Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries	L21: Planning a Bat Conservation Project
SCIENTIFIC CONCEPTS																					
7.1: The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.																					
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x	
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x		
7.2: The student uses scientific inquiry methods during field and laboratory investigations.																					
(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x	x
(B) collect data by observing and measuring	x		x	x				x		x						x			x	x	
(C) organize, analyze, make inferences, and predict trends from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x	
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x	x
(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data	x							x	x	x			x			x				x	
7.3: The student uses critical thinking and scientific problem solving to make informed decisions.																					
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x	
(B) draw inferences based on data related to promotional materials for products and services																					
(C) represent the natural world using models and identify their limitations		x					x	x													
(D) evaluate the impact of research on scientific thought, society, and the environment																					
(F) connect Grade 7 science concepts with the history of science and contributions of scientists																					
7.4: The student knows how to use tools and methods to conduct science inquiry.																					
(A) collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, timing devices, magnets, and compasses					x			x				x				x	x		x	x	
(B) collect and analyze information to recognize patterns such as rates of change	x							x				x			x	x	x			x	
SCIENTIFIC CONCEPTS																					

7.5: The student knows that an equilibrium of a system may change.																						
(A) describe how systems may reach an equilibrium such as when a volcano erupts										×				×	×		x					
(B) observe and describe the role of ecological succession in maintaining an equilibrium in an ecosystem															×							
7.6: The student knows that there is a relationship between force and motion.																						
(A) demonstrate basic relationships between force and motion using simple machines including pulleys and levers																						
(B) demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force																						
(C) relate forces to basic processes in living organisms including the flow of blood and the emergence of seedlings																						
7.7: The student knows that substances have physical and chemical properties.																						
(A) identify and demonstrate everyday examples of chemical phenomena such as rusting and tarnishing of metals and burning of wood												×										
(B) describe physical properties of elements and identify how they are used to position an element on the periodic table																						
(C) recognize that compounds are composed of elements																						
7.8: The student knows that complex interactions occur between matter and energy.																						
(A) illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water																						
(B) identify that radiant energy from the Sun is transferred into chemical energy through the process of photosynthesis																						
7.9: The student knows the relationship between structure and function in living systems.																						
(A) identify the systems of the human organism and describe their functions																						
(B) describe how organisms maintain stable internal conditions while living in changing external environments		×	×	×		×	×		×		×	×	×									
7.10: The student knows that species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.																						
(A) identify that sexual reproduction results in more diverse offspring and asexual reproduction results in more uniform offspring																						
(B) compare traits of organisms of different species that enhance their survival and reproduction				×	×	×	×	×	×	×	×		×	×	×		x					
(C) distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material																						
7.11: The student knows that the responses of organisms are caused by internal or external stimuli.																						
(A) analyze changes in organisms such as a fever or vomiting that may result from internal stimuli																						
(B) identify responses in organisms to external stimuli found in the environment such as the presence or absence of light		×		×	×	×		×	×		×	×		×	×				x	x		
7.12: The student knows that there is a relationship between organisms and the environment.																						
(A) identify components of an ecosystem			×		×	×			×	×	×	×	×	×	×		x	x	x	x		
(B) observe and describe how organisms including producers, consumers, and decomposers live together in an environment and use existing resources										×	×			×			x	x				

(C) describe how different environments support different varieties of organisms			×	×	×	×			×	×	×	×	×	×	×			x				
(D) observe and describe the role of ecological succession in ecosystems																						
7.13: The student knows components of our solar system.																						
(A) identify and illustrate how the tilt of the Earth on its axis as it rotates and revolves around the Sun causes changes in seasons and the length of a day																						
(B) relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon																						
7.14: The student knows that natural events and human activity can alter Earth systems.																						
(A) describe and predict the impact of different catastrophic events on the Earth																						
(B) analyze effects of regional erosional deposition and weathering																						
(C) make inferences and draw conclusions about effects of human activity on Earth's renewable, non-renewable, and inexhaustible resources					×					×			×	×	×			x				

Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries	L21: Planning a Bat Conservation Project
SCIENTIFIC CONCEPTS																					
3.1: The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.																					
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x	
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x		
3.2: The student uses scientific inquiry methods during field and laboratory investigations.																					
(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x	x
(B) collect information by observing and measuring	x		x	x				x		x		x				x			x	x	
(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x	
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x	x
(E) construct simple graphs, tables, maps, and charts to organize, examine and evaluate information	x							x	x	x			x			x				x	
3.3: The student knows that information, critical thinking, and scientific problem solving are used in making decisions.																					
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x	
(B) draw inferences based on information related to promotional materials for products and services																					
(C) represent the natural world using models and identify their limitations		x					x	x													
(D) evaluate the impact of research on scientific thought, society, and the environment																					
(E) connect Grade 3 science concepts with the history of science and contributions of scientists																					
3.4: The student knows how to use a variety of tools and methods to conduct science inquiry.																					
(A) collect and analyze information using tools including calculators, microscopes, cameras, safety goggles, sound recorders, clocks, computers, thermometers, hand lenses, meter sticks, rulers, balances, magnets, and compasses	x				x			x				x				x	x		x	x	x
(B) demonstrate that repeated investigations may increase the reliability of results	x							x								x				x	
SCIENTIFIC CONCEPTS																					
3.5: The student knows that systems exist in the world.																					
(A) observe and identify simple systems such as a sprouted seed and a wooden toy car				x		x	x	x		x	x				x		x	x			

(B) observe a simple system and describe the role of various parts such as a yo-yo and string								×		×	×			×			x	x			
3.6: The student knows that forces cause change.																					
(A) measure and record changes in the position and direction of the motion of an object to which a force such as a push or pull has been applied																					
(B) identify that the surface of the Earth can be changed by forces such as earthquakes and glaciers																					
3.7: The student knows that matter has physical properties.																					
(A) gather information including temperature, magnetism, hardness, and mass using appropriate tools to identify physical properties of matter												×							x	x	
(B) identify matter as liquids, solids, and gases												×									
3.8: The student knows that living organisms need food, water, light, air, a way to dispose of waste, and an environment in which to live.																					
(A) observe and describe the habitats of organisms within an ecosystem		×	×	×	×	×	×		×	×	×	×	×	×	×	x	x	x	x	x	
(B) observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space				×		×			×	×	×		×	×	×		x	x			
(C) describe environmental changes in which some organisms would thrive, become ill, or perish				×					×			×		×	×		x	x		x	
(D) describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home		×												×	×			x	x		
3.9: The student knows that species have different adaptations that help them survive and reproduce in their environment.																					
(A) observe and identify characteristics among species that allow each to survive and reproduce		×	×	×	×	×	×	×	×	×	×		×	×	×		x	x	x		
(B) analyze how adaptive characteristics help individuals within a species to survive and reproduce		×		×	×	×	×	×	×		×	×	×	×	×		x	x			
3.10: The student knows that many likenesses between offspring and parents are inherited from the parents.																					
(A) identify some inherited traits of plants																					
(B) identify some inherited traits of animals																					
3.11: The student knows that the natural world includes earth materials and objects in the sky.																					
(A) identify and describe the importance of earth materials including rocks, soil, water, and gases of the atmosphere in the local area and classify them as renewable, nonrenewable, or inexhaustible resources																					
(B) identify and record properties of soils such as color and texture, capacity to retain water, and ability to support the growth of plants																					
(C) identify the planets in our solar system and their position in relation to the Sun																					
(D) describe the characteristics of the Sun																					

Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries	L21: Planning a Bat Conservation Project
SCIENTIFIC CONCEPTS																					
4.1: The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.																					
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x	
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x		
4.2The student uses scientific inquiry methods during field and laboratory investigations.																					
(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x	x
(B) collect information by observing and measuring	x		x	x				x		x		x				x			x	x	
(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x	
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x	x
(E) construct simple graphs, tables, maps, and charts to organize, examine, and evaluate information	x							x	x	x			x			x				x	
4.3: The student uses critical thinking and scientific problem solving to make informed decisions.																					
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x	
(B) draw inferences based on information related to promotional materials for products and services																					
(C) represent the natural world using models and identify their limitations		x					x	x													
(D) evaluate the impact of research on scientific thought, society, and the environment																					
(E) connect Grade 4 science concepts with the history of science and contributions of scientists																					
4.4: The student knows how to use a variety of tools and methods to conduct science inquiry.																					
(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses	x				x			x				x				x	x		x	x	x
(B) demonstrate that repeated investigations may increase the reliability of results	x							x								x				x	
SCIENTIFIC CONCEPTS																					
4.5: The student knows that complex systems may not work if some parts are removed.																					
(A) identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
(B) predict and draw conclusions about what happens when part of a system is removed										x	x			x	x		x	x			
4.6: The student knows that change can create recognizable patterns.																					
(A) identify patterns of change such as in weather, metamorphosis, and objects in the sky									x			x								x	

(B) illustrate that certain characteristics of an object can remain constant even when the object is rotated like a spinning top, translated like a skater moving in a straight line, or reflected on a smooth surface																					
(C) use reflections to verify that a natural object has symmetry																					
4.7: The student knows that matter has physical properties.																					
(A) observe and record changes in the states of matter caused by the addition or reduction of heat																					
(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy																					
4.8: The student knows that adaptations may increase the survival of members of a species.																					
(A) identify characteristics that allow members within a species to survive and reproduce	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×		x	x		x	
(B) compare adaptive characteristics of various species		×	×	×		×	×	×	×	×	×		×	×				x			
(C) identify the kinds of species that lived in the past and compare them to existing species																					
4.9: The student knows that many likenesses between offspring and parents are inherited or learned.																					
(A) distinguish between inherited traits and learned characteristics																					
(B) identify and provide examples of inherited traits and learned characteristics																					
4.10: The student knows that certain past events affect present and future events.																					
(A) identify and observe effects of events that require time for changes to be noticeable including growth, erosion, dissolving, weathering, and flow										×	×				×						
(B) draw conclusions about "what happened before" using fossils or charts and tables																					
4.11: The student knows that the natural world includes earth materials and objects in the sky.																					
(A) test properties of soils including texture, capacity to retain water, and ability to support life																					
(B) summarize the effects of the oceans on land																					
(C) identify the Sun as the major source of energy for the Earth and understand its role in the growth of plants, in the creation of winds, and in the water cycle																					

Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries	L21: Planning a Bat Conservation Project
SCIENTIFIC CONCEPTS																					
5.1: The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices.																					
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x	
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x		
5.2: The student uses scientific methods during field and laboratory investigations.																					
(A) plan and implement descriptive and simple experimental investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x	x
(B) collect information by observing and measuring	x		x	x				x		x		x				x			x	x	
(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x	
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x	x
(E) construct simple graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate information	x							x	x	x			x			x				x	
5.3: The student uses critical thinking and scientific problem solving to make informed decisions.																					
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x	
(B) draw inferences based on information related to promotional materials for products and services																					
(C) represent the natural world using models and identify their limitations		x					x	x													
(D) evaluate the impact of research on scientific thought, society, and the environment																					
(E) connect Grade 5 science concepts with the history of science and contributions of scientists																					
5.4: The student knows how to use a variety of tools and methods to conduct science inquiry.																					
(A) collect and analyze information using tools including calculators, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, compasses, balances, hot plates, meter sticks, timing devices, magnets, collecting nets, and safety goggles	x				x			x				x				x	x		x	x	x
(B) demonstrate that repeated investigations may increase the reliability of results	x							x								x				x	
SCIENTIFIC CONCEPTS																					
5.5: The student knows that a system is a collection of cycles, structures, and processes that interact.																					
(A) describe some cycles, structures, and processes that are found in a simple system		x						x	x	x	x	x			x					x	
(B) describe some interactions that occur in a simple system		x				x	x	x		x	x			x	x		x	x			
5.6: The student knows that some change occurs in cycles.																					
(A) identify events and describe changes that occur on a regular basis such as in daily, weekly, lunar, and seasonal cycles									x		x	x									

