

Science Grade 6

Adams County/Ohio Valley  
Course of Study

<b>Content Standard: Earth and Space</b>			
<b>Benchmark D: Identify that the lithosphere contains rocks and minerals and that minerals make up rocks. Describe how rocks and minerals are formed and/or classified.</b>			
<b>Content Organizer: Earth Systems</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Describe the rock cycle and explain that there are sedimentary, igneous and metamorphic rocks that have distinct properties (e.g., color, texture) and are formed in different ways.			

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**Content Standard: Earth and Space**  
**Benchmark D: Identify that the lithosphere contains rocks and minerals and that minerals make up rocks. Describe how rocks and minerals are formed and/or classified.**  
**Content Organizer: Earth Systems**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Explain that rocks are made of one or more minerals.			

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**Content Standard: Earth and Space**

**Benchmark D: Identify that the lithosphere contains rocks and minerals and that minerals make up rocks. Describe how rocks and minerals are formed and/or classified.**

**Content Organizer: Earth Systems**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Identify minerals by their characteristic properties.			

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**Content Standard: Life Science**  
**Benchmark A: Explain that the basic functions of organisms are carried out in cells and groups of specialized cells form tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structures.**  
**Content Organizer: Characteristics and Structure of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Explain that many of the basic functions of organisms are carried out by or within cells and are similar in all organisms.			

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**Content Standard: Life Science**  
**Benchmark A: Explain that the basic functions of organisms are carried out in cells and groups of specialized cells form tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structures.**  
**Content Organizer: Characteristics and Structure of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Explain that multicellular organisms have a variety of specialized cells, tissues, organs and organ systems that perform specialized functions.			

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**Content Standard: Life Science**  
**Benchmark A: Explain that the basic functions of organisms are carried out in cells and groups of specialized cells form tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structures.**  
**Content Organizer: Characteristics and Structure of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Identify how plant cells differ from animal cells (e.g., cell wall and chloroplasts).			

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**Content Standard: Life Science**  
**Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.**  
**Content Organizer: Heredity**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
4. Recognize that an individual organism does not live forever; therefore reproduction is necessary for the continuation of every species and traits are passed on to the next generation through reproduction.			

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**Content Standard: Life Science**  
**Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.**  
**Content Organizer: Heredity**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
5. Describe that in asexual reproduction all the inherited traits come from a single parent.			

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**Content Standard: Life Science**  
**Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.**  
**Content Organizer: Heredity**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
6. Describe that in sexual reproduction an egg and sperm unite and some traits come from each parent, so the offspring is never identical to either of its parents.			

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**Content Standard: Life Science**  
**Benchmark B: Describe the characteristics of an organism in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.**  
**Content Organizer: Heredity**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
7. Recognize that likenesses between parents and offspring (e.g., eye color, flower color) are inherited. Other likenesses, such as table manners are learned.			

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**Content Standard: Life Science**

**Benchmark C: Explain how energy entering the ecosystems as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interactions of organisms and the environment.**

**Content Organizer: Diversity and interdependence of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
8. Describe how organisms may interact with one another.			

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<b>Content Standard: Physical Sciences</b>			
<b>Benchmark A: Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter.</b>			
<b>Content Organizer: Nature of Matter</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Explain that equal volumes of different substances usually have different masses.			

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Course of Study

**Content Standard: Physical Sciences**

**Benchmark A: Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter.**

**Content Organizer: Nature of Matter**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Describe that in a chemical change new substances are formed with different properties than the original substance (e.g., rusting, burning).			

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Course of Study

<b>Content Standard: Physical Sciences</b>			
<b>Benchmark A: Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter.</b>			
<b>Content Organizer: Nature of Matter</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
3. Describe that in a physical change (e.g., state, shape and size) the chemical properties of a substance remain unchanged.			

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Course of Study

**Content Standard: Physical Sciences**

**Benchmark A: Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter.**

**Content Organizer: Nature of Matter**

<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
4. Describe that chemical and physical changes occur all around us (e.g., in the human body, cooking and industry).			

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**Content Standard: Physical Sciences**  
**Benchmark C: Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources.**  
**Content Organizer: Nature of Energy**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
5. Explain that the energy found in nonrenewable resources such as fossil fuels (e.g., oil, coal and natural gas) originally came from the sun and may renew slowly over millions of years.			

