

**Correlation of Grade 8 Manitoba Science Curriculum to
Pearson Science 8: Saskatchewan Edition**

Unit 1: Cells, Tissues, Organs, and Systems	
<p>8-1-01 Use appropriate vocabulary related to their investigations of cells and systems. <i>Include: cell theory, osmosis, diffusion, selective permeability, unicellular, multicellular, specialized cells and tissues, organs, systems, arteries, veins, capillaries, terms related to cell structure, heart structure, components of blood, and primary and secondary defense systems.</i></p>	- throughout Unit 1
<p>8-1-02 Identify characteristics of living things, and describe how different living things exhibit these characteristics. <i>Include: composed of cells; reproduce; grow; repair themselves; require energy; respond to the environment; have a lifespan; produce wastes.</i></p>	Section 1.1 Unit Review
<p>8-1-03 Describe cell theory. <i>Include: all living things are composed of one or more cells; cells are the basic unit of structure and function of any organism; all cells come from pre-existing cells; the activity of an organism as a whole depends on the total activity of all its cells.</i></p>	Section 1.3
<p>8-1-04 Identify major events and technological innovations that have enabled scientists to increase our understanding of cell biology. <i>Examples: invention of the light and electron microscopes, works of Robert Hooke, Anton van Leeuwenhoek, Matthias Schleiden and Theodor Schwann...</i></p>	Big Idea 1.0 introduction Section 1.1 Section 1.3
<p>8-1-05 Identify and compare major structures in plants and animal cells, and explain their function. <i>Include: cell membrane, cytoplasm, mitochondria, nucleus, vacuoles, cell wall, chloroplasts.</i></p>	Section 1.3 Section 1.4 Section 1.5 Unit Review
<p>8-1-06 Demonstrate proper use and care of the microscope to observe the general structure of plant and animal cells. <i>Include: preparing wet mounts beginning with the least powerful lens; focusing; drawing specimens; indicating magnification.</i></p>	Section 1.3 Section 2.1
<p>8-1-07 Describe the movement of nutrients and wastes across cell membranes and explain its importance. <i>Include: osmosis, diffusion, selective permeability.</i></p>	Section 2.3 Section 2.4 Section 2.6 Unit Review
<p>8-1-08 Differentiate between unicellular and multicellular organisms.</p>	Section 1.3 Section 1.5 Unit Review
<p>8-1-09 Describe why cells and tissues are specialized in multicellular organisms, and observe examples. <i>Include: specialization is needed because all cells in a complex organism do not have access to the external environment.</i></p>	Section 2.5 Section 2.6
<p>8-1-10 Describe structural and functional relationships among cells, tissues, organs, and systems.</p>	Section 3.1 Unit Review

<p>8-1-11 Describe the structure and function of the heart and the path of blood to and from the heart through its four chambers. <i>Include: atria, ventricles, septum, valves, aorta, pulmonary artery, pulmonary veins, superior vena cava, inferior vena cava.</i></p>	<p>Section 3.2 Section 3.4</p>
<p>8-1-12 Compare and contrast the structure and function of arteries, veins, and capillaries.</p>	<p>Section 3.2 Section 4.2 Unit Review</p>
<p>8-1-13 Identify components of blood and describe the function of each. <i>Include: red blood cells carry oxygen; white blood cells fight infection; platelets clot blood; plasma is the liquid part of blood that transports blood cells, dissolved material, nutrients, and waste products.</i></p>	
<p>8-1-14 Describe, using examples, how individual systems in the human body function interdependently.</p>	<p>Section 3.1 Section 3.3 Section 4.2</p>
<p>8-1-15 Compare heart rate and respiratory rate before, during, and after various physical activities; explain the observed variations; and discuss implications for overall health.</p>	<p>Section 3.1 Section 3.2</p>
<p>8-1-16 Identify components of the primary and secondary defence systems of the human body, and describe their roles. <i>Include: primary defence system— skin, tears, ear wax, saliva, gastric juices, cilia hairs; secondary defence system—white blood cells, antibodies.</i></p>	
<p>8-1-17 Identify medical advances that enhance the human body's defence mechanisms and describe their effects on society. <i>Examples: vaccines, antibiotics...</i></p>	<p>Section 4.5</p>
<p>8-1-18 Research and describe disorders/diseases that affect body systems, and identify possible preventative measures. <i>Examples: liver disease, diabetes, multiple sclerosis, heart attack, stroke, high/low blood pressure, leukemia, anemia, high cholesterol...</i></p>	<p>Section 4.3 Section 4.4</p>
<p>8-1-19 Describe functional similarities and differences of comparable structures and systems in different groups of living things. <i>Examples: movement, food intake, and digestion of a unicellular organism, an invertebrate, and a vertebrate; gas exchange in plants versus animals...</i></p>	<p>Section 4.2</p>

