Middle School Grade 7 Science Tutorials offer targeted instruction, practice, and review designed to help students develop scientific literacy, deepen conceptual understanding, and apply scientific practices. Students explore concepts such as how Earth's structures and organisms change over time, the interdependence of living systems and the environment, and how energy can be transferred and transformed.

Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By continually honing their ability to apply knowledge in real-world scenarios, students build the depth of knowledge and higher-order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students as they explore the nature of science through focused content, interactive mini investigations, multi-modal representations, and personalized feedback. The Review It offers a high-impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

These Tutorials are built to the Next Generation Science Standards for middle school science.

Unit 1: Nature of Science

- **WHAT IS SCIENCE?**
  - SC.7.N.1.A: Nature of Science The Practice of Science Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
  - SC.7.N.1.D: Nature of Science The Practice of Science Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.
  - SC.7.N.1.6: Nature of Science The Practice of Science Explain that empirical evidence is the cumulative body of observations of a natural phenomenon on which scientific explanations are based.
  - SC.7.N.2.A: Nature of Science The Characteristics of Scientific Knowledge Scientific knowledge is based on empirical evidence, and is appropriate for understanding the natural world, but it provides only a limited understanding of the supernatural, aesthetic, or other ways of knowing, such as art, philosophy, or religion.

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- SC.7.N.1.7: Nature of Science The Practice of Science Explain that scientific knowledge is the result of a great deal of debate and confirmation within the science community.
- SC.7.N.1.B: Nature of Science The Practice of Science The processes of science frequently do not correspond to the traditional portrayal of the scientific method.
- SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
- SC.7.N.2.C: Nature of Science The Characteristics of Scientific Knowledge Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.
- SC.7.N.2.B: Nature of Science The Characteristics of Scientific Knowledge Scientific knowledge is durable and robust, but open to change.
- SC.7.N.2.1: Nature of Science The Characteristics of Scientific Knowledge Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.
- SC.7.N.3.1: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.

- **TYPES OF INVESTIGATIONS**
  - SC.7.N.1.A: Nature of Science The Practice of Science Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
  - SC.7.N.1.3: Nature of Science The Practice of Science Distinguish between an experiment (which must involve the identification and control of variables) and other forms of scientific investigation and explain that not all scientific knowledge is derived from experimentation.
  - SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.N.1.2: Nature of Science The Practice of Science Differentiate replication (by others) from repetition (multiple trials).
  - SC.7.N.1.4: Nature of Science The Practice of Science Identify test variables (independent variables) and outcome variables (dependent variables) in an experiment.

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- SC.7.N.1.D: Nature of Science The Practice of Science Scientific knowledge is based on observation and inference; it is important to recognize that these are very different things. Not only does science require creativity in its methods and processes, but also in its questions and explanations.
- SC.7.N.2.C: Nature of Science The Characteristics of Scientific Knowledge Because science is based on empirical evidence it strives for objectivity, but as it is a human endeavor the processes, methods, and knowledge of science include subjectivity, as well as creativity and discovery.

Unit 2: Measurement and Data

- **TOOLS AND MEASUREMENT**
  - SC.7.N.1.A: Nature of Science The Practice of Science Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
  - SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- **DISPLAYING AND INTERPRETING DATA**
  - SC.7.N.1.A: Nature of Science The Practice of Science Scientific inquiry is a multifaceted activity; The processes of science include the formulation of scientifically investigable questions, construction of investigations into those questions, the collection of appropriate data, the evaluation of the meaning of those data, and the communication of this evaluation.
  - SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

Unit 3: Models

- **USING MODELS**
  - SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
  - SC.7.N.3.2: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Identify the benefits and limitations of the use of scientific models.

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- **MODELS OF EARTH**
  - SC.7.N.1.5: Nature of Science The Practice of Science Describe the methods used in the pursuit of a scientific explanation as seen in different fields of science such as biology, geology, and physics.
  - SC.7.N.3.2: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Identify the benefits and limitations of the use of scientific models.

