**Area of Learning: SCIENCE Kindergarten**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Plants and animals have observable features. |  | Humans interact with matter every day through familiar materials. |  | The motion of objects depends on their properties. |  | Daily and seasonal changes affect all living things. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts
* Ask simple questions about familiar objects and events

Planning and conducting* Make exploratory observations using their senses
* Safely manipulate materials
* Make simple measurements using non-standard units

Processing and analyzing data and information* Experience and interpret the local environment
* Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge
* Discuss observations
* Represent observations and ideas by drawing charts and simple pictographs

Applying and innovating* Take part in caring for self, family, classroom and school through personal approaches
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Share observations and ideas orally
* Express and reflect on personal experiences of **place**
 | *Students are expected to know the following:** **basic needs** of plants and animals
* **adaptations** of local **plants** and **animals**
* **local First Peoples uses** of plants and animals
* **properties** of **familiar materials**
* **effects of pushes/pulls** on movement
* effects of size, shape, and materials on movement
* **weather** changes
* **seasonal changes**
* **living things make changes** to accommodate daily and seasonal cycles
* First Peoples knowledge of seasonal changes
 |

**Area of Learning: SCIENCE Grade 1**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Living things have features and behaviours that help them survive in their environment. |  | Matter is useful because of its properties. |  | Light and sound can be produced and their properties can be changed. |  | Observable patterns and cycles occur in the local sky and landscape. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts
* Ask questions about familiar objects and events
* Make simple predictions about familiar objects and events

Planning and conducting* Make and record observations
* Safely manipulate materials to test ideas and predictions
* Make and record simple measurements using informal or non-standard methods

Processing and analyzing data and information* Experience and interpret the local environment
* Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge
* Sort and classify data and information using drawings, pictographs and provided tables
* Compare observations with predictions through discussion
* Identify simple patterns and connections

Evaluating* Compare observations with those of others
* Consider some environmental consequences of their actions
 | *Students are expected to know the following:** **classification** of living and non-living things
* **names** of local plants and animals
* **structural features** of living things in the local environment
* **behavioural adaptations** of animals in the local environment
* **specific properties** of materials allow us to use them in different ways
* natural and artificial **sources of light** and **sound**
* **properties of light** and **sound** depend on their source and the objects with which they interact
* **common objects in the sky**
* the knowledge of First Peoples
	+ shared First Peoples knowledge of the sky
	+ **local First Peoples** knowledge of the local landscape, plants and animals
	+ local First Peoples understanding and use of **seasonal rounds**
* **local patterns** that occur on Earth and in the sky
 |

**Area of Learning: SCIENCE Grade 1**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Applying and innovating* Take part in caring for self, family, classroom and school through personal approaches
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate observations and ideas using oral or written language, drawing, or role-play
* Express and reflect on personal experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 2**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Living things have life cycles adapted to their environment. |  | Materials can be changed through physical and chemical processes. |  | Forces influence the motion of an object. |  | Water is essential to all living things, and it cycles through the environment. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts
* Ask questions about familiar objects and events
* Make simple predictions about familiar objects and events

Planning and conducting* Make and record observations
* Safely manipulate materials to test ideas and predictions
* Make and record simple measurements using informal or non-standard methods

Processing and analyzing data and information* Experience and interpret the local environment
* Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge
* Sort and classify data and information using drawings, pictographs and provided tables
* Compare observations with predictions through discussion
* Identify simple patterns and connections

Evaluating* Compare observations with those of others
* Consider some environmental consequences of their actions
 | *Students are expected to know the following:** **metamorphic** and **non-metamorphic** life cycles of different organisms
* similarities and differences between **offspring and parent**
* **First Peoples use of their knowledge** of life cycles
* **physical** waysof changing materials
* **chemical** waysof changing materials
* types of **forces**
* **water sources** including local watersheds
* **water conservation**
* the **water cycle**
* local First People’s knowledge of water:
	+ water cycles
	+ conservation
	+ **connection to other systems**
 |