(B) identify the significance of the water, carbon, and nitrogen cycles																					
(C) describe and compare life cycles of plants and animals									×	×	×						x				
5.7: The student knows that matter has physical properties.																					
(A) classify matter based on its physical properties including magnetism, physical state, and the ability to conduct or insulate heat, electricity, and sound																					
(B) demonstrate that some mixtures maintain the physical properties of their ingredients																					
(C) identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving sugar in water																					
(D) observe and measure characteristic properties of substances that remain constant such as boiling points and melting points																					
5.8: The student knows that energy occurs in many forms.																					
(A) differentiate among forms of energy including light, heat, electrical, and solar energy																					
(B) identify and demonstrate everyday examples of how light is reflected, such as from tinted windows, and refracted, such as in cameras, telescopes, and eyeglasses																					
(C) demonstrate that electricity can flow in a circuit and can produce heat, light, sound, and magnetic effects																					
(D) verify that vibrating an object can produce sound																					
5.9: The student knows that adaptations may increase the survival of members of a species.																					
(A) compare the adaptive characteristics of species that improve their ability to survive and reproduce in an ecosystem				×		×		×	×	×	×		×	×							
(B) analyze and describe adaptive characteristics that result in an organism's unique niche in an ecosystem		×	×	×	×	×	×	×	×	×	×	×	×	×			x	x		x	
(C) predict some adaptive characteristics required for survival and reproduction by an organism in an ecosystem		×		×		×		×													
5.10: The student knows that likenesses between offspring and parents can be inherited or learned.																					
(A) identify traits that are inherited from parent to offspring in plants and animals																					
(B) give examples of learned characteristics that result from the influence of the environment																					
5.11: The student knows that certain past events affect present and future events.																					
(A) identify and observe actions that require time for changes to be measurable, including growth, erosion, dissolving, weathering, and flow															×						
(B) draw conclusions about "what happened before" using data such as from tree-growth rings and sedimentary rock sequences																					
(C) identify past events that led to the formation of the Earth's renewable, non-renewable, and inexhaustible resources																					
5.12: The student knows that the natural world includes earth materials and objects in the sky.																					
(A) interpret how land forms are the result of a combination of constructive and destructive forces such as deposition of sediment and weathering																					
(B) describe processes responsible for the formation of coal, oil, gas, and minerals																					
(C) identify the physical characteristics of the Earth and compare them to the physical characteristics of the moon																					
(D) identify gravity as the force that keeps planets in orbit around the Sun and the moon in orbit around the Earth																					

Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries
SCIENTIFIC CONCEPTS																				
6.1: The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.																				
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x	
6.2: The student uses scientific inquiry methods during field and laboratory investigations.																				
(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x
(B) collect data by observing and measuring	x		x	x				x		x						x			x	x
(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x
(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data	x							x	x	x			x			x				x
6.3: The student uses critical thinking and scientific problem solving to make informed decisions.																				
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x
(B) draw inferences based on data related to promotional materials for products and services																				
(C) represent the natural world using models and identify their limitations		x					x	x												
(D) evaluate the impact of research on scientific thought, society, and the environment																				
(E) connect Grade 6 science concepts with the history of science and contributions of scientists																				
6.4: The student knows how to use a variety of tools and methods to conduct science inquiry.																				
(A) collect, analyze, and record information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, timing devices, hot plates, test tubes, safety goggles, spring scales, magnets, balances, microscopes, telescopes, thermometers, calculators, field equipment, compasses, computers, and computer probes	x				x			x								x	x		x	x
(B) identify patterns in collected information using percent, average, range, and frequency	x							x								x	x			
SCIENTIFIC CONCEPTS																				
6.5: The student knows that systems may combine with other systems to form a larger system.																				