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**Content Standard: Physical Sciences**  
**Benchmark C: Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources.**  
**Content Organizer: Nature of Energy**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
6. Explain that energy derived from renewable resources such as wind and water is assumed to be available indefinitely.			

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**Content Standard: Physical Sciences**  
**Benchmark C: Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources.**  
**Content Organizer: Nature of Energy**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
7. Describe how electric energy can be produced from a variety of sources (e.g., sun, wind and coal).			

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Course of Study

**Content Standard: Physical Sciences**

**Benchmark C: Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources.**

**Content Organizer: Nature of Energy**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
8. Describe how renewable and nonrenewable energy resources can be managed (e.g., fossil fuels, trees and water).			

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**Content Standard: Science and Technology**

**Benchmark A: Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life.**

**Content Organizer: Understanding Technology**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Explain how technology influences the quality of life.			

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Course of Study

**Content Standard: Science and Technology**

**Benchmark A: Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life.**

**Content Organizer: Understanding Technology**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Explain how decisions about the use of products and systems can result in desirable or undesirable consequences (e.g., social and environmental).			

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Course of Study

**Content Standard: Science and Technology**

**Benchmark A: Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life.**

**Content Organizer: Understanding Technology**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Describe how automation (e.g., robots) has changed manufacturing including manual labor being replaced by highly-skilled jobs.			

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Course of Study

**Content Standard: Science and Technology**  
**Benchmark A: Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life.**  
**Content Organizer: Understanding Technology**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
4. Explain how the usefulness of manufactured parts of an object depend on how well their properties allow them to fit and interact with other materials.			

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**Content Standard: Science and Technology**

**Benchmark B: Design a solution or product taking into account needs and constraints (e.g., cost, time, trade-offs, properties of materials, safety and aesthetics).**

**Content Organizer: Abilities To Do Technological Design**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
5. Design and build a product or create a solution to a problem given one constraint (e.g., limits of cost and time for design and production, supply of materials and environmental effects).			

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**Content Standard: Scientific Inquiry**  
**Benchmark A: Explain that there are differing sets of procedures for guiding scientific investigations and procedures are determined by the nature of the investigation, safety considerations and appropriate tools.**  
**Content Organizer: Doing Scientific Inquiry**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Explain that there are not fixed procedures for guiding scientific investigations; however, the nature of an investigation determines the procedures needed.			

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**Content Standard: Scientific Inquiry**  
**Benchmark A: Explain that there are differing sets of procedures for guiding scientific investigations and procedures are determined by the nature of the investigation, safety considerations and appropriate tools.**  
**Content Organizer: Doing Scientific Inquiry**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark B: Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.</b>			
<b>Content Organizer: Doing Scientific Inquiry</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
3. Distinguish between observation and inference.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark B: Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.</b>			
<b>Content Organizer: Doing Scientific Inquiry</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
4. Explain that a single example can never prove that something is always correct, but sometimes a single example can disprove something.			

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**Content Standard: Scientific Ways of Knowing**  
**Benchmark A: Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation).**  
**Content Organizer: Nature of Science**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Identify that hypotheses are valuable even when they are not supported.			

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**Content Standard: Scientific Ways of Knowing**  
**Benchmark A: Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation).**  
**Content Organizer: Ethical Practices**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Describe why it is important to keep clear, thorough and accurate records.			

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**Content Standard: Scientific Ways of Knowing**  
**Benchmark C: Give examples of how thinking scientifically is helpful in daily life.**  
**Content Organizer: Science and Society**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Identify ways scientific thinking is helpful in a variety of everyday settings.			

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Course of Study

**Content Standard: Scientific Ways of Knowing**  
**Benchmark C: Give examples of how thinking scientifically is helpful in daily life.**  
**Content Organizer: Science and Society**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
4. Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.			

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Course of Study

<b>Content Standard: Scientific Ways of Knowing</b>			
<b>Benchmark C: Give examples of how thinking scientifically is helpful in daily life.</b>			
<b>Content Organizer: Science and Society</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
5. Research how men and women of all countries and cultures have contributed to the development of science.			