, 3.6, 3.8, Unit A Making Connections
	describe, using examples, how forestry practices affect ecosystems (e.g., riparian zones, fishing, forest debris, beetle kill, controlled burn)	3.4, 3.5
	determine the sources of pollutants, and analyze their effects (e.g., autos and air quality, oil spills and water contamination)	2.3, 3.2, 3.5, 6.10
	describe, using examples, how practices of Aboriginal peoples in B.C. affect environmental sustainability in a specific ecosystem	3.1, 3.5, ScienceWorks, 3.7

PHYSICAL SCIENCE

Key Elements

Vocabulary Term	Section
matter	4.3
volume	4.3
state	4.1
solid	5.1
liquid	5.1
gas	5.1
chemical change	5.2
physical change	5.2
reversible and non-reversible changes	5.2
pure substance	6.1
element	6.2
compound	6.2
mixture	6.1
solution	6.3

Vocabulary Term	Section
suspension	6.3
emulsion	6.3
solubility	6.6
concentration	6.6
dilute	6.6
saturation	6.6
supersaturated	6.6
unsaturated	6.6
dissolve	6.4
pH	6.8
acid	6.8
acidic	6.8
base	6.8
basic	6.8
neutral	6.8
hydrometer	Chapter 4 Review

Knowledge	Section
matter is anything that has mass and volume; it is generally classified as a pure substances or a mixture	4.3, 4.4, 6.1, 6.2, 6.3, 6.4, 6.5
the observable properties of matter include colour, texture, and state	4.1, Tech.Connect, Unit B Making Connections
the measurable properties of matter include density, melting, and freezing points	4.1, 4.2, 4.5, 4.6, 6.10
changes to matter can be reversible (mixtures and changes of state) and non-reversible (mechanical change such as grinding, chemical change such as cooking)	5.2, Awesome Science, 5.3, 5.4, 6.3, 6.10, Unit B Making Connections
matter is made up of tiny particles (particle model theory)	5.1, 5.2, 6.1, 6.2, 6.3.
pure substances are either elements or compounds, and their properties are always the same	6.1, 6.2
mixtures have two or more kinds of particles	6.1, 6.3, 6.4, 6.5
mixtures can be classed as solutions, suspensions, or mechanical mixtures	6.3, 6.4, 6.5, 6.6, 6.7, 6.10
mixtures can be separated physically or chemically by removing one of the components (evaporation, crystallization, filtration, dissolving, magnetic separation, flotation)	6.4, 6.5
suspensions consists of solid pieces scattered throughout the mixtures	6.3
solutions are mixtures that appear as a single substance	6.3, 6.4, 6.5, 6.6, 6.7
pH is the measure of the tendency toward acidic or basic conditions	6.8, 6.9, Unit B Making Connections

Skills and Attitudes	Section
demonstrate curiosity, skepticism, creativity, open-mindedness, accuracy, precision, honesty, and persistence as important scientific attributes	4.1, 4.2, 4.4, 4.6, Chapters 5 and 6, Unit B Making Connections
ask questions and formulate hypotheses that are tentative and testable, and draw conclusions from results	4.2, 6.7
use appropriate tools and techniques to gather, analyze, interpret, and share information	4.2, 4.4, 4.6, 5.3, 6.1, 6.2, 6.3, 6.5, 6.6, 6.7, 6.9, Unit B Making Connections
recognize that an experiment must be repeated and yield consistent results to be considered scientifically valid	6.7
develop models to represent systems or analogies about matter	5.1, 6.3
handle chemicals and equipment safely and responsibly	4.2, 4.4, 4.6, 5.3, 6.5, 6.6, 6.7, 6.9, Unit B Making Connections

Chemistry: Prescribed Learning Outcomes

Prescribed Learning Outcome	Suggested Achievement Indicator	Section
measure substances and solutions according to pH, solubility, and concentration		6.8
	describe the effects of a variety of factors (e.g., type of solute, type of solvent, temperature) on solubility	6.6
	determine factors (e.g., heat, stirring, surface area) that affect the rate at which substances dissolve	6.7
	use test papers with teacher support to carefully analyze various substances and solutions for acidic or basic characteristics (pH scale)	6.9, Unit B Making Connections
classify substances as elements, compounds, and mixtures	accurately sort products found in the home into substances, suspensions, emulsions, mechanical mixtures, and solutions found at home	6.1, 6.2, 6.3, 6.4
	correctly relate the particle theory to the properties of elements, compounds, and mixtures	5.1
conduct investigations into properties of matter	identify several qualitative (e.g., colour, texture, state) and quantitative (e.g., density, melting point, freezing point) properties of materials	4.1, 4.2, Tech.Connect, 4.3, 4.4, 4.5, 4.6, Unit B Making Connections
	accurately measure, record, and present data collected during an experiment involving solutions and mixtures	6.5, 6.7, Unit B Making Connections
	describe chemical and physical changes to matter, citing examples	5.1, 5.2, Awesome Science, 5.3, 5.4, Unit B Making Connections