Unit 2: Optics and Vision	
<p>8-2-01 Use appropriate vocabulary related to their investigations of optics. <i>Include: spectrum, additive theory; subtractive theory; frequency; wavelength; refraction; concave and convex mirrors and lenses; terms related to types of light sources, types of electromagnetic radiation, and the law of reflection.</i></p>	- throughout Unit 2"
<p>8-2-02 Differentiate between incandescent and luminescent sources of light. <i>Include: fluorescent, phosphorescent, chemiluminescent, bioluminescent.</i></p>	Section 6.3 Unit Review
<p>8-2-03 Demonstrate that light is a form of energy, that light travels in a straight line, and can be separated into the visible light spectrum.</p>	Section 1.1 Section 6.1 Section 6.4 Unit Review
<p>8-2-04 Explain, using the additive theory, how colours are produced, and identify applications of this theory in daily life.</p>	Section 5.1 Section 5.2 Section 5.4
<p>8-2-05 Explain how the human eye detects colour, and how the ability to perceive colour may vary from person to person.</p>	Section 5.2 Section 5.3 Unit Review
<p>8-2-06 Demonstrate, using the subtractive theory, how colours are produced, and identify applications of this theory in daily life.</p>	Section 5.3 Section 5.4 Unit Review
<p>8-2-07 Compare and contrast various types of electromagnetic radiation, with respect to relative energy, frequency, wavelength, and human perception. <i>Include: radio waves, microwaves, infrared, radiation, visible light, ultraviolet radiation, X-rays, gamma rays.</i></p>	Section 6.1 Section 6.2 Section 6.4 Unit Review
<p>8-2-08 Provide examples of technologies that use electromagnetic radiation, and describe potential positive and negative impacts of their uses. <i>Examples: satellite dish, x-ray machine, light telescopes, motion sensors, microwave ovens...</i></p>	Section 4.2 Section 6.2 Unit Review
<p>8-2-09 Conduct experiments to determine the laws of reflection, and provide examples of the use of reflection in daily life. <i>Include: the angle of reflection is the same as the angle of incidence; the incident beam, the normal, and the reflected beam are all on the same plane.</i></p>	Section 2.1
<p>8-2-10 Conduct experiments to compare the refraction of light through substances of different densities.</p>	Section 3.1
<p>8-2-11 Explain how reflection and refraction produce natural phenomena. <i>Examples: sun dogs, rainbows, blue sky...</i></p>	Section 3.1 Section 5.1 Section 5.4

<p>8-2-12 Investigate to determine how light interacts with concave and convex mirrors and lenses, and provide examples of their use in various optical instruments and systems.</p>	<p>Section 2.2 Section 2.3 Section 3.2 Section 4.1 Section 4.2</p>
<p>8-2-13 Demonstrate the formation of images using a double convex lens, and predict the effects of changes in lens position on the size and location of the image. <i>Examples: magnify or reduce an image by altering the placement of one or more lenses...</i></p>	<p>Section 3.2 Section 4.2</p>
<p>8-2-14 Compare the functional operation of the human eye to that of a camera in focusing an image.</p>	<p>Section 4.1 Section 4.3</p>

Unit 3: Forces, Fluids, and Density	
8-3-01 Use appropriate vocabulary related to their investigations of fluids. <i>Include: fluid, viscosity, flow, density, particle theory of matter, buoyant force, pressure, compressibility, hydraulic, pneumatic.</i>	- throughout Unit 3
8-3-02 Distinguish between fluids and non-fluids.	Invitation to Explore Section 1.3
8-3-03 Explore and compare the viscosity of various liquids. <i>Examples: time the fall of a steel ball through various liquids; time the flow rate of different liquids on an incline...</i>	Section 1.1 Section 1.3 Unit Review
8-3-04 Identify products in which viscosity is an important property, and evaluate different brands of the same product, using the design process. <i>Examples: sauces, lubricating oil, paint, hand lotion...</i>	Section 1.1 Section 1.2 Section 1.3
8-3-05 Plan and conduct experiments to determine factors that affect flow within a given system. <i>Examples: temperature, pressure, tube diameter...</i>	Section 1.2
8-3-06 Measure, calculate, and compare densities of solids, liquids, and gases. <i>Include: different amounts of the same substance, regularly and irregularly shaped objects.</i>	Section 2.1 Section 2.2 Section 2.3 Section 2.4 Section 2.6
8-3-07 Illustrate, using the particle theory of matter, the effects of temperature change on the density of solids, liquids, and gases.	Section 2.5 Section 2.6 Unit Review
8-3-08 Compare fluids of different densities to determine how they alter the buoyant force on an object.	Section 3.1 Section 3.2 Section 3.4 Section 3.5 Section 3.6 Unit Review
8-3-09 Recognize that pressure is the relationship between force and area, and describe situations in which pressure can be increased or decreased by altering surface area. <i>Examples: wearing snowshoes instead of boots to decrease pressure, increase surface area, and stay on top of snow...</i>	Section 4.1
8-3-10 Explain, using the particle theory of matter, the relationships among pressure, volume, and temperature of liquid and gaseous fluids.	Section 4.2 Section 4.3 Section 4.8 Unit Review
8-3-11 Compare the relative compressibility of water and air, and relate this property to their ability to transmit force in hydraulic and pneumatic systems.	Section 4.3 Section 4.4 Section 4.8

