Correlation of Scholastic *The Ten* to Grade 7 Ontario Science and Technology Curriculum

Science and Technology Specific Expectations	Scholastic The Ten
Understanding Life Systems Interactions in the Environment	
1. Relating Science and Technology to Society and the Environment	
1.1 assess the impact of selected technologies on the environment	The 10 Greatest Threats to Earth Student Book pages 19 – 21, 24, 29, 44
1.2 analyse the costs and benefits of selected strategies for protecting the environment	
2. Developing Investigation and Communication Skills	
2.1 follow established safety procedures for investigating ecosystems (e.g., stay with a partner, wash hands after investigating an ecosystem)	
2.2 design and construct a model ecosystem (e.g., a composter, a classroom terrarium, a greenhouse), and use it to investigate interactions between the biotic and abiotic components in an ecosystem	
2.3 use scientific inquiry/research skills to investigate occurrences (e.g., a forest fire, a drought, an infestation of invasive species such as zebra mussels in a local lake or purple loosestrife in a wetland habitat) that affect the balance within a local ecosystem	The 10 Greatest Threats to Earth Teaching Card pages 3 - 6
2.4 use appropriate science and technology vocabulary, including sustainability, biotic, ecosystem, community, population, and producer, in oral and written communication	The 10 Greatest Threats to Earth Student Book pages 19 – 21, 24, 29, 44 Teaching Card pages 3, 4, 6
2.5 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., design a multimedia presentation explaining the interrelationships between biotic and abiotic components in a specific ecosystem)	The 10 Greatest Threats to Earth Student Book pages 14 – 17 Teaching Card pages 3 - 6
3. Understanding Basic Concepts	
3.1 demonstrate an understanding of an ecosystem (e.g., a log, a pond, a forest) as a system of interactions between living organisms and their environment	The 10 Greatest Threats to Earth Student Book pages 19 – 21, 24, 29, 44 Teaching Card page 3
3.2 identify biotic and abiotic elements in an ecosystem, and describe the interactions between them (e.g., between hours of sunlight and the growth of plants in a pond; between a termite colony and a decaying log; between the soil, plants, and animals in a forest)	

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Science and Technology Specific Expectations	Scholastic The Ten
Understanding Life Systems	
3.3 describe the roles and interactions of producers, consumers, and decomposers within an ecosystem (e.g., Plants are producers in ponds. They take energy from the sun and produce food, oxygen, and shelter for the other pond life. Black bears are consumers in forests. They eat fruits, berries, and other consumers. By eating other consumers, they help to keep a balance in the forest community. Bacteria and fungi are decomposers. They help to maintain healthy soil by breaking down organic materials such as manure, bone, spider silk, and bark. Earthworms then ingest the decaying matter, take needed nutrients from it, and return those nutrients to the soil through their castings.)	The 10 Greatest Threats to Earth Student Book page 21 Teaching Card page 3 The 10 Most Essential Natural Resources Student Book page 3
3.4 describe the transfer of energy in a food chain and explain the effects of the elimination of any part of the chain	The 10 Greatest Threats to Earth Student Book page 21 Teaching Card page 3
3.5 describe how matter is cycled within the environment and explain how it promotes sustain-ability (e.g., bears carry salmon into the forest, where the remains decompose and add nutrients to the soil, thus supporting plant growth; through crop rotation, nutrients for future crops are created from the decomposition of the waste matter of previous crops)	The 10 Greatest Threats to Earth Student Book page 21 Teaching Card page 3
3.6 distinguish between primary succession (e.g., the growth of native grasses on a sand dune) and secondary succession (e.g., the growth of grasses and shrubs in a ploughed field) within an ecosystem	
3.7 explain why an ecosystem is limited in the number of living things (e.g., plants and animals, including humans) that it can support	
3.8 describe ways in which human activities and technologies alter balances and interactions in the environment (e.g., clear-cutting a forest, overusing motorized water vehicles, managing wolf-killings in Yukon)	The 10 Greatest Threats to Earth Student Book pages 10 - 45 Teaching Card pages 2 - 8
3.9 describe Aboriginal perspectives on sustain-ability and describe ways in which they can be used in habitat and wildlife management (e.g., the partnership between the Anishinabek Nation and the Ministry of Natural Resources for managing natural resources in Ontario)	

