Science Tutorials offer targeted instruction, practice, and review designed to help students develop scientific literacy, deepen conceptual understanding, and apply scientific practices. 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 state standards.

Unit 1: Nature of Science

- **WHAT IS SCIENCE?**
  - 6.1.a.2: The student will demonstrate an understanding of scientific and engineering practices by asking questions and defining problems develop hypotheses and identify independent and dependent variables
- **TYPES OF INVESTIGATIONS**
  - 6.1.a.1: The student will demonstrate an understanding of scientific and engineering practices by asking questions and defining problems ask questions to determine relationships between independent and dependent variables
  - 6.1.a.2: The student will demonstrate an understanding of scientific and engineering practices by asking questions and defining problems develop hypotheses and identify independent and dependent variables
  - 6.1.b.1: The student will demonstrate an understanding of scientific and engineering practices by planning and carrying out investigations independently and collaboratively plan and conduct observational and experimental investigations; identify variables, constants, and controls where appropriate, and include the safe use of chemicals and equipment
  - 6.1.d.1: The student will demonstrate an understanding of scientific and engineering practices by constructing and critiquing conclusions and explanations construct explanations that includes qualitative or quantitative relationships between variables
- **USING MODELS**

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- 6.1.e.1: The student will demonstrate an understanding of scientific and engineering practices by developing and using models use scale models to represent and estimate distance
- 6.1.e.2: The student will demonstrate an understanding of scientific and engineering practices by developing and using models use, develop, and revise models to predict and explain phenomena
- 6.1.e.3: The student will demonstrate an understanding of scientific and engineering practices by developing and using models evaluate limitations of models

Unit 2: Measurement and Data

- **TOOLS AND MEASUREMENT**
  - 6.1.b.2: The student will demonstrate an understanding of scientific and engineering practices by planning and carrying out investigations evaluate the accuracy of various methods for collecting data
  - 6.1.b.3: The student will demonstrate an understanding of scientific and engineering practices by planning and carrying out investigations take metric measurements using appropriate tools
- **DISPLAYING AND INTERPRETING DATA**
  - 6.1.c.1: The student will demonstrate an understanding of scientific and engineering practices by interpreting, analyzing, and evaluating data organize data sets to reveal patterns that suggest relationships
  - 6.1.c.2: The student will demonstrate an understanding of scientific and engineering practices by interpreting, analyzing, and evaluating data construct, analyze, and interpret graphical displays of data
  - 6.1.c.3: The student will demonstrate an understanding of scientific and engineering practices by interpreting, analyzing, and evaluating data compare and contrast data collected by different groups and discuss similarities and differences in findings
  - 6.1.f.2: The student will demonstrate an understanding of scientific and engineering practices by obtaining, evaluating, and communicating information gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication

Unit 3: Nature of Matter

- **WHAT IS MATTER?**
  - 6.5.b: The student will investigate and understand that all matter is composed of atoms. Key ideas include atoms of a particular element are similar but differ from atoms of other elements;
  - 6.5.c: The student will investigate and understand that all matter is composed of atoms. Key ideas include elements may be represented by chemical symbols;
  - 6.5.d: The student will investigate and understand that all matter is composed of atoms. Key ideas include two or more atoms interact to form new substances, which are held together by electrical forces (bonds);
  - 6.5.e: The student will investigate and understand that all matter is composed of atoms. Key ideas include compounds may be represented by chemical formulas;

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- 6.5.g: The student will investigate and understand that all matter is composed of atoms. Key ideas include a few elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.

- **ATOMIC STRUCTURE**
  - 6.5.a: The student will investigate and understand that all matter is composed of atoms. Key ideas include atoms consist of particles, including electrons, protons, and neutrons;

Unit 4: Describing Matter

- **PROPERTIES OF MATTER**
  - 6.6.b: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include water has specific properties;
- **MIXTURES OF MATTER**
  - 6.6.a: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include water is referred to as the universal solvent;
  - 6.6.b: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include water has specific properties;

Unit 5: Changes in Matter

- **CHANGES OF STATE**
  - 6.6.c: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include thermal energy has a role in phase changes;
- **CHEMICAL EQUATIONS**
  - 6.5.f: The student will investigate and understand that all matter is composed of atoms. Key ideas include chemical equations can be used to model chemical changes; and

Unit 6: Energy

- **DESCRIBING ENERGY**
  - 6.4.a: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include the sun is important in the formation of most energy sources on Earth;
- **ENERGY TRANSFER AND TRANSFORMATION**
  - 6.4.a: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include the sun is important in the formation of most energy sources on Earth;

Unit 7: Thermal Energy and Heat

- **HEAT AND THERMAL ENERGY**

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- 6.4.c: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include radiation, conduction, and convection distribute energy; and

- **ENERGY TRANSFER AND TECHNOLOGY**
  - 6.4.d: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include energy transformations are important in energy usage.

