

Unit Expectations Correlation Chart

Specific Expectations	Chapter/Section References
By the end of Grade 10, students will:	
1. Relating Science to Technology, Society, and the Environment	
1.1 analyze, on the basis of research, ethical issues related to a technological development in the field of systems biology, and communicate their findings	Sections 2.1,3.3, Unit Task
1.2 assess the importance to human health and/or society of medical imaging technologies used in Canada in diagnosing or treating abnormalities in tissues, organs, and/or systems	Section 3.1, Unit Task
1.3 describe public health strategies related to systems biology, and assess their impact on society	Section 3.2
2. Developing Skills of Investigation and Communication	
2.1 use appropriate terminology related to cells, tissues, organs, and systems of living things, including, but not limited to: <i>absorption, anaphase, capillaries, concentration, differentiation, diffusion, meristematic, mesophyll, phloem, prophase, red blood cells, regeneration, stomate, and xylem</i>	All sections
2.2 examine cells under a microscope or similar instrument to identify the various stages of mitosis in plants and animals	Section 1.2
2.3 examine different plant and animal cells under a microscope or similar instrument, and draw labelled biological diagrams to show how the cells' organelles differ	Section 1.1
2.4 investigate, using a microscope or similar instrument, specialized cells in the human body or in plants, focussing on different types of cells, and draw labelled biological diagrams to show the cells' structural differences	Sections 1.1, 1.3
2.5 investigate the rate of cell division in cancerous and non-cancerous cells, using pictures, videos, or images, and predict the impact of this rate of cell division on an organism	Section 1.2
2.6 investigate, through a laboratory or computer-simulated dissection of a plant, worm, fish, or frog, the interrelationships between organ systems of a plant or an animal	Section 2.2
2.7 use a research process to investigate a disease or abnormality related to tissues, organs, or systems of humans or plants	Section 2.2
3. Understanding Basic Concepts	
3.1 describe the cell cycle in plants and animals, and explain the importance of mitosis for the growth of cells and repair of tissues	Sections 1.2, 1.3
3.2 explain the importance of cell division and cell specialization in generating new tissues and organs	Sections 1.2, 1.3
3.3 explain the links between specialized cells, tissues, organs, and systems in plants and animals	Section 1.3 and all sections in Chapter 2
3.4 explain the primary functions of a variety of systems in animals	Section 2.2
3.5 explain the interaction of different systems within an organism and why such interactions are necessary for the organism's survival	Section 2.3

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By the end of grade 10, students will:	
1. Relating Science to Technology, Society, and the Environment	
1.1 analyse, on the basis of research, various safety and environmental issues associated with chemical reactions and their reactants and/or product(s)	Sections 4.1, 4.3, 5.1, 5.2, 6.2 Unit Task
1.2 analyse how an understanding of the properties of chemical substances and their reactions can be applied to solve environmental challenges	Sections 4.3, 5.2
2. Developing Skills of Investigation and Communication	
2.1 use appropriate terminology related to chemical reactions, including, but not limited to: <i>compounds</i> , <i>product</i> , and <i>reactant</i>	All sections
2.2 construct molecular models to illustrate the structure of molecules in simple chemical reactions	Section 4.2
2.3 investigate simple chemical reactions, including synthesis, decomposition, and displacement reactions, and represent them using a variety of formats	Sections 6.1, 6.2
2.4 use an inquiry process to investigate the law of conservation of mass by comparing theoretical and empirical values and account for discrepancies	Section 4.3
2.5 plan and conduct an inquiry to identify the evidence of chemical change	Sections 4.1, 4.3, 6.1
2.6 plan and conduct an investigation and classify some common substances as being acidic, basic or neutral	Section 5.1
3. Understanding Basic Concepts	
3.1 describe the relationships among chemical formulae, composition, and names of binary compounds	Sections 4.2, 4.3
3.2 explain, using the law of conservation of mass and atomic theory, the rationale for balancing chemical equations	Section 4.3
3.3 describe the types of evidence that indicate chemical change	Sections 4.3, 5.2, 6.1, 6.2
3.4 write word equations and balanced chemical equations for simple chemical reactions	Sections 4.3, 5.2, 6.1, 6.2 Unit Task
3.5 describe, on the basis of observations, the reactants and products of a variety of chemical reactions, including synthesis, decomposition, and displacement reactions	Sections 5.2, 6.1, 6.2 Unit Task
3.6 explain the process of acid-base neutralization (i.e., an acid reacts with a base to form a salt and often water)	Section 5.2
3.7 describe how the pH scale is used to classify aqueous solutions as acidic, basic, or neutral	Section 5.1
3.8 identify simple ionic compounds, simple compounds involving polyatomic ions, molecular compounds, and acids, using a periodic table and a list of the most common polyatomic ions	Sections 4.2, 5.1, 5.2, 6.1, 6.2 Unit Task