(A) identify and describe a system that results from the combination of two or more systems such as in the solar system										×	×			×	×		x			
(B) describe how the properties of a system are different from the properties of its parts											×			×						
6.6: The student knows that there is a relationship between force and motion.																				
(A) identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force																				
(B) demonstrate that changes in motion can be measured and graphically represented																				
(C) identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity																				
6.7: The student knows that substances have physical and chemical properties.																				
(A) demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances																				
(B) classify substances by their physical and chemical properties																				
6.8: The student knows that complex interactions occur between matter and energy.																				
(A) define matter and energy																				
(B) explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin										×										
(C) describe energy flow in living systems including food chains and food webs										×				×			x			
6.9: The student knows that obtaining, transforming, and distributing energy affects the environment.																				
(A) identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy																				
(B) compare methods used for transforming energy in devices such as water heaters, cooling systems, or hydroelectric and wind power plants																				
(C) research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible																				
6.10: The student knows the relationship between structure and function in living systems.																				
(A) differentiate between structure and function		×				×	×												x	
(B) determine that all organisms are composed of cells that carry on functions to sustain life																				
(C) identify how structure complements function at different levels of organization including organs, organ systems, organisms, and populations		×	×	×		×	×				×			×			x			
6.11: The student knows that traits of species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.																				
(A) identify some changes in traits that can occur over several generations through natural occurrence and selective breeding																				
(B) identify cells as structures containing genetic material																				
(C) interpret the role of genes in inheritance																				
6.12: The student knows that the responses of organisms are caused by internal or external stimuli.																				
(A) identify responses in organisms to internal stimuli such as hunger or thirst		×		×	×	×			×	×	×				×		x	x		

(B) identify responses in organisms to external stimuli such as the presence or absence of heat or light		×		×	×	×		×	×		×	×		×	×				x	x
(C) identify components of an ecosystem to which organisms may respond	×	×	×	×	×	×		×	×	×	×	×	×	×	×		x	x		
6.13: The student knows components of our solar system.																				
(A) identify characteristics of objects in our solar system including the Sun, planets, meteorites, comets, asteroids, and moons																				
(B) describe types of equipment and transportation needed for space travel																				
6.14: The student knows the structures and functions of Earth systems.																				
(A) summarize the rock cycle																				
(B) identify relationships between groundwater and surface water in a watershed																				
(C) describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in weather change																				

Science Lessons/Units of Study	Lesson 1: Thinking About Our Bat Attitudes	L2: Understanding Bats	L3: Finding Bats	L4: Identifying Bats	L5: Reporting on Bats	L6: Investigating Bat Adaptations	L7: Experimenting with Flight	L8: Imitating Echolocation	L9: Comparing How Animals Survive Winter	L10: Recognizing Bats in the Balance of Nature	L11: Examining Bats in a Desert Ecosystem	L12: Exploring Bat Caves	L13: Studying Neighborhood Bats	L14: Observing How Bats Help Rain Forests	L15: Saving a Tropical Rain Forest	L16: Counting Bats	L17: Calculating the Value of Bats	L18: Working Together to Save Bats	L19: Building a Home for Bats	L20: Making Scientific Discoveries	L21: Planning a Bat Conservation Project
SCIENTIFIC CONCEPTS																					
8.1: The student conducts field and laboratory investigations using safe, environmentally appropriate, and ethical practices.																					
(A) demonstrate safe practices during field and laboratory investigations			x					x				x				x			x	x	
(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials																			x		
8.2: The student uses scientific inquiry methods during field and laboratory investigations.																					
(A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology								x								x			x	x	x
(B) collect data by observing and measuring	x		x	x				x		x						x			x	x	
(C) organize, analyze, evaluate, make inferences, and predict trends from direct and indirect evidence	x			x		x		x	x	x	x	x	x		x	x	x	x	x	x	
(D) communicate valid conclusions	x		x	x		x		x			x				x	x	x	x	x	x	x
(E) construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data	x							x	x	x			x			x				x	
8.3: The student uses critical thinking and scientific problem solving to make informed decisions.																					
(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information																				x	
(B) draw inferences based on data related to promotional materials for products and services																					
(C) represent the natural world using models and identify their limitations		x					x	x													
(D) evaluate the impact of research on scientific thought, society, and the environment																					
(E) connect Grade 8 science concepts with the history of science and contributions of scientists																					
8.4: The student knows how to use a variety of tools and methods to conduct science inquiry.																					
(A) collect, record, and analyze information using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, water test kits, and timing devices					x			x				x				x	x		x	x	
(B) extrapolate from collected information to make predictions								x				x				x	x			x	
8.5: The student knows that relationships exist between science and technology.																					
(A) identify a design problem and propose a solution																					

