Virtual Learning Academy
Jefferson County Educational Service Center
Academic Content Standards
Science 04

Lesson 01-Explain Air

Explain Air

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
01. Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure. (04)

Lesson 02- Identify five forms of Water

Identify five forms of Water

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
02. Identify how water exists in the air in different forms (e.g., in clouds, fog, rain, snow and hail). (04)

Lesson 03-Water Changes

Water Changes

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
03. Investigate how water changes from one state to another (e.g., freezing, melting, condensation and evaporation). (04)

Lesson 04- Describing weather

Describing weather

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
04. Describe weather by measurable quantities such as temperature, wind direction, wind speed, precipitation and barometric pressure. (04)

Lesson 05 - Recording local weather

Recording local weather

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
05. 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). (04)

Lesson 06-Weather patterns

Weather patterns

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
06. Trace how weather patterns generally move from west to east in the United States. (04)

Lesson 07 - Weather and Clouds

Weather and Clouds

Standard Benchmark and Indicator
S01. Earth and Space Sciences
D. Analyze weather and changes that occur over a period of time. (03-05)
07. Describe the weather which accompanies cumulus, cumulonimbus, cirrus and stratus clouds. (04)

Lesson 08 - Earth’s shape from wind, water, ice

Earth’s shape from wind, water, ice

Standard Benchmark and Indicator
S01. Earth and Space Sciences
B. Summarize the processes that shape Earth's surface and describe evidence of those processes. (03-05)
08. 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). (04)

Lesson 09- Freezing-Thawing-Plant growth to reshape Earth

Freezing-Thawing-Plant growth to reshape Earth

Standard Benchmark and Indicator

S01. Earth and Space Sciences
B. Summarize the processes that shape Earth's surface and describe evidence of those processes. (03-05)
09. Identify and describe how freezing, thawing and plant growth reshape the land surface by causing the weathering of rock. (04)

Lesson 10-Earth's surface changes

Earth's surface changes

Standard Benchmark and Indicator
S01. Earth and Space Sciences
B. Summarize the processes that shape Earth's surface and describe evidence of those processes. (03-05)
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). (04)

Lesson 11- Plant Life Cycles

Plant Life Cycles

Standard Benchmark and Indicator
S02. Life Sciences
A. Differentiate between the life cycles of different plants and animals. (03-05)
01. Compare the life cycles of different plants including germination, maturity, reproduction and death. (04)

Lesson 12- Plant Structures

Plant Structures

Standard Benchmark and Indicator
S02. Life Sciences
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. (03-05)
02. Relate plant structures to their specific functions (e.g., growth, survival and reproduction). (04)

Lesson 13- Plant Characteristics

Plant Characteristics

Standard Benchmark and Indicator
S02. Life Sciences
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.
03. Classify common plants according to their characteristics (e.g., tree leaves, flowers, seeds, roots and stems). (04)

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Lesson 14- Fossils

Fossils

Standard Benchmark and Indicator
S02. Life Sciences
C. Compare changes in an organism's ecosystem/habitat that affect its survival. (03-05)
04. Observe and explore that fossils provide evidence about plants that lived long ago and the nature of the environment at that time. (04)

Lesson 15- Interactions of Organisms

Interactions of Organisms

Standard Benchmark and Indicator
S02. Life Sciences
A. Differentiate between the life cycles of different plants and animals. (03-05)
05. Describe how organisms interact with one another in various ways (e.g., many plants depend on animals for carrying pollen or dispersing seeds). (04)

Lesson 16- Physical changes

Physical changes

Standard Benchmark and Indicator
S03. Physical Sciences
A. Compare the characteristics of simple physical and chemical changes. (03-05)
01. 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). (04)

Lesson 17-Chemical changes

Chemical Changes

Standard Benchmark and Indicator
S03. Physical Sciences
A. Compare the characteristics of simple physical and chemical changes. (03-05)
02. 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). (04)

Lesson 18- Classifying matter

Classifying matter

Standard Benchmark and Indicator
S03. Physical Sciences
B. Identify and describe the physical properties of matter in its various states. (03-05)
03. 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). (04)

Lesson 19- Properties of Matter

Properties of Matter

Standard Benchmark and Indicator
S03. Physical Sciences
B. Identify and describe the physical properties of matter in its various states. (03-05)
04. Explain that matter has different states (e.g., solid, liquid and gas) and that each state has distinct physical properties. (04)

Lesson 20- Temperature changes

Temperature changes

Standard Benchmark and Indicator
S03. Physical Sciences
D. Summarize the way changes in temperature can be produced and thermal energy transferred. (03-05)
05. Compare ways the temperature of an object can be changed (e.g., rubbing, heating and bending of metal). (04)

Lesson 21- Technology changes

Technology changes

Standard Benchmark and Indicator
S04. Science and Technology
A. Describe how technology affects human life. (03-05)
01. Explain how technology from different areas (e.g., transportation, communication, nutrition, healthcare, agriculture, entertainment and manufacturing) has improved human lives. (04)

