

**Chicago Ridge District 127.5**  
**8th Grade Science Scope and Sequence**

Unit	Disciplinary Core Ideas	Performance Expectations	SEP	CCC
<p><b>MS. Forces and Interactions</b>  <b>Motion and Stability</b></p> <p>Unit 1: Forces</p>	<p><b>PS2.A: Forces and Motion.</b>            (MS-PS2-1), (MS-PS2-2), (MS-PS2-2)</p> <p><b>PS2.B: Types of Interactions</b>            (MS-PS2-5), (MS-PS2-3), (MS-PS2-4)</p>	<p>Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects.            MS-PS2-1</p> <p>Plan an investigation to provide evidence that the change in an object’s motion depends on the sum of the forces on the object and the mass of the object.            MS-PS2-2</p> <p>Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.            MS-PS2-3</p> <p>Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.            MS-PS2-4</p> <p>Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on</p>	<p><b>Asking Questions and Defining Problems.</b>            (MS-PS2-3)</p> <p><b>Planning and Carrying Out Investigations</b>            (MS-PS2-2), (MS-PS2-5)</p> <p><b>Constructing Explanations and Designing Solutions</b>            (MS-PS2-1)</p> <p><b>Engaging in Argument from Evidence.</b>            (MS-PS2-4)</p> <p><b>Science Knowledge Is Based on Empirical Evidence</b>            (MS-PS2-2), (MS-PS2-4)</p>	<p><b>Cause and Effect</b>            (MS-PS2-3), (MS-PS2-5)</p> <p><b>Systems and System Models</b>            (MS-PS2-1), (MS-PS2-4)</p> <p><b>Stability and Change</b>            (MS-PS2-2)</p> <p><b>Influence of Science, Engineering, and Technology on Society and the Natural World</b>            (MS-PS2-1)</p>

		each other even though the objects are not in contact. MS-PS2-5		
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<b>MS. Energy</b>  Unit 2: Kinetic and Potential Energy  Unit 3: Thermal Energy	<p><b>PS3.A: Definitions of Energy</b> (MS-PS3-1), (MS-PS3-2), (MS-PS3-3), (MS-PS3-4)</p> <p><b>PS3.B: Conservation of Energy and Energy Transfer</b> (MS-PS3-5), (MS-PS3-4), (MS-PS3-3)</p> <p><b>PS3.C: Relationship Between Energy and Forces</b> (MS-PS3-2)</p> <p><b>ETS1.A: Defining and Delimiting an Engineering Problem</b> (MS-PS3-3)</p> <p><b>ETS1.B: Developing Possible Solutions</b> (MS-PS3-3)</p>	<p>Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object. MS-PS3-1</p> <p>Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system. MS-PS3-2</p> <p>Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. MS-PS3-3</p> <p>Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the. MS-PS3-4</p>	<p><b>Developing and Using Models.</b> (MS-PS3-2)</p> <p><b>Planning and Carrying Out Investigations.</b> (MS-PS3-4)</p> <p><b>Analyzing and Interpreting Data</b> (MS-PS3-1)</p> <p><b>Constructing Explanations and Designing Solutions</b> (MS-PS3-3)</p> <p><b>Engaging in Argument from Evidence</b> (MS-PS3-5)</p> <p><b>Science Knowledge Is Based on Empirical Evidence.</b> (MS-PS3-4), (MS-PS3-5)</p>	<p><b>Scale, Proportion, and Quantity</b> (MS-PS3-1), (MS-PS3-4)</p> <p><b>Systems and System Models</b> (MS-PS3-2)</p> <p><b>Energy and Matter</b> (MS-PS3-3), (MS-PS3-5)</p>

		Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. MS-PS3-5		
<b>Unit</b>	<b>Disciplinary Core Ideas</b>	<b>Performance Expectations</b>	<b>SEP</b>	<b>CCC</b>
<b>MS. Earth's Systems</b>				
Unit 1: Atmosphere and Energy  Unit 2: Weather  Unit 3: Climate	<b>ESS2.C: The Roles of Water in Earth's Surface Processes</b> (MS-ESS2-6)  <b>ESS2.D: Weather and Climate</b> (MS-ESS2-6), (MS-ESS2-5), (MS-ESS2-6)  <b>ESS3.D: Global Climate Change</b> (MS-ESS3-5)	Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. MS-ESS2-5  Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. MS-ESS2-6  Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. MS-ESS3-5	<b>Asking Questions and Defining Problems</b> (MS-ESS3-5)  <b>Developing and Using Models</b> (MS-ESS2-6)  <b>Planning and Carrying Out Investigations</b> (MS-ESS2-5)	<b>Cause and Effect</b> (MS-ESS2-5)  <b>Systems and System Models</b> (MS-ESS2-6)  <b>Stability and Change</b> (MS-ESS3-5)
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**MS. Growth, Development, and Reproduction of Organisms**

**Biological Evolution, Unity and Diversity**

Unit 1: History of Life on Earth

Unit 2: Evolution of Life

**LS1.B: Growth and Development of Organisms**

(MS-LS1-4), (MS-LS1-4), (MS-LS1-5), (secondary to MS-LS3-2)

**LS3.A: Inheritance of Traits**

(MS-LS3-1), (MS-LS3-2)

**LS3.B: Variation of Traits**

(MS-LS3-2), (MS-LS3-1)

Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.  
MS-LS1-4

Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.  
MS-LS1-5

Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.  
MS-LS3-1

Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.  
MS-LS3-2

**Developing and Using Models**

(MS-LS3-1), (MS-LS3-2)

**Constructing Explanations and Designing Solutions**

(MS-LS1-5)

**Engaging in Argument from Evidence**

(MS-LS1-4)

**Obtaining, Evaluating, and Communicating Information**

(MS-LS4-5)

**Cause and Effect**

(MS-LS3-2,) (MS-LS1-4), (MS-LS1-5), (MS-LS4-5)

**Structure and Function**

(MS-LS3-1)

**Interdependence of Science, Engineering, and Technology**

(MS-LS4-5)

**Science Addresses Questions About the Natural and Material World**

(MS-LS4-5)

		Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. MS-LS4-5		
<b>Unit</b>	<b>Disciplinary Core Ideas</b>	<b>Performance Expectations</b>	<b>SEP</b>	<b>CCC</b>
<b>MS. Natural Selection and Adaptations</b>  Unit 3: Human Impacts on Evolution	<p><b>LS4.A: Evidence of Common Ancestry and Diversity</b> (MS-LS4-1), (MS-LS4-2), (MS-LS4-3)</p> <p><b>LS4.B: Natural Selection</b> (MS-LS4-4)</p> <p><b>LS4.C: Adaptation</b> (MS-LS4-6)</p>	<p>Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. MS-LS4-1</p> <p>Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. MS-LS4-2</p> <p>Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not</p>	<p><b>Analyzing and Interpreting Data</b> (MS-LS4-3), (MS-LS4-1)</p> <p><b>Using Mathematics and Computational Thinking</b> (MS-LS4-6)</p> <p><b>Constructing Explanations and Designing Solutions</b> (MS-LS4-4), (MS-LS4-2)</p> <p><b>Science Knowledge Is Based on Empirical Evidence</b> (MS-LS4-1)</p>	<p><b>Patterns</b> (MS-LS4-1), (MS-LS4-3), (MS-LS4-2)</p> <p><b>Cause and Effect</b> (MS-LS4-4), (MS-LS4-6)</p> <p><b>Scientific Knowledge Assumes an Order and Consistency in Natural Systems</b> (MS-LS4-1), (MS-LS4-2)</p>

		<p>evident in the fully formed anatomy. MS-LS4-3</p> <p>Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. MS-LS4-4</p> <p>Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. MS-LS4-6</p>		
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