

Student _____				Course <u>Grade 8 Science</u>
R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 1 – Water Systems on Earth’s Surface				
1.1 Describe major interactions among the hydrosphere, lithosphere and atmosphere (332-3)				
1.2 Define water cycle				
1.3 Demonstrate the importance of choosing words that are scientifically appropriate by using these words in context. Include: (i) hydrologist (ii) oceanographer (109-13)				
1.4 Sketch and label a diagram of the water cycle				
1.5 Distinguish between ocean water and fresh water. Include: (i) salinity (ii) density (iii) freezing point				
1.6 Identify sources of fresh water. Including: (i) drainage basins (ii) ground water (iii) glaciers				
1.7 Describe how long periods of global warming affect glaciers and describe the consequent effects on the environment. (311-12)				
1.8 Identify when the last ice age began and ended and what parts of North America were covered in ice.				
1.9 Apply the concept of systems to show how a change in one component of a body of water causes change in other components in that system. (111-6)				
1.10 Provide examples of problems related to the oceans that cannot be completely resolved using scientific and technological knowledge. (113-10)				

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Unit 1 – Water Systems on Earth’s Surface				
1.11 Describe processes that lead to the development of ocean basins and continental drainage systems. (311-7) Include: (i) volcanic action (ii) plate tectonics (iii) erosion (iv) glaciation				
1.12 Investigate technologies that have assisted scientists to research ocean basins. (111-3, 209-5) Include: (i) sonar (ii) satellites (iii) core sampling (iv) underwater photography/ videography (v) deep sea submersibles (vi) diving				
1.13 Provide examples of how technologies, used to investigate the ocean floor, have improved over time. (110-8)				
1.14 Research underwater exploration technologies to note significant changes and improvements from past to present. Include: (i) diving vs. submersibles (ii) wire line depth probes vs. sonar				
1.15 Identify some strengths and weaknesses of technologies used to investigate the ocean floor. (210-3)				

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Unit 1 – Water Systems on Earth’s Surface				
1.16 Recognize that no single data collection method provides a complete picture of the ocean floor.				
1.17 Using a diagram, illustrate a typical continental margin from coastal shoreline to mid-ocean ridge. Include: (i) continental shelf (ii) continental slope (iii) abyssal plain (iv) mid-ocean ridge				
1.18 Provide examples of public and private Canadian institutions that support scientific and technological research involving the oceans. (112-5) Include: (i) Environment Canada (ii) Federal Fisheries (iii) Ocean Sciences Centre (iv) Centre for Cold Ocean Research C-CORE at Memorial University				
1.19 Describe the interactions of the ocean currents, winds, and regional climates (311-9)				
1.20 Define ocean current				
1.21 Identify the two types of ocean currents. Include: (i) surface currents, and (ii) deep water currents				

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Unit 1 – Water Systems on Earth’s Surface				
1.22 Identify and explain how temperature differences create deep water currents.				
1.23 Identify wind action as a cause of surface currents				
1.24 Identify and explain how other factors influence the formation and movement of ocean currents. Include: (i) salinity (ii) Earth’s spin (Coriolis effect) (iii) shape of continents (iv) temperature				
1.25 Identify local ocean currents. Include: (i) Labrador current (cold) (ii) Gulf Stream (warm)				
1.26 Carry out procedures in order to investigate how temperature differences cause deep water currents. (209-1)				
1.27 Select appropriate methods and tools for collecting data (208-8)				
1.28 Use tools and apparatus safely (209-6)				
1.29 Interpret trends in data, and explain relationships among the variables (210-6)				
1.30 Communicate questions, and results using notes, and drawings (211-2)				

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Unit 1 – Water Systems on Earth’s Surface				
1.31 State a conclusion about the formation of deep water currents (209-4, 210-11)				
1.32 Explain how waves and tides are generated. (311-10a)				
1.33 Define wave				
1.34 Identify that waves on the surface of water are the result of a transfer of energy from moving air to the water				
1.35 Define and illustrate the following wave features: (i) wave length (ii) wave height (iii) crest (iv) trough				
1.36 Distinguish between ocean waves, swells, and breakers				
1.37 Identify that as waves approach a shoreline the wave length decreases and wave height increases				
1.38 Define tsunami				

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Unit 1 – Water Systems on Earth’s Surface