Science and Technology Specific Expectations	Scholastic The Ten
Understanding Structures and Mechanisms Form and Function	
1. Relating Science and Technology to Science and the Environment	
1.1 evaluate the importance for individuals, society, the economy, and the environment of factors that should be considered in designing and building structures and devices to meet specific needs (e.g., function; efficiency; ease of use; user preferences; aesthetics; cost; intended lifespan; effect on the environment; safety, health, legal requirements)	The 10 Most Phenomenal Modern Buildings Student Book pages 8, 12, 16, 20, 24, 28, 32, 36, 40, 44 Teaching Card pages 1 – 8 The 10 Most Amazing Bridges Student Book pages 18 – 21, 30 -33 Teaching Card pages 2, 4, 5, 6
1.2 evaluate the impact of ergonomic design on the safety and efficiency of workplaces, tools, and everyday objects (e.g., furniture, computer equipment, home tools and equipment), and describe changes that could be made in personal spaces and activities on the basis of this information (e.g., use computer keyboards and mice that are ergonomically designed; use kitchen tools such as knives with ergonomic handles; use equipment for household jobs that is designed to ease strain on the body, such as ergonomically designed snow shovels and garden tools)	
2. Developing Investigation and Communication Skills	
2.1 follow established safety procedures for using tools and handling materials (e.g., wear safety glasses when cutting or drilling)	
2.2 design, construct, and use physical models to investigate the effects of various forces on structures (e.g., the struts of a roof experience compression forces from shingles; the support cables of a suspension bridge are in tension; a twisted ruler has torsion forces; the pin that holds the two parts of a pair of scissors together has shear forces acting on it)	
2.3 investigate the factors that determine the ability of a structure to support a load (e.g., the weight of the structure itself; the magnitude of the external loads it will need to support; the strength of the materials used to build it)	The 10 Most Amazing Bridges Student Book pages 22 – 25, 30 - 33 Teaching Card pages 4, 5
2.4 use technological problem-solving skills to determine the most efficient way for a structure (e.g., a chair, a shelf, a bridge) to support a given load)	

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Science and Technology Specific Expectations	Scholastic The Ten
2. Developing Investigation and Communication Skills	
2.5 investigate methods used by engineers to ensure structural safety (e.g., incorporating sensors in structures to detect unusual stresses and give early warning of failure; designing structures to carry much heavier loads than they will actually have to bear)	The 10 Most Amazing Bridges Student Book pages 30 - 33 Teaching Card page 5
2.6 use appropriate science and technology vocabulary, including truss, beam, ergonomics, shear, and torsion), in oral and written communication	The 10 Most Amazing Bridges Student Book page 39 The 10 Most Phenomenal Modern Buildings Student Book page 12
2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., use a graphic organizer to show the steps taken in designing and making a product)	The 10 Most Phenomenal Modern Buildings Teaching Card pages 4, 5, 7
3. Understanding Basic Concepts	
3.1 classify structures as solid structures (e.g., dams), frame structures (e.g., goal posts), or shell structures (e.g., airplane wings)	
3.2 describe ways in which the centre of gravity of a structure (e.g., a child's high chair, a tower) affects the structure's stability	
3.3 identify the magnitude, direction, point of application, and plane of application of the forces applied to a structure	
3.4 distinguish between external forces (e.g., wind, gravity, earthquakes) and internal forces (tension, compression, shear, and torsion) acting on a structure	The 10 Most Phenomenal Modern Buildings Student Book pages 12, 13, 28
3.5 describe the role of symmetry in structures (e.g., aesthetic appeal, structural stability)	
3.6 identify and describe factors that can cause a structure to fail (e.g., bad design, faulty con-struction, foundation failure, extraordinary loads)	The 10 Most Amazing Bridges Student Book pages 18 – 21, 34 – 37 Teaching Card pages 3, 5
3.7 identify the factors (e.g., properties of the material as they relate to the product, availability, costs of shipping, aesthetic appeal, disposal) that determine the suitability of materials for use in manufacturing a product (e.g., a running shoe)	

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Science and Technology Specific Expectations	Scholastic The Ten
Understanding Matter and Energy	
1.1 Relating Science and Technology to Science and the Environment	
1.1 assess positive and negative environmental impacts related to the disposal of pure substances (e.g., uranium) and mixtures (e.g., paint, sewage)	The 10 Most Essential Natural Resources Student Book pages 18 - 21
1.2 assess the impact on society and the environment of different industrial methods of separating mixtures and solutions	
2. Developing Investigation and Communication Skills	
2.1 follow established safety procedures for handling chemicals and apparatus (e.g., wash hands after handling chemicals, take note of universal warning symbols)	
2.2 use scientific inquiry/experimentation skills to investigate factors (e.g., temperature, type of solute or solvent, particle size, stirring) that affect the solubility of a substance and the rate at which substances dissolve	
2.3 investigate processes (e.g., filtration, distillation, settling, magnetism) used for separating different mixtures	
2.4 use scientific inquiry/experimentation skills to investigate the properties of mixtures and solutions (e.g., the amount of solute required to form a saturated solution; differences between pure substances and mixtures)	
2.5 use appropriate science and technology vocabulary, including mechanical mixture, solution, solute, insoluble, saturated, unsaturated, and dilute, in oral and written communication	
2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using appropriate mathematical conventions, make a scatter plot to show the relationship between solute, solvent, and temperature)	

