

Science 9 Unit A Biological Diversity Checklist

- _____ I can identify the variation between species, between ecosystems and within ecosystems.
- _____ I can describe an organisms niche, community and population.
- _____ I can describe the three types of symbiosis (mutualism, commensalism and parasitism).

- _____ I can distinguish between asexual and sexual reproduction.
- _____ I can describe the difference between continuous and discrete variation
- _____ I can describe and give an example of the four types of asexual reproduction (binary fission, budding, spore production and vegetative reproduction).
- _____ I can describe the two types of sexual reproduction (cross-fertilization and sexual reproduction).
- _____ I can describe describe the formation of a zygote from a gamete.
- _____ I can distinguish between heritable and non heritable characteristics.
- _____ I can identify dominant and recessive genes.

- _____ I can identify the relationship between chromosomes, genes and DNA.
- _____ I can identify mitosis and binary fission as cell division that leads to identical daughter cells.
- _____ I can identify meiosis as the formation of sex cells.
- _____ I can describe the advantages and disadvantages of sexual and asexual reproduction.
- _____ I can distinguish between and identify examples of natural and artificial selection.

- _____ I can distinguish between generalist and specialist species.
- _____ I can distinguish between extinction and extirpation as well as the causes of each.
- _____ I can identify strategies for minimizing the loss of species diversity (ex-situ and in-situ conservation).

_____ I can describe artificial insemination, invitro fertilization, cloning, and genetic engineering.

_____ I can identify and describe manipulated, responding and controlled variables.

_____ I can read and interpret data on charts and graphs.

Science 9 Unit B Matter & Chemical Change

- _____ I can identify WHMIS and lab safety rules.
- _____ I can identify physical and chemical properties of matter.
- _____ I can classify materials based on their properties and composition (pure substances (2) and mixtures (4)).
- _____ I can identify physical and chemical changes.
- _____ I can identify evidence of a chemical change.
- _____ I can describe three reactions involving oxygen (combustion, corrosion and photosynthesis/ cellular respiration).
- _____ I can identify and explain exothermic and endothermic reactions.
- _____ I can describe the four different ways of affecting reaction rates.
- _____ I can apply the law of conservation of mass.
- _____ I can use the periodic table to identify different families, periods, metals, nonmetals and metalloids.
- _____ I can explain the different theories of the models of the atom (Dalton, Rutherford, Thompson, Bohr, Nagaoka, Chadwick and the Quantum Mechanical Model).
- _____ I can identify the subatomic particles in an atom.
- _____ I can identify the relationship between the structure of atoms in each group and the properties of elements in that group.
- _____ I can distinguish between ionic and molecular compounds.
- _____ I can name and write formulas for ionic and molecular compounds.
- _____ I can identify common household chemicals.
- _____ I can identify how many elements and atoms are in a molecule.
- _____ I can assemble or draw simple models of molecular and ionic compounds.

_____ I can write simple word equations and chemical formulas.

_____ I can state a prediction and a hypothesis based on background information.

_____ I can demonstrate proper knowledge of WHMIS by using proper techniques for handling and disposing of laboratory materials.

_____ I can analyze qualitative and quantitative data.

Science 9 Unit C Environmental Chemistry Checklist

- _____ I can identify common organic and inorganic substances that are essential for health and growth.
- _____ I can name and describe lipids, carbohydrates, nucleic acids, and proteins.
- _____ I can describe and recognize processes by which chemicals move through the environment. (dilution, dispersion, deposition and biomagnification)
- _____ I can describe the uptake of materials by living things through ingestion, absorption, elimination, diffusion, osmosis and active transport.
- _____ I can investigate materials that are hard to break down and eliminate.
- _____ I can identify considerations that decide what substances can be released into the environment.
- _____ I can identify substrates and nutrient levels for living things.
- _____ I can describe the use of biological monitoring.
- _____ I can identify chemical factors that affect the health and distribution of living things such as oxygen, pH and nutrients.
- _____ I can calculate chemical concentration in parts per million, billion and trillion.
- _____ I can identify the pH of acids, bases and neutral substances.
- _____ I can describe the effects of acids and bases on living and non-living things.
- _____ I can describe neutralization reactions.
- _____ I can describe ways materials can be transferred through the soil, air and water.
- _____ I can describe biodegradation.
- _____ I can identify the use of hazardous chemicals on the environment by using LD50.
- _____ I can evaluate potential risks of everyday situations on the environment.

Science 9 Unit D Electrical Principles & Technologies

Checklist

- _____ I can identify how devices create and convert energy from one form to another (mechanical, thermal, chemical and electrical).
- _____ I can understand how different chemicals make different batteries.
- _____ I can describe how a generator and a motor work.
- _____ I can modify the parts of a St. Louis motor and predict the resulting changes.

- _____ I can assess potential dangers of an electrical device by knowing the difference between amperage and voltage.
- _____ I can distinguish safe and unsafe activities related to electricity.
- _____ I can identify the difference between static and current electricity and give examples of both.
- _____ I can describe the difference in resistance between a conductor and an insulator.
- _____ I can use switches, resistors and rheostats to control electrical flow.
- _____ I can describe the relationship between current, resistance and voltage ie as resistance increases current decreases.
- _____ I can measure volts and amps in circuits and calculate resistance using ohm's law.
- _____ I can create parallel and series circuits.
- _____ I can draw circuit diagrams and identify electrical symbols.
- _____ I can identify the similarities and differences between microcircuits and circuits in the house.

- _____ I can use the formulas and identify the units of the following equations $P=IV$ and $E= Pt$.
- _____ I can describe energy losses in electrical devices.
- _____ I can calculate efficiency in electrical devices as $\text{output/input} \times 100$.

_____ I can identify techniques for reducing waste of energy in common household devices.

_____ I can identify and evaluate sources of renewable and nonrenewable electrical energy.

_____ I can describe the environmental impacts of electricity generation.

_____ I can evaluate electrical technologies in terms of benefits and impacts.

_____ I can describe issues involving conservation of energy and suggest ways to improve the sustainability of energy use.

Science 9 Unit E Space Exploration Checklist

- _____ I can identify different perspectives on the theories of earth and space.
- _____ I can identify types of technology used to observe the universe.
- _____ I can describe the different celestial bodies.
- _____ I can describe the characteristics of the planets in our solar system compared to Earth.
- _____ I can use techniques for determining the position and motion of objects in space including models, estimation, triangulation altitude and azimuth.
- _____ I can describe eclipses, and meteor showers.
- _____ I can identify challenges that must be met in developing life-support systems in space (gravity, temperature, water)
- _____ I can describe technology used to support and sustain life in space.
- _____ I can describe scientific technologies and principles used for space transport.
- _____ I can identify materials created for space that are used on Earth.
- _____ I can describe the development of artificial satellites and what they are used for. (communication, weather, GPS and military)
- _____ I can explain the operation of reflecting and refracting telescopes.
- _____ I can explain the role of radio and optical telescopes in determining the characteristics of stars.
- _____ I can describe how global positioning systems and remote sensing systems operate.
- _____ I can identify some disadvantages of space exploration.
- _____ I can identify Canadian contributions to the space program ie Canadarm.
- _____ I can identify and analyze environmental, political, economical and ethical issues as they relate to space exploration and development.