**Area of Learning: SCIENCE Grade 2**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Applying and innovating* Take part in caring for self, family, classroom and school through personal approaches
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate observations and ideas using oral or written language, drawing, or role-play
* Express and reflect on personal experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 3**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Living things are diverse, can be grouped, and interact in their ecosystems. |  | All matter is made of particles. |  | Thermal energy can be produced and transferred. |  | Wind, water, and ice change the shape of the land. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts
* Identify questions about familiar objects and events that can be investigated scientifically
* Make predictions based on prior knowledge

Planning and conducting* Suggest ways to plan and conduct an inquiry to find answers to their questions
* Consider ethical responsibilities when deciding how to conduct an experiment
* Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate
* Make observations about living and non-living things in the local environment
* Collect simple data

Processing and analyzing data and information* Experience and interpret the local environment
* Identify First Peoples perspectives and knowledge as sources of information
* Sort and classify data and information using drawings or provided tables
* Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends
* Compare results with predictions, suggesting possible reasons for findings
 | *Students are expected to know the following:** **biodiversity** in the local environment
* **the knowledge of local First Peoples** of **ecosystems**
* **energy is needed for life**
* **matter is anything that has mass and takes up space**
* **atoms are building blocks of matter**
* **sources** of **thermal energy**
* **transfer of thermal energy**
* major local **landforms**
* local First Peoples knowledge of local landforms
* observable changes in the local environment caused by erosion and deposition by wind, water, and ice
 |

**Area of Learning: SCIENCE Grade 3**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Make simple inferences based on their results and prior knowledge
* Reflect on whether an investigation was a fair test
* Demonstrate an understanding and appreciation of evidence
* Identify some simple environmental implications of their and others’ actions

Applying and innovating* Contribute to care for self, others, school, and neighbourhood through personal or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate
* Express and reflect on personal or shared experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 4**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| All living things sense and respond to their environment. |  | Matter has mass, takes up space, and can change phase. |  | Energy can be transformed.  |  | The motions of Earth and the moon cause observable patterns that affect living and non-living systems. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate curiosity about the natural world
* Observe objects and events in familiar contexts
* Identify questions about familiar objects and events that can be investigated scientifically
* Make predictions based on prior knowledge

Planning and conducting* Suggest ways to plan and conduct an inquiry to find answers to their questions
* Consider ethical responsibilities when deciding how to conduct an experiment
* Safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate
* Make observations about living and non-living things in the local environment
* Collect simple data

Processing and analyzing data and information* Experience and interpret the local environment
* Identify First Peoples perspectives and knowledge as sources of information
* Sort and classify data and information using drawings or provided tables
* Use tables, simple bar graphs, or other formats to represent data and show simple patterns and trends
* Compare results with predictions, suggesting possible reasons for findings
 | *Students are expected to know the following:** sensing and responding:
	+ **humans**
	+ **other animals**
	+ **plants**
* **biomes** aslarge regions with similar environmental features
* phases of matter
* the **effect** **of temperature** on particle movement
* energy:
	+ has **various forms**
	+ is **conserved**
* **devices that transform energy**
* local changes caused by **Earth’s axis**, **rotation**, **and orbit**
* **the effects of the relative positions of the sun, moon, and Earth** including **local First Peoples perspectives**
 |

**Area of Learning: SCIENCE Grade 4**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Make simple inferences based on their results and prior knowledge
* Reflect on whether an investigation was a fair test
* Demonstrate an understanding and appreciation of evidence
* Identify some simple environmental implications of their and others’ actions

Applying and innovating* Contribute to care for self, others, school, and neighbourhood through individual or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate
* Express and reflect on personal or shared experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 5**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Multicellular organisms have organ systems that enable them to survive and interact within their environment. |  | Solutions are homogeneous. |  | Machines are devices thattransfer force and energy. |  | Earth materials change as they move through the rock cycle and can be used as natural resources. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate a sustained curiosity about a scientific topic or problem of personal interest
* Make observations in familiar or unfamiliar contexts
* Identify questions to answer or problems to solve through scientific inquiry
* Make predictions about the findings of their inquiry