Science and Technology Specific Expectations	Scholastic The Ten
3. Understanding Basic Concepts	
3.1 distinguish between pure substances (e.g., distilled water, salt, copper pipe) and mixtures (e.g., salad dressing, chocolate chip cookies)	The 10 Most Essential Natural Resources Student Book page 14
3.2 state the postulates of the particle theory of matter (all matter is made up of particles; all particles are in constant motion; all particles of one substance are identical; temperature affects the speed at which particles move; in a gas, there are spaces between the particles; in liquids and solids, the particles are close together and have strong forces of attraction between them)	
3.3 use the particle theory to describe the difference between pure substances (which have identical particles) and mixtures (which have different particles)	
3.4 distinguish between solutions and mechanical mixtures	
3.5 describe the processes (e.g., evaporation, sifting, filtration, distillation, magnetism) used to separate mixtures or solutions into their components, and identify some industrial applications of these processes (e.g., use of cheesecloth to separate seeds and skins from juice and pulp to make fruit jellies; use of evaporation in maple syrup production; use of different sizes of sieves to separate wheat grains in white bread production; use of strainers in industries to separate slurry into solids and liquids)	
3.6 identify the components of a solution (e.g., solvent, solute)	
3.7 identify solutes and solvents in various kinds of solutions (e.g., copper and tin in bronze; iodine and alcohol in iodine solution)	The 10 Most Essential Natural Resources Student Book page 14
3.8 describe the concentration of a solution in qualitative terms (e.g., dilute, concentrated) and in quantitative terms (e.g., 5 grams of salt in 1000 ml of water)	
3.9 describe the difference between saturated and unsaturated solutions	
3.10 explain why water is referred to as the universal solvent	

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Science and Technology Specific Expectations	Scholastic The Ten
Understanding Earth and Space Systems Heat in the Environment	
1. Relating Science and Technology to Society and the Environment	
1.1 assess the social and environmental benefits of technologies that reduce heat loss or transfer (e.g., insulated clothing, building insulation, green roofs, energy-efficient buildings)	The 10 Coolest Wonders of the Universe Student Book page 45 Teaching Card page 6
1.2 assess the environmental and economic impacts of using conventional (e.g., fossil fuel, nuclear) and alternative forms of energy (e.g., geothermal, solar, wind, wave, biofuel)	The 10 Greatest Threats to Earth Student Book pages 42 - 46 Teaching Card page 6
2. Developing Investigation and Communication Skills	
2.1 follow established safety procedures for using heating appliances and handling hot materials (e.g., use protective gloves when removing items from hot plates)	
2.2 investigate the effects of heating and cooling on the volume of a solid, a liquid, and a gas	
2.3 use technological problem-solving skills to identify ways to minimize heat loss	
2.4 use scientific inquiry/experimentation skills to investigate heat transfer through conduction, convection, and radiation	
2.5 use appropriate science and technology vocabulary, including heat, temperature, conduction, convection, and radiation, in oral and written communication	The 10 Greatest Threats to Earth Student Book pages 16, 17
2.6 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes (e.g., using the conventions of science, create a labelled diagram to illustrate convection in a liquid or a gas)	
3. Understanding Basic Concepts	
3.1 use the particle theory to compare how heat affects the motion of particles in a solid, a liquid, and a gas	
3.2 identify ways in which heat is produced (e.g., burning fossil and renewable fuels, electrical resistance, physical activity)	
3.3 use the particle theory to explain the effects of heat on volume in solids (e.g., rails, sidewalks, and bridge segments expand in hot weather), liquids (e.g., sea levels are rising partly because global warming is making the oceans warmer and the water in them is expanding), and gases (e.g., the air in car tires expands on hot pavement)	

Science and Technology Specific Expectations	Scholastic The Ten
3. Understanding Basic Concepts	
3.4 explain how heat is transmitted through conduction (e.g., the transmission of heat from a stove burner to a pot and from the pot to the pot handle), and describe natural processes that are affected by conduction (e.g., the formation of igneous and metamorphic rocks and diamonds)	
3.5 explain how heat is transmitted through convection, and describe natural processes that depend on convection (e.g., thunderstorms, land and sea breezes)	
3.6 explain how heat is transmitted through radiation, and describe the effects of radiation from the sun on different kinds of surfaces (e.g., an ice-covered lake, a forest, an ocean, an asphalt road)	
3.7 describe the role of radiation in heating and cooling the earth, and explain how greenhouse gases affect the transmission of radiated heat through the atmosphere (e.g., The earth is warmed by absorbing radiation from the sun. It cools by radiating thermal energy back to space. Greenhouse gases absorb some of the radiation that the earth emits to space and reradiate it back to the earth's surface. If the quantity of greenhouse gases in the atmosphere increases, they absorb more outgoing radiation, and the earth becomes warmer.)	The 10 Greatest Threats to Earth Student Book pages 42 – 46 Teaching Card page 6
3.8 identify common sources of greenhouse gases (e.g., carbon dioxide comes from plant and animal respiration and the burning of fossil fuels; methane comes from wetlands, grazing livestock, termites, fossil fuel extraction, and landfills; nitrous oxide comes from soils and nitrogen fertilizers), and describe ways of reducing emissions of these gases	The 10 Most Essential Natural Resources Student Book page 30