1.39 Define tide

1.39 Define tide

1.40 Explain and illustrate how tides are generated by the gravitational pull of the moon.

1.41 Define tidal range

1.42 Distinguish between spring tides and neap tides

1.43 Describe the processes of erosion and deposition in relation to the interaction of waves and tides with shorelines. (311-10b, 311-11)

1.44 Identify that wave and tide interactions with shorelines depend on:

- (i) shape of the shoreline
- (ii) slope of the shoreline
- (iii) type of rock material
- (iv) wave energy

1.45 Define headlands and bays

1.46 Explain how waves affect headlands and bays differently

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Unit 1 – Water Systems on Earth’s Surface

1.47 Investigate how shoreline slope and rock type determine the type of interaction between waves and shorelines

1.48 Research information, from various print and electronic sources, on the processes of erosion and deposition that result from wave action and water flow. (209-5, 311-11) Include:
(i) beaches
(ii) shoal
(iii) sand bars
(iv) sea caves
(v) sea arches
(vi) sea stacks

1.49 Provide examples of various technologies designed to contain damage due to waves and tides. (112-3)

1.50 Investigate, using print and electronic media, recent and past events (storms or tides) that have affected local shorelines creating damage to property and the environment.

1.51 Research technologies used to prevent or reduce wave action along shorelines where human development is occurring. Include:
(i) breakwaters
(ii) jetties/wharves
(iii) vegetation

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Unit 1 – Water Systems on Earth’s Surface

1.52 Define heat capacity

1.53 Describe how the heat capacity of water relates to climate.

1.54 Describe how convection affects weather

1.55 Describe how oceans moderate climate

1.56 Distinguish between the effects of El Niño and La Niña as global climatic influences

1.57 Recognize how Newfoundland and Labrador’s close proximity to the Labrador Current and the Gulf Stream affect our climate. Include:

- (i) frequency of fog
- (ii) temperature fluctuations within short time frames

1.58 Analyze factors that affect productivity and species distribution in freshwater and marine environments (311-8)

1.59 Describe species found in freshwater environments. Include:

- (i) lakes and ponds
- (ii) wetlands
- (iii) rivers and streams
- (iv) estuaries

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Unit 1 – Water Systems on Earth’s Surface

1.60 Describe species found in saltwater environments. Include:

- (i) pelagic zone
- (ii) benthic zone

1.61 Select appropriate methods and tools for collecting data and information and for solving problems (208-8)

1.62 Interpret patterns and trends in data, and infer and explain relationships among the variables (210-6)

1.63 Prepare a presentation or report on the effect of abiotic factors on the distribution of species in freshwater and marine environments and evaluate processes used in planning and completing the task. (211-2, 211-4)

1.64 Identify the effects of abiotic factors on plant and animal distributions in marine and freshwater ecosystems. (208-2, 306-3) Include:

- (i) temperature
- (ii) dissolved oxygen
- (iii) phosphates
- (iv) pH
- (v) turbidity
- (vi) pollution
- (vii) upwelling (marine)
- (viii) salinity (marine)
- (ix) ocean currents (marine)

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Unit 1 – Water Systems on Earth’s Surface				
1.65 Predict and interpret trends in populations of a marine species from graphical data by interpolating and extrapolating data. (210-4, 210-6)				
1.66 Describe some positive and negative effects of marine technologies on ocean species. (113-2)				
1.67 Discuss how new technologies have contributed to over-fishing				
1.68 Discuss how the offshore oil industry impacts marine environments				
1.69 Discuss potential impacts aquaculture technologies have on marine environment				
Unit 2 – Optics				
2.1 Provide examples of ideas and theories of light used in the past to explain observed properties. (110-1) Include: (i) Pythagoras’ belief that light consisted of beams (ii) Michelson’s experiment to measure the speed of light				
2.2 Identify the speed of light as 3×10^8 m/s.				
2.3 Compare the speed of light to the speed of sound using thunder and lightning as an example.				