Planning and conducting* With support, plan appropriate investigations to answer their questions or solve problems they have identified
* Decide which variable should be changed and measured for a fair test
* Choose appropriate data to collect to answer their questions
* Observe, measure, and record data, using appropriate tools, including digital technologies
* Use equipment and materials safely, identifying potential risks

Processing and analyzing data and information* Experience and interpret the local environment
* Identify First Peoples perspectives and knowledge as sources of information
* Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data
* Identify patterns and connections in data
* Compare data with predictions and develop explanations for results
* Demonstrate an openness to new ideas and consideration of alternatives
 | *Students are expected to know the following:** basic structures and functions of body systems:
	+ **digestive**
	+ **musculo-skeletal**
	+ **respiratory**
	+ **circulatory**
* **solutions and solubility**
* properties of **simple machines** and their **force effects**
* machines:
	+ **constructed**
	+ **found in nature**
* **power** – the rate at which energy is transferred
* the rock cycle
* local types of **earth materials**
* First Peoples concepts of **interconnectedness** in the environment
* the nature of sustainable practices around BC’s resources
* First Peoples knowledge of sustainable practices
 |

**Area of Learning: SCIENCE Grade 5**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Evaluate whether their investigations were fair tests
* Identify possible sources of error
* Suggest improvements to their investigation methods
* Identify some of the assumptions in **secondary sources**
* Demonstrate an understanding and appreciation of evidence
* Identify some of the social, ethical, and environmental implications of the findings from their own and others’ investigations

Applying and innovating* Contribute to care for self, others, and community through personal or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate ideas, explanations, and processes in a variety of ways
* Express and reflect on personal, shared, or others’ experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 6**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment. |  | Everyday materials are often mixtures. |  | Newton’s three laws of motion describe the relationship between force and motion. |  | The solar system is part of the Milky Way, which is one of billions of galaxies. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate a sustained curiosity about a scientific topic or problem of personal interest
* Make observations in familiar or unfamiliar contexts
* Identify questions to answer or problems to solve through scientific inquiry
* Make predictions about the findings of their inquiry

Planning and conducting* With support, plan appropriate investigations to answer their questions or solve problems they have identified
* Decide which variable should be changed and measured for a fair test
* Choose appropriate data to collect to answer their questions
* Observe, measure, and record data, using appropriate tools, including digital technologies
* Use equipment and materials safely, identifying potential risks

Processing and analyzing data and information* Experience and interpret the local environment
* Identify First Peoples perspectives and knowledge as sources of information
* Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data
* Identify patterns and connections in data
* Compare data with predictions and develop explanations for results
* Demonstrate an openness to new ideas and consideration of alternatives
 | *Students are expected to know the following:** the basic structures and functions of body **systems:**
	+ **excretory**
	+ **reproductive**
	+ **hormonal**
	+ **nervous**
* **heterogeneous mixtures**
* mixtures**:**
	+ **separated using a difference in component properties**
	+ **local First Peoples knowledge** of separation and extraction methods
* **Newton’s three laws of motion**
* effects of **balanced and unbalanced forces** in **daily physical activities**
* **force of gravity**
* the overall scale, structure, and age of the universe
* the position, motion, and **components of our solar system** in our galaxy
 |

**Area of Learning: SCIENCE Grade 6**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Evaluate whether their investigations were fair tests
* Identify possible sources of error
* Suggest improvements to their investigation methods
* Identify some of the assumptions in **secondary sources**
* Demonstrate an understanding and appreciation of evidence
* Identify some of the social, ethical, and environmental implications of the findings from their own and others’ investigations

Applying and innovating* Contribute to care for self, others, and community through personal or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate ideas, explanations, and processes in a variety of ways
* Express and reflect on personal, shared, or others’ experiences of **place**
 |  |

**Area of Learning: SCIENCE Grade 7**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Evolution by natural selection provides an explanation for the diversity and survival of living things. |  | Elements consist of one type of atom, and compounds consist of atoms of different elements chemically combined.  |  | The electromagnetic force produces both electricity and magnetism. |  | Earth and its climate have changed over geological time. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest
* Make observations aimed at identifying their own questions about the natural world
* Identify a question to answer or a problem to solve through scientific inquiry
* Formulate alternative “If…then…” hypotheses based on their questions
* Make predictions about the findings of their inquiry

