

Science Grade 4

Adams County/Ohio Valley Schools  
Course of Study

<b>Content Standard: Earth and Space</b>			
<b>Benchmark D: Analyze weather and changes that occur over a period of time.</b>			
<b>Content Organizer: Earth Systems</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure.			

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2. Identify how water exists in the air in different forms (e.g., in clouds, fog, rain, snow and hail).			

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3. Investigate how water changes from one state to another (e.g., freezing, melting, condensation and evaporation).			

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4. Describe weather by measurable quantities such as temperature, wind direction, wind speed, precipitation and barometric pressure.			

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5. Record local weather information on a calendar or map and describe changes over a period of time (e.g., barometric pressure, temperature, precipitation symbols and cloud conditions).			

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6. Trace how weather patterns generally move from west to east in the United States.			

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7. Describe the weather which accompanies cumulus, cumulonimbus, cirrus and stratus clouds.			

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<b>Content Standard: Earth and Space</b> <b>Benchmark B: Summarize the processes that shape Earth's surface and describe evidence of those processes.</b> <b>Content Organizer: Processes That Shape Earth</b>			
Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
8. Describe how wind, water and ice shape and reshape Earth's land surface by eroding rock and soil in some areas and depositing them in other areas producing characteristic landforms (e.g., dunes, deltas and glacial moraines).			

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<b>Content Organizer: Processes That Shape Earth</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
9. Identify and describe how freezing, thawing and plant growth reshape the land surface by causing the weathering of rock.			

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<b>Content Standard: Earth and Space</b>			
<b>Benchmark B: Summarize the processes that shape Earth's surface and describe evidence of those processes.</b>			
<b>Content Organizer: Processes That Shape Earth</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
10. Describe evidence of changes on Earth's surface in terms of slow processes (e.g., erosion, weathering, mountain building and deposition) and rapid processes (e.g. volcanic eruptions, earthquakes and landslides).			

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<b>Content Standard: Life Sciences</b>			
<b>Benchmark A: Differentiate between the life cycles of different plants and animals.</b>			
<b>Content Organizer: Heredity</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Compare the life cycles of different plants including germination, maturity, reproduction and death.			

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**Content Standard: Life Science**  
**Benchmark B: Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.**  
**Content Organizer: Diversity and Interdependence of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
2. Relate plant structures to their specific functions (e.g., growth, survival and reproduction).			

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**Content Standard: Life Science**  
**Benchmark B: Analyze plant and animal structures and functions needed for survival and describe the flow of energy through a system that all organisms use to survive.**  
**Content Organizer: Diversity and Interdependence of Life**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Classify common plants according to their characteristics (e.g., tree leaves, flowers, seeds, roots and stems).			

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<b>Content Standard: Life Science</b>			
<b>Benchmark C: Compare changes in an organism's ecosystem/habitat that affect its survival.</b>			
<b>Content Organizer: Diversity and Interdependence of Life</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
4. Observe and explore that fossils provide evidence about plants that lived long ago and the nature of the environment at that time.			

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<b>Content Standard: Life Science</b>			
<b>Benchmark A: Differentiate between the life cycles of different plants and animals.</b>			
<b>Content Organizer: Diversity and Interdependence of Life</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
5. Describe how organisms interact with one another in various ways (e.g., many plants depend on animals for carrying pollen or dispersing seeds).			

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**Content Standard: Physical Sciences**  
**Benchmark A: Compare the characteristics of simple physical and chemical changes.**  
**Content Organizer: Nature of Matter**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Identify characteristics of a simple physical change (e.g., heating or cooling can change water from one state to another and the change is reversible).			

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<b>Content Standard: Physical Sciences</b>			
<b>Benchmark A: Compare the characteristics of simple physical and chemical changes.</b>			
<b>Content Organizer: Nature of Matter</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
2. Identify characteristics of a simple chemical change. When a new material is made by combining two or more materials, it has chemical properties that are different from the original materials (e.g., burning paper, vinegar and baking soda).			