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Unit 2 – Optics				
2.4 Provide examples of how scientific knowledge of light resulted in the development of early technologies. (111-1) Include: (i) microscope (ii) telescope				
2.5 Define light as a form of energy that can be detected by the human eye.				
2.6 Identify and describe properties of visible light. (308-8) Include the following properties, definitions and examples: (i) travels in a straight line (rectilinear propagation) e.g. shadow formation (ii) reflects (reflection) e.g. mirrors (specular) and dust (diffuse) (iii) refracts (refraction) e.g. bent stick effect (iv) disperses (dispersion) e.g. formation of a rainbow as light separates into its constituent colors. (v) travels through a vacuum (does not require a medium) e.g. light from sun and stars reaching earth through space (vi) travels to different degrees through transparent, translucent and opaque materials e.g. window pane, frosted window				
2.7 Identify and evaluate potential applications of what was learned concerning refraction. (210-12)				
2.8 Use a prism to observe the dispersion of light.				

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Unit 2 – Optics				
2.9 Define the visible light spectrum.				
2.10 List the constituent colors of white light, in order of degree of refraction.				
2.11 Explain the importance of using the words frequency and wavelength correctly. (109-13)				
2.12 Define frequency.				
2.13 Define wavelength.				
2.14 Relate the degree of refraction for each of the constituent colors to its wavelength (longest wavelength refracts the least).				
2.15 Describe the relationship between frequency and wavelength. Include: (i) high frequency waves have short wavelengths (ii) low frequency waves have long wavelengths				
2.16 Compare properties of visible light to the properties of other types of electromagnetic radiation, including infrared, ultraviolet, X-rays, microwaves, and radio waves. (308-12)				

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Unit 2 – Optics				
2.17 Describe the electromagnetic spectrum in terms of wavelength, frequency, and energy. Include, in order of decreasing wavelength (increasing frequency): <ul style="list-style-type: none"> (i) radio waves (ii) microwaves (iii) infrared (iv) visible light (v) ultraviolet (vi) x-rays 				
2.18 Describe different types of electromagnetic radiation, including infrared, ultraviolet, X-rays, microwaves, and radio waves. (308-11)				
2.19 Provide examples of the use of each type of electromagnetic radiation. Include: <ul style="list-style-type: none"> (i) infrared: motion sensors (ii) radio waves: telecommunications (iii) microwaves: cooking food (iv) ultraviolet: sun tanning (v) x-rays: medical detection 				
2.20 Describe possible negative and positive effects of technologies associated with electromagnetic radiation. (113-2)				

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Unit 2 – Optics				
2.21 Indicate that generally higher energy electromagnetic radiation is more harmful to humans.				
2.22 Recognize that there are positive and negative effects of exposure to electromagnetic radiation. Include: <ul style="list-style-type: none"> (i) x-rays: positive-medical detection, negative-over exposure can lead to cancer (ii) ultraviolet: positive-used to treat jaundice in babies, negative-skin cancer (iii) radio waves: positive-improved telecommunications, negative-uncertain of long term exposure effects 				
2.23 Formulate operational definitions for incidence, reflection, and the normal. (208-7)				
2.24 Define: <ul style="list-style-type: none"> (i) incident light ray (ii) reflected light ray (iii) normal (iv) angle of incidence (v) angle of reflection (vi) specular reflection (vii) diffuse reflection 				

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Unit 2 – Optics				
2.25 Describe applications of the laws of reflection in everyday life. (308-9B) Include: (i) specular reflection (ii) diffuse reflection				
2.26 Estimate angles of incidence and reflection. (209-2)				
2.27 Recognize that the angle of incidence is equal to the angle of reflection.				
2.28 State the Laws of Reflection.				
2.29 Recognize that a ray diagram is a useful way to represent the behaviour of light.				
2.30 Use mirrors effectively and accurately for investigating the characteristics of images formed. (209-3)				
2.31 Define and delimit questions and problems to facilitate investigation. (208-3)				
2.32 State a conclusion, based on experimental data, and explain how evidence gathered supports or refutes an initial idea. (210-11)				

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Unit 2 – Optics				
2.33 Construct ray diagrams to describe the formation of an image in a plane mirror. Include: (i) angle of incidence and angle of reflection are always equal (ii) the image and object distance are always equal				
2.34 Construct a classification key of mirrors. (210-1)				
2.35 Describe three types of mirrors. Include: (i) plane (ii) concave (iii) convex				
2.36 Provide examples of each type of mirror. Include: (i) bathroom mirror (plane) (ii) inside of a metal spoon (concave) (iii) safety mirror on the front of a school bus (convex)				
2.37 Use mirrors effectively and accurately for investigating the characteristics of images formed. (209-3)				
2.38 Describe the image size and image orientation using a variety of mirrors. Include: (i) plane (ii) convex (iii) concave				