Planning and conducting* Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified
* Measure and control variables (dependent and independent) through fair tests
* Observe, measure, and record data (**qualitative and quantitative**), using equipment, including digital technologies, with **accuracy** and **precision**
* Use appropriate SI units and perform simple unit conversions
* Ensure that safety and ethical guidelines are followed in their investigations

Processing and analyzing data and information* Experience and interpret the local environment
* Apply First Peoples perspectives and knowledge, other **ways of knowing**, and local knowledge as sources of information
* Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, keys, models, and digital technologies as appropriate
* Seek patterns and connections in data from their own investigations and secondary sources
* Use scientific understandings to identify relationships and draw conclusions
 | *Students are expected to know the following:** **organisms have evolved over time**
* **survival needs**
* **natural selection**
* **elements** and **compounds** are **pure substances**
* **crystalline structure** of solids
* **chemical changes**
* electricity
	+ **generated in different ways** with different environmental impacts
	+ **electromagnetism**
* the fossil record provides evidence for changes in biodiversity over **geological time**
* First Peoples knowledge of changes in biodiversity over time
* evidence of **climate change** over geological time and the recent **impacts of humans:**
	+ **physical records**
	+ **local First Peoples knowledge of climate change**
 |

**Area of Learning: SCIENCE Grade 7**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected
* Identify possible sources of error and suggest improvements to their investigation methods
* Demonstrate an awareness of assumptions and bias in their own work and secondary sources
* Demonstrate an understanding and appreciation of evidence (qualitative and quantitative)
* Exercise a healthy, informed skepticism and use scientific knowledge and findings from their own investigations to evaluate claims in secondary sources
* Consider social, ethical, and environmental implications of the findings from their own and others’ investigations

Applying and innovating* Contribute to care for self, others, community, and world through personal or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate
* Express and reflect on a variety of experiences and perspectives of **place**
 |  |

**Area of Learning: SCIENCE Grade 8**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Life processes are performed at the cellular level. |  | The behaviour of matter can be explained by the kinetic molecular theory and atomic theory. |  | Energy can be transferred as both a particle and a wave. |  | The theory of plate tectonics is the unifying theory that explains Earth’s geological processes. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest
* Make observations aimed at identifying their own questions about the natural world
* Identify a question to answer or a problem to solve through scientific inquiry
* Formulate alternative “If…then…” hypotheses based on their questions
* Make predictions about the findings of their inquiry

Planning and conducting* Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified
* Measure and control variables (dependent and independent) through fair tests
* Observe, measure, and record data (**qualitative and quantitative**), using equipment, including digital technologies, with **accuracy** and **precision**
* Use appropriate SI units and perform simple unit conversions
* Ensure that safety and ethical guidelines are followed in their investigations

Processing and analyzing data and information* Experience and interpret the local environment
* Apply First Peoples perspectives and knowledge, other **ways of knowing**, and local knowledge as sources of information
* Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, keys, models, and digital technologies as appropriate
* Seek patterns and connections in data from their own investigations and secondary sources
* Use scientific understandings to identify relationships and draw conclusions
 | *Students are expected to know the following:** **characteristics of life**
* **cell theory** and **types of cells**
* photosynthesis and cellular respiration
* the relationshipof **micro-organisms** with living things:
	+ basic functions of the **immune system**
	+ **vaccination** and **antibiotics**
	+ impacts of **epidemics** and **pandemics** on human populations
* **kinetic molecular theory (KMT)**
* **atomic theory** and **models**
* **protons, neutrons, and quarks**
* **electrons and leptons**
* **types** and **effects** of electromagnetic radiation
* light:
	+ **properties**
	+ **behaviours**
	+ **ways of sensing**
* **plate tectonic movement**
* major geological events of local significance
* First Peoples knowledgeof:
	+ local geological formations
	+ significant local geological events
* layers of Earth
 |