Lesson 22- Technology/Inventions

Technology/Inventions

Standard Benchmark and Indicator
S04. Science and Technology
A. Describe how technology affects human life. (03-05)
02. Investigate how technology and inventions change to meet peoples' needs and wants. (04)

Lesson 23 -Design Process

Design Process

Standard Benchmark and Indicator
S04. Science and Technology
A. Describe how technology affects human life. (03-05)
B. Describe and illustrate the design process. (03-05)
03. Describe, illustrate and evaluate the design process used to solve a problem. (04)

Lesson 24-Scientific tools

Scientific tools

Standard Benchmark and Indicator
S05. Scientific Inquiry
A. Use appropriate instruments safely to observe, measure and collect data when conducting a scientific investigation. (03-05)
01. Select the appropriate tools and use relevant safety procedures to measure and record length, weight, volume, temperature and area in metric and English units. (04)

Lesson 25- Seasonal Cycles

Seasonal Cycles

Standard Benchmark and Indicator
S05. Scientific Inquiry
B. Organize and evaluate observations, measurements and other data to formulate inferences and conclusions. (03-05)
02. Analyze a series of events and/or simple daily or seasonal cycles, describe the patterns and infer the next likely occurrence. (04)

Lesson 26- Simple Investigations

Simple Investigations

Standard Benchmark and Indicator
S05. Scientific Inquiry
C. Develop, design and safely conduct scientific investigations and communicate the results. (03-05)
03. Develop, design and conduct safe, simple investigations or experiments to answer questions. (04)

Lesson 27- Experimenting

Experimenting

Standard Benchmark and Indicator
S05. Scientific Inquiry
C. Develop, design and safely conduct scientific investigations and communicate the results. (03-05)
04. Explain the importance of keeping conditions the same in an experiment. (04)

Lesson 28- Experiment Conditions

Experiment Conditions

Standard Benchmark and Indicator
S05. Scientific Inquiry
C. Develop, design and safely conduct scientific investigations and communicate the results. (03-05)
05. Describe how comparisons may not be fair when some conditions are not kept the same between experiments. (04)

Lesson 29- Data in Experiments

Data in Experiments

Standard Benchmark and Indicator
S05. Scientific Inquiry
C. Develop, design and safely conduct scientific investigations and communicate the results. (03-05)
06. Formulate instructions and communicate data in a manner that allows others to understand and repeat an investigation or experiment. (04)

Lesson 30- Scientific Conclusions/Facts & Opinions

Scientific Conclusions/Facts & Opinions

Standard Benchmark and Indicator
S06. Scientific Ways of Knowing
A. Distinguish between fact and opinion and explain how ideas and conclusions change as new knowledge is gained. (03-05)
01. Differentiate fact from opinion and explain that scientists do not rely on claims or conclusions unless they are backed by observations that can be

claims or conclusions unless they are backed by observations that can be confirmed. (04)

Lesson 31-Investigation results

Investigation results

Standard Benchmark and Indicator
S06. Scientific Ways of Knowing
C. Explain the importance of keeping records of observations and investigations that are accurate and understandable. (03-05)
02. Record the results and data from an investigation and make a reasonable explanation. (04)

Lesson 32- Science discrepancies

Science discrepancies

Standard Benchmark and Indicator
S06. Scientific Ways of Knowing
B. Describe different types of investigations and use results and data from investigations to provide the evidence to support explanations and conclusions. (03-05)
03. Explain discrepancies in an investigation using evidence to support findings. (04)

Lesson 33- Records, Observations, & Investigations

Records, Observations, & Investigations

Standard Benchmark and Indicator
S06. Scientific Ways of Knowing
C. Explain the importance of keeping records of observations and investigations that are accurate and understandable. (03-05)
04. Explain why keeping records of observations and investigations is important. (04)

Lesson 34- Marie Curie-A Scientist

Marie Curie-A Scientist

Standard Benchmark and Indicator

A. Compare the characteristics of simple physical and chemical changes. (03-05)
01. 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). (04)
02. 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). (04)
B. Identify and describe the physical properties of matter in its various states. (03-05)
D. Summarize the way changes in temperature can be produced and thermal energy transferred. (03-05)

Lesson 35- Galileo Galilei-A Scientist

Galileo Galilei-A Scientist

Standard Benchmark and Indicator
S01. Earth and Space Sciences
B. Summarize the processes that shape Earth's surface and describe evidence of those processes. (03-05)
D. Analyze weather and changes that occur over a period of time. (03-05)
01. Explain that air surrounds us, takes up space, moves around us as wind, and may be measured using barometric pressure. (04)

Lesson 36-George Washington Carver--A Scientist

George Washington Carver-A Scientist

Standard Benchmark and Indicator
S02. Life Sciences
A. Differentiate between the life cycles of different plants and animals. (03-05)
01. Compare the life cycles of different plants including germination, maturity, reproduction and death. (04)
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. (03-05)
02. Relate plant structures to their specific functions (e.g., growth, survival and reproduction). (04)