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Unit 2 – Optics				
2.39 Interpret patterns and trends in data, and infer and explain relationships among the variables. (210-6)				
2.40 Define the focal point, focal length and the principle axis.				
2.41 State a prediction and a hypothesis based on background information or an observed pattern of events. (208-5)				
2.42 Design an experiment and identify major variables. (208-6)				
2.43 Use mirrors effectively and accurately for investigating the characteristics of images formed. (209-3)				
2.44 Describe how three incident rays reflect on curved mirrors. Include: (i) rays traveling parallel to the principal axis (ii) rays traveling through the focal point. (iii) rays incident to the mirror at the centre of curvature.				
2.45 Describe the formation of images in curved mirrors.				

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Unit 2 – Optics				
2.46 Construct ray diagrams showing the formation of images in curved mirrors. Include: (i) convex mirrors (ii) concave mirrors, when the object is in different positions. Include: <ul style="list-style-type: none">• object between focal point and mirror• object between focal point and 2x focal length• object beyond 2x focal length				
2.47 Describe the characteristics of images formed using concave and convex mirrors. Include: (i) size (ii) upright or inverted (iii) real or virtual				
2.48 Differentiate between real and virtual images.				
2.49 Identify new questions and problems concerning light reflection that arise from what was learned. (210-16)				
2.50 Work cooperatively and collaboratively with others to plan and safely construct an optical device using mirrors. (209-6, 211-1)				
2.51 Identify and correct practical problems in the way a constructed optical device functions. (210-14)				

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Unit 2 – Optics				
2.52 Identify questions to investigate involving refraction arising from practical problems and issues. (208-2) Include: (i) the bent stick effect (ii) apparent position of a fish under water				
2.53 Describe qualitatively how visible light is refracted. (308-10)				
2.54 Define the process of light refraction. Include: (i) incident ray (ii) refracted ray (iii) angle of incidence (iv) angle of refraction				
2.55 Indicate that the speed of light decreases as it travels from one medium to another of greater density, and vice versa.				
2.56 Estimate angles of incidence and refraction. (209-2) Include: (i) as light moves from a less dense medium to a more dense medium (ii) as light moves from a more dense medium to a less dense medium				
2.57 Identify that a light ray traveling into a medium of greater density will bend towards the normal, and vice versa.				

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Unit 2 – Optics				
2.58 Predict the effect of transparent media of varying densities on the angle of refraction of light. (208-5) Include: (i) vegetable oil (ii) water (iii) rubbing alcohol				
2.59 Construct a classification key of lenses. (210-1)				
2.60 Describe two types of lenses. Include: (i) convex (ii) concave				
2.61 Provide examples of each type of lens. Include: (i) magnifying glass (convex) (ii) eye glasses (convex) (iii) eye glasses (concave)				
2.62 Describe how lenses correct near-sightedness and far-sightedness.				
2.63 Estimate focal length of a convex lens by finding its focal point. (209-2)				
2.64 Define focal length.				

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Unit 2 – Optics				
2.65 Rephrase questions related to refraction and lenses in a testable form. (208-1)				
2.66 Describe how three incident rays refract through convex and concave lenses. Include the following incident rays: (i) traveling parallel to the principal axis (ii) traveling through the optical centre (iii) traveling through the focus				
2.67 Construct ray diagrams to describe the formation of an image in a double convex lens, when the object’s distance changes. Include: (i) object between focal point and lens (ii) object between focal point and 2x focal length (iii) object beyond 2x focal length				
2.68 Construct ray diagrams to describe the formation of an image in a double concave lens, when the object’s distance changes. Include: (i) object between focal point and lens (ii) object between focal point and 2x focal length (iii) object beyond 2x focal length				
2.69 Describe the general characteristics of the image for all cases. Include: (i) distance (ii) size (iii) orientation				

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Unit 2 – Optics				
2.70 Describe how optical technologies have developed through systematic trial-and-error processes constrained by the optical properties of the materials. (109-5)				
2.71 Provide examples of optical technologies that enable scientific research and relate personal activities associated with such technologies. (109-10, 111-3) Include: (i) telescopes (refracting and reflecting) (ii) microscopes				
2.72 Provide examples related to optics that illustrate that scientific and technological activities take place individually and in group settings. (112-8) Include: (i) Galileo – telescope (individual) (ii) Newton – telescope (individual) (iii) Hubble Telescope (group) (iv) Laser technologies (group)				