**Area of Learning: SCIENCE Grade 8**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Reflect on their investigation methods, including the adequacy of controls on variables (dependent and independent) and the quality of the data collected
* Identify possible sources of error and suggest improvements to their investigation methods
* Demonstrate an awareness of assumptions and bias in their own work and secondary sources
* Demonstrate an understanding and appreciation of evidence (qualitative and quantitative)
* Exercise a healthy, informed skepticism and use scientific knowledge and findings from their own investigations to evaluate claims in secondary sources
* Consider social, ethical, and environmental implications of the findings from their own and others’ investigations

Applying and innovating* Contribute to care for self, others, community, and world through personal or collaborative approaches
* Co-operatively design projects
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving

Communicating* Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate
* Express and reflect on a variety of experiences and perspectives of **place**
 |  |

**Area of Learning: SCIENCE Grade 9**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Cells are derived from cells. |  | The electron arrangement of atoms impacts their chemical nature. |  | Electric current is the flow of electric charge. |  | The biosphere, geosphere, hydrosphere, and atmosphere are interconnected, as matter cycles and energy flows through them. |

**Learning Standards**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*Questioning and predicting* Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest
* Make observations aimed at identifying their own questions, including increasingly complex ones, about the natural world
* Formulate multiple hypotheses and predict multiple outcomes

Planning and conducting* Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data (qualitative and quantitative)
* Assess risks and address ethical, cultural and/or environmental issues associated with their proposed methods and those of others
* Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data
* Ensure that safety and ethical guidelines are followed in their investigations

Processing and analyzing data and information* Experience and interpret the local environment
* Apply First Peoples perspectives and knowledge, other **ways of knowing**, and local knowledge as sources of information
* Seek and analyze patterns, trends, and connections in data, including describing relationships between variables (dependent and independent) and identifying inconsistencies
* Construct, analyze and interpret graphs (including interpolation and extrapolation), models and/or diagrams
* Use knowledge of scientific concepts to draw conclusions that are consistent with evidence
* Analyze cause-and-effect relationships
 | *Students are expected to know the following:** asexual reproduction:
	+ **mitosis**
	+ **different forms**
* sexual reproduction:
	+ **meiosis**
	+ **human sexual reproduction**
* element properties as organized in the **periodic table**
* The arrangement of electrons determines the **compounds** formed by elements
* **circuits** —must be complete for electrons to flow
* **voltage**, **current**, **and resistance**
* **effects of solar radiation** on the cycling of matter and energy
* **matter** **cycles** within **biotic and abiotic** components of ecosystems
* **sustainability** **of systems**
* First Peoples knowledge of **interconnectedness** and **sustainability**
 |

**Area of Learning: SCIENCE Grade 9**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **Curricular Competencies** | **Content** |
| Evaluating* Evaluate their methods and experimental conditions, including identifying sources of error or uncertainty, confounding variables, and possible alternative explanations and conclusions
* Describe specific ways to improve their investigation methods and the quality of the data
* Evaluate the validity and limitations of a model or analogy in relation to the phenomenon modelled
* Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and secondary sources
* Consider the changes in knowledge over time as tools and technologies have developed
* Connect scientific explorations to careers in science
* Exercise a healthy, informed skepticism, and use scientific knowledge and findings to form their own investigations and to evaluate claims in secondary sources
* Consider social, ethical, and environmental implications of the findings from their own and others’ investigations
* Critically analyze the validity of information in secondary sources and evaluate the approaches used to solve problems

Applying and innovating* Contribute to care for self, others, community, and world through individual or collaborative approaches
* Transfer and apply learning to new situations
* Generate and introduce new or refined ideas when problem solving
* Contribute to finding solutions to problems at a local and/or global level through inquiry
* Consider the role of scientists in innovation

Communicating* Formulate physical or mental theoretical models to describe a phenomenon
* Communicate scientific ideas, claims, information, and perhaps a suggested course of action, for a specific purpose and audience, constructing evidence-based arguments and using appropriate scientific language, conventions, and representations
* Express and reflect on a variety of experiences, perspectives, and worldviews through **place**
 |  |