Unit 4: Energy and Work

- **DESCRIBING ENERGY**
  - SC.7.P.10.A: Physical Science Forms of Energy Energy is involved in all physical processes and is a unifying concept in many areas of science.
  - SC.7.P.10.B: Physical Science Forms of Energy Energy exists in many forms and has the ability to do work or cause a change.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- **ENERGY TRANSFER AND TRANSFORMATION**
  - SC.7.P.11.2: Physical Science Energy Transfer and Transformations Investigate and describe the transformation of energy from one form to another.
  - SC.7.P.11.A: Physical Science Energy Transfer and Transformations Waves involve a transfer of energy without a transfer of matter.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.P.11.D: Physical Science Energy Transfer and Transformations The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.
  - SC.7.P.11.3: Physical Science Energy Transfer and Transformations Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.
- **WORK AND SIMPLE MACHINES**
  - SC.7.P.10.B: Physical Science Forms of Energy Energy exists in many forms and has the ability to do work or cause a change.

Unit 5: Energy and Waves

- **MECHANICAL WAVES AND SOUND**

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- SC.7.P.11.A: Physical Science Energy Transfer and Transformations Waves involve a transfer of energy without a transfer of matter.
- SC.7.P.11.B: Physical Science Energy Transfer and Transformations Water and sound waves transfer energy through a material.
- SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

- **ELECTROMAGNETIC WAVES**
  - SC.7.P.10.1: Physical Science Forms of Energy Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.
  - SC.7.P.11.A: Physical Science Energy Transfer and Transformations Waves involve a transfer of energy without a transfer of matter.
  - SC.7.P.11.C: Physical Science Energy Transfer and Transformations Light waves can travel through a vacuum and through matter.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
- **WAVES AND MATTER**
  - SC.7.P.10.2: Physical Science Forms of Energy Observe and explain that light can be reflected, refracted, and/or absorbed.
  - SC.7.P.10.3: Physical Science Forms of Energy Recognize that light waves, sound waves, and other waves move at different speeds in different materials.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.P.10.1: Physical Science Forms of Energy Illustrate that the sun's energy arrives as radiation with a wide range of wavelengths, including infrared, visible, and ultraviolet, and that white light is made up of a spectrum of many different colors.

Unit 6: Thermal Energy

- **THERMAL ENERGY AND TEMPERATURE**

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- SC.7.P.11.1: Physical Science Energy Transfer and Transformations Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.
- SC.7.P.11.2: Physical Science Energy Transfer and Transformations Investigate and describe the transformation of energy from one form to another.

- **HEAT AND THERMAL ENERGY**
  - SC.7.P.11.1: Physical Science Energy Transfer and Transformations Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.
  - SC.7.P.11.4: Physical Science Energy Transfer and Transformations Observe and describe that heat flows in predictable ways, moving from warmer objects to cooler ones until they reach the same temperature.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

Unit 7: Thermal Energy and Change

- **CHANGES OF STATE**
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.P.11.1: Physical Science Energy Transfer and Transformations Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.
- **ENERGY TRANSFER AND TECHNOLOGY**
  - SC.7.P.11.2: Physical Science Energy Transfer and Transformations Investigate and describe the transformation of energy from one form to another.

Unit 8: Thermal Energy and Earth

- **THE EARTH SYSTEM**
  - SC.7.E.6.1: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.
  - SC.7.P.11.D: Physical Science Energy Transfer and Transformations The Law of Conservation of Energy: Energy is conserved as it transfers from one object to another and from one form to another.
- **THE ROCK CYCLE**

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- SC.7.E.6.1: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.
- SC.7.E.6.2: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).

- **PLATE TECTONICS**
  - SC.7.E.6.5: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.
  - SC.7.E.6.7: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.
  - SC.7.N.2.1: Nature of Science The Characteristics of Scientific Knowledge Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.
  - SC.7.N.3.1: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.