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Unit 3 – Fluids				
3.1 Identify questions to investigate arising from practical problems and issues involving fluids. (208-2)				
3.2 Define fluid				
3.3 Compare solids, liquids and gases in terms of shape and volume, and using the particle theory of matter. Include: (i) shape (ii) volume (iii) particle arrangement (iv) particle movement				
3.4 Identify examples of fluids in everyday life. Include: (i) compressed air in tires (ii) water (iii) syrup				
3.5 Define viscosity				
3.6 Relate the viscosity of a liquid to the amount of friction between particles.				

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Unit 3 – Fluids				
3.7 Identify examples of viscosity in everyday life. Include: (i) motor oil (ii) paints (iii) foods				
3.8 Define flow rate				
3.9 Identify examples of liquids with different flow rates. Include: (i) water (ii) dishwashing liquid (iii) corn syrup				
3.10 Identify and relate personal activities and potential applications to fluid dynamics. (109-10, 112-7, 210-12). Include: (i) Pancake batter (ii) Motor oil				
3.11 Compare the viscosity of various liquids. (307 6)				
3.12 Rephrase questions in a testable form and clearly define practical problems. (208-1)				

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Unit 3 – Fluids				
3.13 Identify and suggest explanation for discrepancies in data (210-7)				
3.14 Compile and display data using a bar graph (210-2)				
3.15 Design an experiment to test the viscosity of various common fluids and identify the major variables. (208 6)				
3.16 Carry out procedures controlling the major variables (209-1)				
3.17 Describe factors that can modify the viscosity of a liquid. (307 7) Teachers could use a number of examples to explain the factors affecting the viscosity.				
3.18 Explain a liquid’s resistance to flow in terms of the particle theory of matter. Include: (i) strength of attraction between particles (ii) temperature (iii) concentration.				
3.19 Work cooperatively with team members to design an experiment and identify major variables in order to investigate the effect of temperature and concentration on viscosity. (208 6, 211-3)				
3.20 Use a temperature-measuring technology effectively and accurately for collecting data in temperature-viscosity investigations. (209-3)				

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Unit 3 – Fluids				
3.21 Demonstrate knowledge of WHMIS standards, for example, by demonstrating the correct methods of disposal of various oils. (209-7)				
3.22 Describe the relationship among the mass, volume, and density of solids, liquids and gases using the particle model of matter. (307 8)				
3.23 Describe the relationship between state of matter (solid, liquid or gas) and density using the particle model of matter.				
3.24 Describe the relationship between mass, volume and density.				
3.25 Analyze quantitatively the density of various substances. (307 11)				
3.26 Calculate the density of a material, given mass and volume				
3.27 Calculate the mass of a material, given density and volume				
3.28 Calculate the volume of a material, given density and mass				
3.29 Use instruments effectively and accurately for collecting data. (209-3)				
3.30 Select appropriate methods and tools, and use them safely, in order to determine the volume of irregular shaped objects by water displacement. (208-8, 209-6)				

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Unit 3 – Fluids				
3.31 Identify, and suggest explanations for, discrepancies in data. (210-7)				
3.32 Calculate the density of various objects. (210-9) Include: (i) irregular shaped objects (ii) liquids (iii) granular objects (iv) regular shaped objects				
3.33 Explain the effects of changes in temperature on the density of solids, liquids, and gases and relate the result to the particle model of matter. (307-9)				
3.34 Identify examples of density changes (resulting from a temperature change) in everyday life. Include: (i) hot air balloons (ii) warm vs. cool tire pressure (iii) water in its three states				
3.35 Describe situations in life where the density of substances naturally changes or is intentionally changed. Include: (i) drying of wood (seasoning of wood) (ii) hot air balloons (iii) salt water being easier to float in (307-10)				
3.36 Describe the movement of objects in terms of balanced and unbalanced forces. (309-2)				

