

8th GRADE SCIENCE
Semester One/ 1st Quarter
Benchmark Blueprint

Strand 1: Inquiry Process		
<p>Inquiry Process establishes the basis for students' learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.</p>		
CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
<p>Concept 1: Observations, Questions, and Hypotheses Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.</p>	<p><i>PO 1. Formulate questions based on observations that lead to the development of a hypothesis.</i> <i>(See M08-S2C1-01)</i></p>	
	<p><i>PO 2. Use appropriate research information, not limited to a single source, to use in the development of a testable hypothesis.</i> <i>(See R08-S3C2-03 and W-E8-01)</i></p>	
	<p><i>PO 3. Generate a hypothesis that can be tested.</i></p>	
<p>Concept 2: Scientific Testing (Investigating and Modeling) Design and conduct controlled investigations.</p>	<p><i>PO 1. Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.</i></p>	
	<p><i>PO 2. Design a controlled investigation to support or reject a hypothesis.</i></p>	
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	<p><i>PO 4. Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).</i></p>	
	<p><i>PO 5. Keep a record of observations, notes, sketches, questions, and ideas using tools such as written and/or computer logs.</i></p>	

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	<p><i>PO 2. Form a logical argument about a correlation between variables or sequence of events (e.g., construct a cause-and-effect chain that explains a sequence of events).</i></p>	
	<p>PO 3. Interpret data that show a variety of possible relationships between two variables, including:</p> <ul style="list-style-type: none"> • positive relationship • negative relationship • no relationship 	
	<p>PO 4. Formulate a future investigation based on the data collected.</p>	
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	PO 3. Present analyses and conclusions in clear, concise formats. (See W-E6-PO1)	
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Strand 2: History and Nature of Science

Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the inclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
<p>Concept 1: History of Science as a Human Endeavor Identify individual, cultural, and technological contributions to scientific knowledge.</p>		
<p>Concept 2: Nature of Scientific Knowledge Understand how science is a process for generating knowledge.</p>		

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Strand 3: Science in Personal and Social Perspectives		
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CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
<p>Concept 1: Changes in Environments Describe the interactions between human populations, natural hazards, and the environment.</p>	<p>PO 1. Analyze the risk factors associated with natural, human induced, and/or biological hazards, including:</p> <ul style="list-style-type: none"> • waste disposal of industrial chemicals • greenhouse gases 	
	<p>PO 2. Analyze possible solutions to address the environmental risks associated with chemicals and biological systems.</p>	
<p>Concept 2: Science and Technology in Society Develop viable solutions to a need or problem.</p>		

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Strand 4: Life Science

Life Science expands students' biological understanding of life by focusing on the characteristics of living things, the diversity of life, and how organisms and populations change over time in terms of biological adaptation and genetics. This understanding includes the relationship of structures to their functions and life cycles, interrelationships of matter and energy in living organisms, and the interactions of living organisms with their environment.

CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
Concept 2: Reproduction and Heredity Understand the basic principles of heredity.	PO 1. Explain the purposes of cell division: <ul style="list-style-type: none"> • growth and repair • reproduction 	
	PO 2. Explain the basic principles of heredity using the human examples of: <ul style="list-style-type: none"> • eye color • widow's peak • blood type 	
	PO 3. Distinguish between the nature of dominant and recessive traits in humans.	

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CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
<p>Concept 4: Diversity, Adaptation, and Behavior Identify structural and behavioral adaptations.</p>	PO 1. Explain how an organism's behavior allows it to survive in an environment	
	PO 2. Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment.	
	PO 3. Determine characteristics of organisms that could change over several generations.	
	PO 4. Compare the symbiotic and competitive relationships in organisms within an ecosystem (e.g., lichen, mistletoe/tree, clownfish/sea anemone, native/non-native species).	
	PO 5. Analyze the following behavioral cycles of organisms: <ul style="list-style-type: none"> • hibernation • migration • dormancy (plants) 	
	PO 6. Describe the following factors that allow for the survival of living organisms: <ul style="list-style-type: none"> • protective coloration • beak design • seed dispersal • pollination 	

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CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
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	<p>PO 2. Evaluate the effects of the following major scientific milestones on society:</p> <ul style="list-style-type: none"> • Mendelian Genetics • Newton's Laws 	
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	<p><i>PO 2. Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.</i></p>	
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Strand 5: Physical Science

Physical Science affords students the opportunity to increase their understanding of the characteristics of objects and materials they encounter daily. Students gain an understanding of the nature of matter and energy, including their forms, the changes they undergo, and their interactions. By studying objects and the forces that act upon them, students develop an understanding of the fundamental laws of motion, knowledge of the various ways energy is stored in a system, and the processes by which energy is transferred between systems and surroundings.

CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
<p>Concept 1: Properties and Changes of Properties in Matter Understand physical and chemical properties of matter.</p>	PO 1. Identify different kinds of matter based on the following physical properties: <ul style="list-style-type: none"> • states • density • boiling point • melting point • solubility 	
	PO 2. Identify different kinds of matter based on the following chemical properties: <ul style="list-style-type: none"> • reactivity • pH • oxidation (corrosion) 	
	PO 3. Identify the following types of evidence that a chemical reaction has occurred: <ul style="list-style-type: none"> • formation of a precipitate • generation of gas • color change • absorption or release of heat 	
	PO 4. Classify matter in terms of elements, compounds, or mixtures.	
	PO 5. Classify mixtures as being homogeneous or heterogeneous.	
	PO 6. Explain the systematic organization of the periodic table.	
	PO 7. Investigate how the transfer of energy can affect the physical and chemical properties of matter.	

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<p>Concept 1: Properties and Changes of Properties in Matter Understand physical and chemical properties of matter.</p>		
<p>Concept 2: Motion and Forces Understand the relationship between force and motion.</p>	PO 1. Demonstrate velocity as the rate of change of position over time.	
	PO 2. Identify the conditions under which an object will continue in its state of motion (Newton's 1 st Law of Motion).	
	PO 3. Describe how the acceleration of a body is dependent on its mass and the net applied force (Newton's 2 nd Law of Motion).	
	PO 4. Describe forces as interactions between bodies (Newton's 3 rd Law of Motion).	
	PO 5. Create a graph devised from measurements of moving objects and their interactions, including: <ul style="list-style-type: none"> • position-time graphs • velocity-time graphs 	

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4th Quarter
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Comprehensive Health Education Standards		
STANDARD 1		
Students comprehend concepts related to health promotion and disease prevention		
CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
1CH-E1. Explain the relationship between positive health behaviors and health care and the prevention of injury, illness, disease, disability and premature death	PO 2. Illustrate the harmful effects of use of tobacco, alcohol and other drugs	
1CH-E2. Describe the interrelationship of mental, emotional, social and physical health during adolescence	PO 1. Describe how thoughts, feelings, dealing with people and being physically healthy are all interconnected	
	PO 2. Illustrate how the variables stated above (in PO 1) interact as seen in case studies, movies, etc.	
1CH-E5. Explain how environmental health and personal health are interrelated	PO 1. Compare healthy environments and healthy people with unhealthy environments and unhealthy people	

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Comprehensive Health Education Standards

STANDARD 2

Students demonstrate the ability to access accurate health information.

CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
2CH-E1. Obtain and utilize accurate health resources from home, school and community	PO 1. Apply health information from home, school and community	
2CH-E3. Compare the costs and effectiveness of health products	PO 1. Describe similar health products' cost and effectiveness in treating health problems	
2CH-E4. Describe situations requiring professional health services	PO 1. Same as concept	

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Comprehensive Health Education Standards		
STANDARD 3		
Students demonstrate the ability to practice health-enhancing behaviors and reduce health risks.		
CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
3CH-E2. Identify strengths of, and risks to, one's personal and family health (e.g., heart disease, diabetes, high blood pressure) and implement strategies to improve or maintain both	PO 1. Rank personal and family strengths and risks	
3CH-E3. Distinguish between responsible and risky/harmful behaviors (e.g., responsible: exercise, sleep, nutrition; risky: the use of tobacco, alcohol and other drugs)	PO 1. Identify responsible and risky behaviors	
3CH-E4. Develop injury prevention and management strategies for personal and family health including ways to avoid and reduce threatening situations	PO 1. Identify existing prevention and management strategies regarding personal and family health	
	PO 2. Identify ways to avoid threatening situations	

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Comprehensive Health Education Standards

STANDARD 3

Students demonstrate the ability to practice health-enhancing behaviors and reduce health risks.

CONCEPT	PERFORMANCE OBJECTIVE	ASSESSMENT
3CH-E5. Demonstrate strategies to manage stress		PO 1. Choose five ways to reduce stress
3CH-E6. Perform basic safety, first aid and life saving techniques		PO 1. Apply basic first aid and basic life saving techniques