(B) design and test a model to solve the problem							×														
(C) evaluate the model and make recommendations for improving the model							×														
SCIENTIFIC CONCEPTS																					
8.6: The student knows that interdependence occurs among living systems.																					
(A) describe interactions among systems in the human organism																					
(B) identify feedback mechanisms that maintain equilibrium of systems such as body temperature, turgor pressure, and chemical reactions									×	×		×					x				
(C) describe interactions within ecosystems		×	×	×	×	×	×	×	×	×	×	×	×	×	×		x	x		x	
8.7: The student knows that there is a relationship between force and motion.																					
(A) demonstrate how unbalanced forces cause changes in the speed or direction of an object's motion																					
(B) recognize that waves are generated and can travel through different media								×													
8.8: The student knows that matter is composed of atoms.																					
(A) describe the structure and parts of an atom																					
(B) identify the properties of an atom including mass and electrical charge																					
8.9: The student knows that substances have chemical and physical properties.																					
(A) demonstrate that substances may react chemically to form new substances												×									
(B) interpret information on the periodic table to understand that physical properties are used to group elements																					
(C) recognize the importance of formulas and equations to express what happens in a chemical reaction																					
D) identify that physical and chemical properties influence the development and application of everyday materials such as cooking surfaces, insulation, adhesives, and plastics																					
8.10: The student knows that complex interactions occur between matter and energy.																					
(A) illustrate interactions between matter and energy including specific heat																					
(B) describe interactions among solar, weather, and ocean systems																					
(C) identify and demonstrate that loss or gain of heat energy occurs during exothermic and endothermic chemical reactions																					
8.11: The student knows that traits of species can change through generations and that the instructions for traits are contained in the genetic material of the organisms.																					
(A) identify that change in environmental conditions can affect the survival of individuals and of species						×			×	×	×	×	×	×	×			x	x	x	
(B) distinguish between inherited traits and other characteristics that result from interactions with the environment																					
(C) make predictions about possible outcomes of various genetic combinations of inherited characteristics																					
8.12: The student knows that cycles exist in Earth systems.																					
(A) analyze and predict the sequence of events in the lunar and rock cycles																					
(B) relate the role of oceans to climatic changes																					
(C) predict the results of modifying the Earth's nitrogen, water, and carbon cycles																					
8.13: The student knows characteristics of the universe.																					

(A) describe characteristics of the universe such as stars and galaxies																					
(B) explain the use of light years to describe distances in the universe																					
(C) research and describe historical scientific theories of the origin of the universe																					
8.14: The student knows that natural events and human activities can alter Earth systems.																					
(A) predict land features resulting from gradual changes such as mountain building, beach erosion, land subsidence, and continental drift																					
(B) analyze how natural or human events may have contributed to the extinction of some species											×			×	×			X			
(C) describe how human activities have modified soil, water, and air quality													×		×			X			