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Unit 3 – Fluids				
3.37 Define force				
3.38 Define balanced and unbalanced forces				
3.39 Describe qualitatively the difference between mass and weight. (309-1)				
3.40 Describe the connection between weight, buoyancy, and sinking or floating. (309-2)				
3.41 Define buoyant force				
3.42 Apply the concept of balanced and unbalanced forces to the buoyancy and weight of an object to explain why it sinks or floats.				
3.43 Identify questions to investigate arising from practical problems involving density and buoyancy. (208-2)				
3.44 List examples of materials that may sink or float, depending on the application. Include: (i) wooden boats vs. a water logged stick (ii) metal block vs. metal boats (iii) a sealed, empty plastic bottle vs. a plastic bottle full of water				

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Unit 3 – Fluids				
3.45 Define average density				
3.46 Indicate that an object will float if it is less dense than the fluid in which it is immersed.				
3.47 Indicate that an object will sink if it is denser than the fluid in which it is immersed.				
3.48 Provide examples of technologies that have been developed because of our understanding of density and buoyancy. (111-1) Include: (i) personal flotation devices (ex. life jackets) (ii) submarines (iii) hot air balloons				
3.49 Describe quantitatively the relationship between force, area, and pressure. (309-3)				
3.50 Define pressure				
3.51 Define the Pascal (Pa) unit				
3.52 Define atmospheric pressure				

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Unit 3 – Fluids				
3.53 Calculate the pressure, given force and area				
3.54 Calculate the force, given pressure and area				
3.55 Calculate the area, given pressure and force				
3.56 Describe the science underlying hydraulic technologies. (111-5)				
3.57 Define hydraulic system				
3.58 Identify a liquid as an incompressible fluid (ie. definite volume)				
3.59 Define pneumatic system.				
3.60 Identify a gas as a compressible fluid (ie. indefinite volume)				
3.61 State Pascal's law				

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Unit 3 – Fluids				
3.62 Identify examples of applications of Pascal’s law. Include: (i) a car lift or hoist (ii) an hydraulic jack (iii) automobile braking system				
3.63 Identify questions to investigate arising from practical problems and issues.				
3.64 Explain qualitatively the relationship among pressure, volume, and temperature when liquid and gaseous fluids are compressed or heated. (309-4)				
3.65 Indicate that increasing the temperature of a gas results in an increase in volume (pressure being held constant)				
3.66 Indicate that increasing the pressure on a gas results in a decrease in volume (temperature being held constant)				
3.67 Indicate that increasing temperature of a gas results in an increase in pressure (volume being held constant)				
3.68 Interpret patterns and trends in data and infer and explain relationships among the variables (210-6)				

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Unit 3 – Fluids				
3.69 Provide examples illustrating the relationship among pressure, volume and temperature when gaseous fluids are compressed or heated. Include: <ul style="list-style-type: none"> (i) propane cylinders (increase in pressure with a decrease in volume at constant temperature) (ii) heating an aerosol can result in an explosion (increase in temperature resulting in an increase in pressure, at constant volume) 				
Unit 4 – Cells, Tissues, Organs and Systems				
4.1 Compare the early idea that living organisms were made of air, fire and water with the modern cell theory. (110-2)				
4.2 Define cell.				
4.3 Describe the four characteristics common to living things. Include: <ul style="list-style-type: none"> (i) growth (ii) movement (locomotion) (iii) response to stimuli (iv) reproduction 				
4.4 Describe how optical technologies have developed through systematic trial and error processes constrained by the optical properties of the materials.(109-5)				

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Unit 4 – Cells, Tissues, Organs and Systems				
4.5 Identify and state the functions of the major parts of the compound microscope. (i) eyepiece (ii) objective lenses (iii) stage (iv) coarse adjustment knob (v) fine adjustment knob (vi) light source/lamp (vii) iris diaphragm (viii) base (ix) barrel (or tube) (x) arm (xi) revolving nosepiece				
4.6 Use a light microscope to produce a clear image of cells. (209-3)				
4.7 Identify and suggest explanations for discrepancies in data. (210-6)				
4.8 Organize data using a format that is appropriate to the task. (209-4)				
4.9 Estimate measurements of plant cells viewed with microscope. (209-2)				

Student _____

Course Grade 8 Science

R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.10 Demonstrate proper care in the use and storage of the compound microscope. (209-6)				
4.11 Examine the field of view under low and medium power.				
4.12 Prepare and observe a wet mount slide.				
4.13 Illustrate and explain that the cell is a living system that exhibits the following characteristics of life. (304-4) Include: (i) growth (ii) movement/locomotion (iii) response to stimuli (iv) reproduction				
4.14 Explain that it is important to use proper terms when comparing plant and animal cells. (109-13)				