Unit 8: The Solar System

- **SUN-EARTH-MOON SYSTEM**
  - 6.3.a: The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include Earth has unique properties;
  - 6.3.b: The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include the rotation of Earth in relationship to the sun causes day and night;
  - 6.3.c: The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include the movement of Earth and the moon in relationship to the sun causes phases of the moon;
  - 6.3.d: The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include Earths tilt as it revolves around the sun causes the seasons; and
  - 6.3.e: The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include the relationship between Earth and the moon is the primary cause of tides.

- **OUR SOLAR SYSTEM**
  - 6.2.a: The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include matter is distributed throughout the solar system;
  - 6.2.b: The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include planets have different sizes and orbit at different distances from the sun;
  - 6.2.c: The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include gravity contributes to orbital motion; and
  - 6.2.d: The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include the understanding of the solar system has developed over time.

Unit 9: The Atmosphere and Hydrosphere

- **THE ATMOSPHERE**
  - 6.7.a: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include air is a mixture of gaseous elements and compounds;

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- 6.7.b: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include the atmosphere has physical characteristics;
- 6.7.c: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include properties of the atmosphere change with altitude;

- **FRESHWATER AND ICE**
  - 6.8.a: The student will investigate and understand that land and water have roles in watershed systems. Key ideas include a watershed is composed of the land that drains into a body of water;
  - 6.8.d: The student will investigate and understand that land and water have roles in watershed systems. Key ideas include natural processes, human activities, and biotic and abiotic factors influence the health of a watershed system.

Unit 10: Weather and Climate

- **WEATHER**
  - 6.7.d: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include there is a relationship between air movement, thermal energy, and weather conditions;
  - 6.7.e: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include atmospheric measures are used to predict weather conditions; and
  - 6.7.f: The student will investigate and understand that air has properties and that Earths atmosphere has structure and is dynamic. Key ideas include weather maps give basic information about fronts, systems, and weather measurements.
- **CLIMATE**
  - 6.6.e: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include large bodies of water moderate climate; and
- **SEVERE WEATHER**
  - 6.1.b.4: The student will demonstrate an understanding of scientific and engineering practices by planning and carrying out investigations use tools and materials to design and/or build a device to solve a specific problem
  - 6.1.c.4: The student will demonstrate an understanding of scientific and engineering practices by interpreting, analyzing, and evaluating data use data to evaluate and refine design solutions

Unit 11: Our Changing Planet

- **EARTH'S STRUCTURE AND CYCLES**
  - 6.4.a: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include the sun is important in the formation of most energy sources on Earth;

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- 6.4.b: The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include Earths energy budget relates to living systems and Earths processes;

- **WEATHERING AND EROSION**
  - 6.6.d: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include water has a role in weathering;

Unit 12: Humans and Earth's Resources

- **NATURAL RESOURCES**
  - 6.6.f: The student will investigate and understand that water has unique physical properties and has a role in the natural and human made environment. Key ideas include water is important for agriculture, power generation, and public health.
  - 6.9.a: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include natural resources are important to protect and maintain;
  - 6.9.b: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include renewable and nonrenewable resources can be managed;
  - 6.9.d: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include major health and safety issues are related to different forms of energy;
- **IMPACTS OF HUMANS**
  - 6.1.a.3: The student will demonstrate an understanding of scientific and engineering practices by asking questions and defining problems offer simple solutions to design problems
  - 6.1.d.2: The student will demonstrate an understanding of scientific and engineering practices by constructing and critiquing conclusions and explanations construct scientific explanations based on valid and reliable evidence obtained from sources (including the students own investigations)
  - 6.1.d.3: The student will demonstrate an understanding of scientific and engineering practices by constructing and critiquing conclusions and explanations generate and compare multiple solutions to problems based on how well they meet the criteria and constraints
  - 6.1.f.1: The student will demonstrate an understanding of scientific and engineering practices by obtaining, evaluating, and communicating information read scientific texts, including those adapted for classroom use, to obtain scientific and/or technical information
  - 6.1.f.3: The student will demonstrate an understanding of scientific and engineering practices by obtaining, evaluating, and communicating information construct, use, and/or present an argument supported by empirical evidence and scientific reasoning
  - 6.8.a: The student will investigate and understand that land and water have roles in watershed systems. Key ideas include a watershed is composed of the land that drains into a body of water;

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- 6.8.d: The student will investigate and understand that land and water have roles in watershed systems. Key ideas include natural processes, human activities, and biotic and abiotic factors influence the health of a watershed system.
- 6.9.b: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include renewable and nonrenewable resources can be managed;
- 6.9.c: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include major health and safety issues are associated with air and water quality;
- 6.9.d: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include major health and safety issues are related to different forms of energy;
- 6.9.e: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include preventive measures can protect land use and reduce environmental hazards; and
- 6.9.f: The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include there are cost/benefit tradeoffs in conservation policies.

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