<p>8-3-12 Identify a variety of natural and constructed hydraulic and pneumatic systems and describe how they function. <i>Examples: heart, lungs, eyedropper, misting bottle, fuel pump, hydraulic lift...</i></p>	<p>Section 4.4 Section 4.5 Section 4.6 Section 4.7 Section 4.8 Unit Review</p>
<p>8-3-13 Compare hydraulic and pneumatic systems, and identify advantages and disadvantages of each.</p>	<p>Section 4.4 Section 4.6 Section 4.7 Section 4.8</p>
<p>8-3-14 Use the design process to construct a prototype that uses a pneumatic or hydraulic system to perform a given task. <i>Examples: a prototype that can lift a load a specified distance...</i></p>	<p>Section 4.7 Design Project</p>

Unit 4: Water Systems on Earth	
8-4-01 Use appropriate vocabulary related to their investigations of water systems. <i>Include: heat capacity, fresh water, salt water, convection, Coriolis effect, global water cycle, drainage system, watershed, continental divide, erosion, deposition, flow rate, tides, terms related to water treatment.</i>	- throughout Unit 4
8-4-02 Demonstrate that water, as compared to other substances, has a high heat capacity and is able to dissolve a wide variety of solutes.	Section 5.1 (a bit)
8-4-03 Compare and contrast characteristics and properties of fresh water and salt water. <i>Examples: freezing point, density, dissolved materials, global distribution, relative amounts, biologically diverse components of each..</i>	Section 2.1 Section 2.2 Section 2.4
8-4-04 Identify factors that can work individually or in combination to affect ocean currents. <i>Include: convection, Coriolis effect, prevailing winds, position of continents.</i>	Section 4.3 Section 4.4
8-4-05 Describe how the heat capacity of large bodies of water and the movement of ocean currents influence regional climates. <i>Examples: Gulf Stream effects, El Niño, lake effect...</i>	Section 4.2 Section 5.2 Section 5.4
8-4-06 Describe the components of the global water cycle and explain how it works.	Section 1.2 Section 1.4
8-4-07 Describe features of the North American drainage system. <i>Include: local and regional watersheds, direction of water flow, continental divide.</i>	Section 3.1 Section 3.3
8-4-08 Describe how erosion and deposition are influenced by the flow rate of a stream or river, and contrast the related characteristics of young and mature streams. <i>Examples: meanders, oxbows, alluvial deposits, sandbars, flood plains, deltas...</i>	Section 3.1 (a bit)
8-4-09 Describe how wave action and ice movement in large bodies of water cause erosion and deposition.	Section 4.1 Section 5.3
8-4-10 Explain how tides are caused and describe their effects on shorelines.	
8-4-11 Describe examples of human interventions to prevent riverbank or coastal erosion. <i>Examples: vegetation, reinforcement (concrete, boulders), piers, breakwaters...</i>	
8-4-12 Identify factors that can cause flooding either individually or in combination <i>Examples: heavy snow pack, quick thaw, rain in spring, lack of vegetation to remove water through transpiration, frozen ground preventing absorption, agricultural drainage systems, dams, diversions ...</i>	Section 6.2

<p>8-4-13 Provide examples of the way in which technology is used to contain or prevent damage due to flooding, and discuss related positive and negative impacts. <i>Examples: floodway, diversion, dike, levee...</i></p>	Section 6.2
<p>8-4-14 Identify sources of drinking water and describe methods for obtaining water in areas where supply is limited. <i>Examples: desalination, melting of ice, condensation...</i></p>	
<p>8-4-15 Explain how and why water may need to be treated for use by humans. <i>Include: filtration, settling, chlorination, fluoridation.</i></p>	Section 6.3 Section 6.6
<p>8-4-16 Compare the waste-water disposal system within their communities to one used elsewhere. <i>Include: process involved, environmental impact, cost.</i></p>	Section 6.3
<p>8-4-17 Identify substances that may pollute water, related environmental and societal impacts of pollution, and ways to reduce or eliminate effects of pollution.</p>	Section 6.1 Section 6.2 Section 6.4 Section 6.5 Section 6.6
<p>8-4-18 Identify environmental, social, and economic factors that should be considered in the management of water resources. <i>Examples: ecosystem preservation, employment, recreation, industrial growth, water quality...</i></p>	Big Idea 6.0 Science World
<p>8-4-19 Use the design process to develop a system to solve a water-related problem.</p>	