EARTH AND SPACE SCIENCE

Key Elements

Vocabulary Term	Section
crust	8.1
mantle	8.1
outer core	8.1
inner core	8.1
weathering	7.5
erosion	7.6
deposition	7.6
fossil	7.4
fossil record	7.4
geologic time scale	7.4
rock cycle	7.8
plate tectonics	8.4
continental crust	8.4
mid-ocean range	8.4
delta	7.6
mountain	9.1

Vocabulary Term	Section
valley	7.6
volcano	9.5
plain	7.6
plateau	9.1
oceanic crust	8.4
convergent boundaries	9.1
divergent boundaries	9.1
transform plate boundaries/ transform fault boundaries	9.1
subduction zone	9.1
igneous rock	7.3
metamorphic rock	7.3
sedimentary rock	7.3
magma	7.3
lava	7.3
seismic waves	9.3

Knowledge	Section
Earth is broadly differentiated into a crust, mantle, and core	8.1
the geosphere refers to the physical Earth; the atmosphere refers to the air; the biosphere refers to life forms; and the hydrosphere refers to water	1.3
mountains, valleys, plains, deserts, rivers, lakes, and oceans are features of the surface of Earth	Unit C Preview, 7.6, 9.1
Earth's crust and uppermost mantle are made of large moving sections called tectonic plates	8.4
the features on the surface of Earth are formed by tectonic activity, particularly, at convergent, divergent, or transform fault tectonic plate boundaries and by the processes of wind, water, and ice that wear down surface features over time	7.5, 7.6, 7.7, 9.1, 9.2, Unit C Making Connections
the theory of plate tectonics explains how and why the tectonic plates move, and explains why Earth's surface is continually changing	8.4
stress in Earth's crust is released in tectonic plate movement and earthquakes	9.3
heat within Earth is released in volcanic activity	9.5
information about the mantle and core is obtained by recording and charting energy waves from earthquakes and by looking at rocks exposed at Earth's surface	9.3
earthquakes are common along all tectonic plate boundaries and occur deep in Earth at subduction zones	8.5, 9.3

Knowledge	Section
rocks are made of minerals that have unique properties	7.1
minerals are made from pure elements in Earth	7.1
minerals can be identified by their colour, lustre, hardness, cleavage, crystal structure, and their reaction to certain chemicals	7.1, 7.2, Unit C Making Connections
rocks are classified by how they are formed within the rock cycle and their mineral content	7.3, 7.8, Unit C Making Connections
igneous, sedimentary, and metamorphic rocks can be changed from one form to another	7.3, 7.8, 7.9, Unit C Making Connections
fossils in sedimentary rocks allow us to interpret ancient environments	7.4
the history of changes in life on Earth are recorded in the fossil record	7.4, 8.2
the geologic time scale is based on changes in life on Earth	7.4

Skills and Attitudes	Section
use analogies to visualize science concepts	7.5, 7.8, 8.1
collect data from research resources and apply to diagrams and graphs	7.9, 8.3
report on the rock cycle from lab research results and observations	7.9
observe how the positions of earthquakes, volcanoes, and mountain ranges outline the boundaries of tectonic plates	8.5
classify rock collections	7.2
examine and identify commonly found rocks and local geological formations	7.2, Unit C Making Connections
use models to predict how earthquake waves travel through Earth and how this information leads to an understanding of the interior of Earth	9.3
investigate the use of models to show large scale systems	7.3, 7.7, 7.9, 8.1, 8.2, 8.3, 8.4, 9.2

Earth's Crust: Prescribed Learning Outcomes

Prescribed Learning Outcome	Suggested Achievement Indicator	Section
compare the characteristics of Earth's core, mantle, and crust, and describe the formation of rocks	accurately list the characteristics of each layer of Earth	8.1, 9.3
	construct a flow chart to explain in detail the geological processes involved in forming minerals and rocks	7.3, 7.8
	catalogue the properties of rock and mineral samples (e.g., cleavage, colour, crystal habit, fracture, hardness, lustre, and streak) on the basis of a detailed examination	7.1, 7.2, Unit C Making Connections
analyze the dynamics of tectonic plate movement and landmass formation	explain how earthquakes have helped scientists understand Earth's structure (e.g., primary and secondary seismic waves)	9.3
	detail the effects of earthquakes, volcanoes, and fault boundaries on Earth's crust	8.4, 8.5, 9.4, 9.5
	model tectonic plate movement to show convergent, divergent, and transform plate boundaries	9.1, 9.2
explain how Earth's surface changes over time		8.3
	identify how scientists use the placement and position of an object to infer the time of events (e.g., superposition)	7.5, 7.6, 7.7, 7.8, 8.2, Unit C Making Connections
	illustrate how fossils come to be associated with sedimentary rock	7.3, 7.4
	report on how fossil record is used to record Millennium changes in Earth's surfaces	7.4