Unit 9: Our Changing Planet

- **DEFORMING EARTH'S CRUST**
  - SC.7.E.6.2: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Identify the patterns within the rock cycle and relate them to surface events (weathering and erosion) and sub-surface events (plate tectonics and mountain building).
- **EARTHQUAKES AND VOLCANOES**
  - SC.7.E.6.5: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All

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life, including human civilization, is dependent on Earth's internal and external energy and material resources. Explore the scientific theory of plate tectonics by describing how the movement of Earth's crustal plates causes both slow and rapid changes in Earth's surface, including volcanic eruptions, earthquakes, and mountain building.

- SC.7.E.6.7: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Recognize that heat flow and movement of material within Earth causes earthquakes and volcanic eruptions, and creates mountains and ocean basins.

Unit 10: Humans and Earth's Resources

- **NATURAL RESOURCES**
  - SC.7.L.17.A: Life Science Interdependence Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.P.10.B: Physical Science Forms of Energy Energy exists in many forms and has the ability to do work or cause a change.
- **SOIL**
  - SC.7.E.6.1: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Describe the layers of the solid Earth, including the lithosphere, the hot convecting mantle, and the dense metallic liquid and solid cores.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.
  - SC.7.E.6.6: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.
  - SC.7.L.17.A: Life Science Interdependence Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.

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- SC.7.L.17.B: Life Science Interdependence Both human activities and natural events can have major impacts on the environment.

- **IMPACTS OF HUMANS**
  - SC.7.E.6.6: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.
  - SC.7.L.17.B: Life Science Interdependence Both human activities and natural events can have major impacts on the environment.

Unit 11: Life on Earth

- **CHARACTERISTICS OF LIFE**
  - SC.7.L.16.A: Life Science Heredity and Reproduction Reproduction is characteristic of living things and is essential for the survival of species.
  - SC.7.L.16.B: Life Science Heredity and Reproduction Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.
  - SC.7.L.16.1: Life Science Heredity and Reproduction Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
  - SC.7.L.16.3: Life Science Heredity and Reproduction Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
- **CELL GROWTH AND REPRODUCTION**
  - SC.7.L.16.A: Life Science Heredity and Reproduction Reproduction is characteristic of living things and is essential for the survival of species.
  - SC.7.L.16.3: Life Science Heredity and Reproduction Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
- **CLASSIFICATION OF LIVING THINGS**
  - SC.7.L.15.B: Life Science Diversity and Evolution of Living Organisms The scientific theory of evolution is supported by multiple forms of evidence.
  - SC.7.L.15.1: Life Science Diversity and Evolution of Living Organisms Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.
  - SC.7.N.1.1: Nature of Science The Practice of Science Define a problem from the seventh grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments, identify variables, collect and organize data, interpret data in charts, tables, and graphics, analyze information, make predictions, and defend conclusions.

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Unit 12: Genetics

- **INHERITANCE**
  - SC.7.L.16.1: Life Science Heredity and Reproduction Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
  - SC.7.L.16.3: Life Science Heredity and Reproduction Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
  - SC.7.N.2.1: Nature of Science The Characteristics of Scientific Knowledge Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.
  - SC.7.L.16.2: Life Science Heredity and Reproduction Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.
- **GENES AND DNA**
  - SC.7.L.16.B: Life Science Heredity and Reproduction Genetic information is passed from generation to generation by DNA; DNA controls the traits of an organism.
  - SC.7.L.16.1: Life Science Heredity and Reproduction Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
  - SC.7.L.16.C: Life Science Heredity and Reproduction Changes in the DNA of an organism can cause changes in traits, and manipulation of DNA in organisms has led to genetically modified organisms.
- **BIOTECHNOLOGY**
  - SC.7.L.16.4: Life Science Heredity and Reproduction Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society and the environment.
  - SC.7.L.16.C: Life Science Heredity and Reproduction Changes in the DNA of an organism can cause changes in traits, and manipulation of DNA in organisms has led to genetically modified organisms.