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Course Grade 8 Science

R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.15 Examine and explain the role of the following organelles: (i) cell wall (i) cell membrane (ii) chloroplast (iii) cytoplasm (iv) nucleus (v) vacuole (vii) mitochondria				
4.16 Label organelles on diagrams of typical plant and animal cells.				
4.17 State the cell theory				
4.18 Work cooperatively with team members to develop and construct models of cells. (211-3)				
4.19 Evaluate individual and group processes used in constructing models of cells. (211-4)				
4.20 Distinguish between typical plant and animal cells. (304-5)				

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R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.21 Produce labeled drawings of each type of cell.				
4.22 List three differences between plant and animal cells. Include: (i) plant cells have chloroplasts (ii) plant cells have cell walls, therefore they have a regular shape (iii) plant cells have fewer, and larger, vacuoles				
4.23 Explain that growth and reproduction depend on cell division. (304-6)				
4.24 Explain that mitosis is the process of division of cells.				
4.25 Relate the needs and functions of various cells and organs to the needs and functions of the human organism as a whole. (304-8)				
4.26 Explain that cells and organisms require the same basic necessities of life. Include: (i) oxygen (ii) nutrients (iii) waste removal				
4.27 Explain structural and functional relationships between and among cells, tissues, organs, and systems in the human body. (304-7)				

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R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.28 describe these levels of organization found in living things. (i) cells (ii) tissues (iii) organs (iv) organ systems (v) organisms				
4.29 Diagram the relationships between cells, tissues, organs, organ systems and organisms in a flow chart.				
4.30 Evaluate individual and group processes used in presenting the roles of the main organ systems. (211-4)				
4.31 Identify the main function of the following organ systems in keeping organisms alive. (i) circulatory (ii) respiratory (iii) digestive (iv) excretory (v) nervous (vi) muscular				

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Unit 4 – Cells, Tissues, Organs and Systems				
4.32 Describe the basic factors that affect the functions and efficiency of the human respiratory, circulatory, muscular, digestive, excretory, and nervous systems. (304-9)				
4.33 Explain the roles that diet, nutrition, exercise and stress have on the systems mentioned above.				
4.34 Debate lifestyle choices such as diet choices, smoking, drinking alcohol, or sedentary lifestyle and their effects on body systems.				
4.35 Illustrate examples of conflicting evidence related to how we should maintain and/or treat body systems. (110-5)				
4.36 Describe the science underlying various technologies used to assist or replace unhealthy organs or systems. Include: (111-5) (i) insulin pump (ii) artificial heart				
4.37 Provide examples of scientific knowledge that have resulted in the development of technologies (111-1)				
4.38 Describe how a community’s needs can lead to developments in science and technology (112-2)				
4.39 Make informed decisions about applications of science and technology, taking into account environmental and social advantages and disadvantages (113-9)				

Student _____				Course <u>Grade 8 Science</u>
R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.40 Propose a course of action on social issues related to science and technology, taking into account human and environmental needs (113-13)				
4.41 Design and carry out an experiment to compare and contrast heart rate and breathing rate in an individual during various levels of activity, and identify and control the major variables. (208-6, 209-1)				
4.42 Rephrase questions into testable form about the factors that affect physical fitness and health. (208-1)				
4.43 State a hypothesis based on background information or an observed pattern of events. (208-5)				
4.44 Carry out procedures controlling the major variables. (209-1)				
4.45 Identify and suggest explanations for discrepancies in data. (210-6)				
4.46 Compile and display data using tables and graphs. (210-2)				
4.47 Suggest explanations for variations in the heart rate and the breathing rate of an individual during various levels of activity when the experiment is repeated. (210-7)				

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R – retain, D – delete, C - changed	R	D	C	changed outcomes
Unit 4 – Cells, Tissues, Organs and Systems				
4.48 Describe three examples of the interdependence of various systems of the human body. (304-10) Include: (i) circulatory/respiratory (ii) digestive/circulatory (iii) nervous/muscular				
4.49 Provide examples of careers that are associated with the health of body systems. (112-10)				
4.50 Make informed decisions about applications of science and technology that are associated with human body systems taking into account personal and social advantages and disadvantages. (113-8)				