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**Content Standard: Physical Sciences**  
**Benchmark B: Identify and describe the physical properties of matter in its various states.**  
**Content Organizer: Nature of Matter**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Describe objects by the properties of the materials from which they are made and that these properties can be used to separate or sort a group of objects (e.g., paper, glass, plastic and metal).			

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<b>Content Standard: Physical Sciences</b>			
<b>Benchmark B: Identify and describe the physical properties of matter in its various states.</b>			
<b>Content Organizer: Nature of Matter</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
4. Explain that matter has different states (e.g., solid, liquid and gas) and that each state has distinct physical properties.			

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<b>Content Standard: Physical Sciences</b>			
<b>Benchmark D: Summarize the way changes in temperature can be produced and thermal energy transferred.</b>			
<b>Content Organizer: Nature of Energy</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
5. Compare ways the temperature of an object can be changed (e.g., rubbing, heating and bending of metal).			

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<b>Content Standard: Science and Technology</b>			
<b>Benchmark A: Describe how technology affects human life.</b>			
<b>Content Organizer: Understanding Technology</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Explain how technology from different areas (e.g., transportation, communication, nutrition, healthcare, agriculture, entertainment and manufacturing) has improved human lives.			

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<b>Content Standard: Science and Technology</b>			
<b>Benchmark A: Describe how technology affects human life.</b>			
<b>Content Organizer: Understanding Technology</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
2. Investigate how technology and inventions change to meet peoples' needs and wants.			

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<b>Content Standard: Science and Technology</b>			
<b>Benchmark B: Describe and illustrate the design process.</b>			
<b>Content Organizer: Abilities To Do Technological Design</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
3. Describe, illustrate and evaluate the design process used to solve a problem.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark A: Use appropriate instruments safely to observe, measure and collect data when conducting a scientific investigation.</b>			
<b>Content Organizer: Doing Scientific Inquiry</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
1. Select the appropriate tools and use relevant safety procedures to measure and record length, weight, volume, temperature and area in metric and English units.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark B: Organize and evaluate observations, measurements and other data to formulate inferences and 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>
2. Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark C: Develop, design and safely conduct scientific investigations and communicate the results.</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. Develop, design and conduct safe, simple investigations or experiments to answer questions.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark C: Develop, design and safely conduct scientific investigations and communicate the results.</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 the importance of keeping conditions the same in an experiment.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark C: Develop, design and safely conduct scientific investigations and communicate the results.</b>			
<b>Content Organizer: Doing Scientific Inquiry</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
5. Describe how comparisons may not be fair when some conditions are not kept the same between experiments.			

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<b>Content Standard: Scientific Inquiry</b>			
<b>Benchmark C: Develop, design and safely conduct scientific investigations and communicate the results.</b>			
<b>Content Organizer: Doing Scientific Inquiry</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
6. Formulate instructions and communicate data in a manner that allows others to understand and repeat an investigation or experiment.			

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**Content Standard: Scientific Ways of Knowing**

**Benchmark A: Distinguish between fact and opinion and explain how ideas and conclusions change as new knowledge is gained.**

**Content Organizer: Nature of Science**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
1. Differentiate fact from opinion and explain that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.			

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<b>Content Standard: Scientific Ways of Knowing</b>			
<b>Benchmark C: Explain the importance of keeping records of observations and investigations that are accurate and understandable.</b>			
<b>Content Organizer: Nature of Science</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
2. Record the results and data from an investigation and make a reasonable explanation.			

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**Content Standard: Scientific Ways of Knowing**

**Benchmark B: Describe different types of investigations and use results and data from investigations to provide the evidence to support explanations and conclusions.**

**Content Organizer: Nature of Science**

Grade-level Indicator	Instructional Activities/Strategies	Resources	Assessment
3. Explain discrepancies in an investigation using evidence to support findings.			

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<b>Content Standard: Scientific Ways of Knowing</b>			
<b>Benchmark C: Explain the importance of keeping records of observations and investigations that are accurate and understandable.</b>			
<b>Content Organizer: Ethical Practices</b>			
<b>Grade-level Indicator</b>	<b>Instructional Activities/Strategies</b>	<b>Resources</b>	<b>Assessment</b>
4. Explain why keeping records of observations and investigations is important.			