Unit 13: Reproduction and Development

- **PATTERNS OF REPRODUCTION**
  - SC.7.L.16.1: Life Science Heredity and Reproduction Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
  - SC.7.L.16.3: Life Science Heredity and Reproduction Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.
- **LIFE CYCLES**

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- SC.7.L.16.1: Life Science Heredity and Reproduction Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
- SC.7.L.16.3: Life Science Heredity and Reproduction Compare and contrast the general processes of sexual reproduction requiring meiosis and asexual reproduction requiring mitosis.

Unit 14: Ecology

- **CHARACTERISTICS OF ECOSYSTEMS**
  - SC.7.L.17.A: Life Science Interdependence Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
  - SC.7.L.17.3: Life Science Interdependence Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.
- **INTERACTIONS IN ECOSYSTEMS**
  - SC.7.L.17.A: Life Science Interdependence Plants and animals, including humans, interact with and depend upon each other and their environment to satisfy their basic needs.
  - SC.7.L.17.1: Life Science Interdependence Explain and illustrate the roles of and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.
  - SC.7.L.17.2: Life Science Interdependence Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
  - SC.7.L.17.3: Life Science Interdependence Describe and investigate various limiting factors in the local ecosystem and their impact on native populations, including food, shelter, water, space, disease, parasitism, predation, and nesting sites.
  - SC.7.L.17.C: Life Science Interdependence Energy flows from the sun through producers to consumers.
- **SUCCESSION AND ECOSYSTEM STABILITY**
  - SC.7.L.17.B: Life Science Interdependence Both human activities and natural events can have major impacts on the environment.

Unit 15: Change over Time

- **GEOLOGIC TIME**
  - SC.7.E.6.3: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Identify current methods for measuring the age of Earth and its parts, including the law of superposition and radioactive dating.
  - SC.7.N.2.1: Nature of Science The Characteristics of Scientific Knowledge Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new

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interpretations are encountered.

- SC.7.N.3.1: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.
- SC.7.E.6.4: Earth and Space Science Over geologic time, internal and external sources of energy have continuously altered the features of Earth by means of both constructive and destructive forces. All life, including human civilization, is dependent on Earth's internal and external energy and material resources. Explain and give examples of how physical evidence supports scientific theories that Earth has evolved over geologic time due to natural processes.

- **THEORY OF EVOLUTION**
  - SC.7.N.3.1: Nature of Science The terms that describe examples of scientific knowledge, for example; theory, law, hypothesis, and model have very specific meanings and functions within science. Recognize and explain the difference between theories and laws and give several examples of scientific theories and the evidence that supports them.
  - SC.7.L.15.A: Life Science Diversity and Evolution of Living Organisms The scientific theory of evolution is the organizing principle of life science.
  - SC.7.L.15.B: Life Science Diversity and Evolution of Living Organisms The scientific theory of evolution is supported by multiple forms of evidence.
  - SC.7.L.15.1: Life Science Diversity and Evolution of Living Organisms Recognize that fossil evidence is consistent with the scientific theory of evolution that living things evolved from earlier species.
  - SC.7.L.15.2: Life Science Diversity and Evolution of Living Organisms Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.
  - SC.7.L.15.3: Life Science Diversity and Evolution of Living Organisms Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.
- **NATURAL SELECTION**
  - SC.7.L.15.3: Life Science Diversity and Evolution of Living Organisms Explore the scientific theory of evolution by relating how the inability of a species to adapt within a changing environment may contribute to the extinction of that species.
  - SC.7.L.15.C: Life Science Diversity and Evolution of Living Organisms Natural Selection is a primary mechanism leading to change over time in organisms.
  - SC.7.L.15.2: Life Science Diversity and Evolution of Living Organisms Explore the scientific theory of evolution by recognizing and explaining ways in which genetic variation and environmental factors contribute to evolution by natural selection and diversity of organisms.

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