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By the end of grade 10, students will:	
1. Relating Science to Technology, Society, and the Environment	
1.1 analyse current and/or potential effects, both positive and negative, of climate change on human activity and natural systems	Unit Opener Sections 8.2, 8.3, 9.2 Unit Task
1.2 assess, on the basis of research, the effectiveness of some current individual, regional, national, or international initiatives that address the issue of climate change, and propose a further course of action related to one of these initiatives	Chapter 9 Unit Task
2. Developing Skills of Investigation and Communication	
2.1 use appropriate terminology related to climate change, including, but not limited to: <i>albedo</i> , <i>anthropogenic</i> , <i>atmosphere</i> , <i>cycles</i> , <i>heat sinks</i> , and <i>hydrosphere</i>	All Sections
2.2 design and build a model to illustrate the natural greenhouse effect, and use the model to explain the anthropogenic greenhouse effect	Sections 7.2, 8.1
2.3 analyse different sources of scientific data for evidence of natural climate change and climate change influenced by human activity	Sections 7.2, 8.1, 8.2, 8.3 Unit Task
2.4 investigate a popular hypothesis on a cause-and-effect relationship having to do with climate change, using simulations and/or time-trend data that model climate profiles	Sections 8.1, 8.2, 8.3
2.5 investigate, through laboratory inquiry or simulations, the effects of heat transfer within the hydrosphere and atmosphere	Sections 7.1, 7.2, 8.1
2.6 investigate, through laboratory inquiry or simulations, how water in its various states influences climate patterns	Section 7.2
2.7 investigate, through research or simulations, the influence of ocean currents on local and global heat transfer and precipitation patterns	Sections 7.2, 8.2 Unit Task
2.8 classify the climate of their local region using various tools or systems, and compare their region to other regions in Ontario, Canada, and the world	Section 7.1
2.9 compare different perspectives and/or biases evident in discussions of climate change in scientific and non-scientific media	Sections 8.3, 9.1 Unit Task
3. Understanding Basic Concepts	
3.1 describe the principal components of Earth's climate system and how the system works	Sections 7.1, 7.2
3.2 describe and explain heat transfer in the hydrosphere and atmosphere and its effects on air and water currents	Sections 7.1, 7.2
3.3 describe the natural greenhouse effect, explain its importance for life, and distinguish it from the anthropogenic greenhouse effect	Sections 7.2, 8.1
3.4 identify natural phenomena and human activities known to affect climate, and describe the role of both in Canada's contribution to climate change	Sections 8.1, 8.2, 8.3, 9.1 Unit Task
3.5 describe the principal sources and sinks, both natural and/or anthropogenic, of greenhouse gases	Sections 7.2, 8.1
3.6 describe how different carbon and nitrogen compounds influence the trapping of heat in the atmosphere and hydrosphere	Sections 7.2, 8.1
3.7 describe, in general terms, the causes and effects of the anthropogenic greenhouse effect, the depletion of stratospheric and tropospheric ozone, and the formation of ground-level ozone and smog	Sections 7.1, 8.1, 8.2, 8.3 Unit Task
3.8 identify and describe indicators of global climate change	Sections 8.1, 8.2, 8.3, 9.1 Unit Task

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Specific Expectations	Chapter/Section References
By the end of grade 10, students will:	
E1. Relating Science to Technology, Society, and the Environment	
E1.1 analyze a technological device or procedure related to human perception of light and evaluate its effectiveness	Section 12.1, Unit Task
E1.2 analyze a technological device that uses the properties of light and explain how it has enhanced society	Section 12.2
E2. Developing Skills of Investigation and Communication	
E2.1 use appropriate terminology related to light and optics, including, but not limited to: <i>angle of incidence</i> , <i>angle of reflection</i> , <i>angle of refraction</i> , <i>focal point</i> , <i>luminescence</i> , <i>magnification</i> , <i>mirage</i> , and <i>virtual image</i>	All sections
E2.2 use an inquiry process to investigate the laws of reflection, using plane and curved mirrors, and draw ray diagrams to summarize their findings	Section 11.1
E2.3 predict the qualitative characteristics of images formed by plane and curved mirrors, test their predictions through inquiry, and summarize their findings	Section 11.1
E2.4 use an inquiry process to investigate the refraction of light as it passes through media of different refractive indices, compile data on their findings, and analyze the data to determine if there is a trend	Section 11.2
E2.5 predict, using ray diagrams and algebraic equations, the position and characteristics of an image produced by a converging lens, and test their predictions through inquiry	Section 11.3
E2.6 calculate, using the indices of refraction, the velocity of light as it passes through a variety of media, and explain the angles of refraction with reference to the variations in velocity	Section 11.2
E3. Understanding Basic Concepts	
E3.1 describe and explain various types of light emissions	Section 10.2
E3.2 identify and label the visible and invisible regions of the electromagnetic spectrum	Section 10.1
E3.3 describe, on the basis of observation, the characteristics and positions of images formed by plane and curved mirrors with the aid of ray diagrams and algebraic equations, where appropriate	Section 11.1
E3.4 explain the conditions required for partial reflection/refraction and for total internal reflection in lenses, and describe the reflection/refraction using labelled ray diagrams	Section 11.3
E3.5 describe the characteristics and positions of images formed by converging lenses with the aid of ray diagrams	Section 11.3
E3.6 identify ways in which the properties of mirrors and lenses determine their use in optical instruments	Sections 11.1, 11.3, 12.2
E3.7 identify the factors, in qualitative and quantitative terms, that affect the refraction of light as it passes from one medium to another	Section 11.2
E3.8 describe properties of light, and use them to explain naturally occurring optical phenomena	Throughout, especially Sections 10.3 and 11.2