

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 Matter

- **WHAT IS MATTER?**

- PS.2.b: The student will investigate and understand that matter is composed of atoms. Key ideas include the periodic table can be used to predict the chemical and physical properties of matter; and

- **ATOMIC STRUCTURE**

- PS.2.a: The student will investigate and understand that matter is composed of atoms. Key ideas include our understanding of atoms has developed over time;

- **THE PERIODIC TABLE**

- PS.2.b: The student will investigate and understand that matter is composed of atoms. Key ideas include the periodic table can be used to predict the chemical and physical properties of matter; and
- PS.3.c: The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include compounds form through ionic and covalent bonding; and
- PS.4.a: The student will investigate and understand that the periodic table is a model used to organize elements based on their atomic structure. Key uses include symbols, atomic numbers, atomic mass, chemical groups (families), and periods are identified on the periodic table; and
- PS.4.b: The student will investigate and understand that the periodic table is a model used to organize elements based on their atomic structure. Key uses include elements are classified as metals, metalloids, and nonmetals.

- **ELEMENTS AND THE PERIODIC TABLE**

- PS.2.b: The student will investigate and understand that matter is composed of atoms. Key ideas include the periodic table can be used to predict the chemical and physical properties of matter; and
- PS.3.c: The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include compounds form through ionic and covalent bonding; and
- PS.4.a: The student will investigate and understand that the periodic table is a model used to organize elements based on their atomic structure. Key uses include symbols, atomic numbers, atomic mass, chemical groups (families), and periods are identified on the periodic table; and
- PS.4.b: The student will investigate and understand that the periodic table is a model used to organize elements based on their atomic structure. Key uses include elements are classified as metals, metalloids, and nonmetals.

Unit 2: Describing Matter

- **PROPERTIES OF MATTER**

- PS.3.a: The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include pure substances can be identified based on their chemical and physical properties;

- **SOLIDS, LIQUIDS, AND GASES**

- PS.2.c: The student will investigate and understand that matter is composed of atoms. Key ideas include the kinetic molecular theory is used to predict and explain matter interactions.

Unit 3: Changes in Matter

- **PHYSICAL AND CHEMICAL CHANGES**

- PS.3.b: The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include pure substances can undergo physical and chemical changes that may result in a change of properties;

- **CHEMICAL EQUATIONS**

- PS.3.d: The student will investigate and understand that matter has properties and is conserved in chemical and physical processes. Key ideas include balanced chemical equations model the conservation of matter.

Unit 4: Forces and Motion

- **DESCRIBING FORCES**

- PS.8.b: The student will investigate and understand that work, force, and motion are related. Key ideas include motion is described by Newton's laws.

- **DESCRIBING MOTION**

- PS.8.a: The student will investigate and understand that work, force, and motion are related. Key ideas include motion can be described using position and time; and

- **EFFECTS OF FORCES**

- PS.8.b: The student will investigate and understand that work, force, and motion are related. Key ideas include motion is described by Newtons laws.

Unit 5: Describing Energy

- **DESCRIBING ENERGY**

- PS.5.a: The student will investigate and understand that energy is conserved. Key ideas include energy can be stored in different ways;

- **ENERGY TRANSFER AND TRANSFORMATION**

- PS.5.b: The student will investigate and understand that energy is conserved. Key ideas include energy is transferred and transformed; and

Unit 6: Waves

- **MECHANICAL WAVES**

- PS.6.b: The student will investigate and understand that waves are important in the movement of energy. Key ideas include mechanical waves need a medium to transfer energy;

- **ELECTROMAGNETIC WAVES**

- PS.6.a: The student will investigate and understand that waves are important in the movement of energy. Key ideas include energy may be transferred in the form of longitudinal and transverse waves;
- PS.7.a: The student will investigate and understand that electromagnetic radiation has characteristics. Key ideas include electromagnetic radiation, including visible light, has wave characteristics and behavior; and

Unit 7: Applications of Waves

- **INTERACTIONS OF WAVES AND MATTER**

- PS.6.c: The student will investigate and understand that waves are important in the movement of energy. Key ideas include waves can interact; and

- **WAVES AND TECHNOLOGY**

- PS.6.d: The student will investigate and understand that waves are important in the movement of energy. Key ideas include energy associated with waves has many applications.
- PS.7.b: The student will investigate and understand that electromagnetic radiation has characteristics. Key ideas include regions of the electromagnetic spectrum have specific characteristics and uses.

Unit 8: Thermal Energy and Heat

- **ENERGY TRANSFER AND TECHNOLOGY**

- PS.5.c: The student will investigate and understand that energy is conserved. Key ideas include energy can be transformed to meet societal needs.

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- PS.9.a: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include an imbalance of charge generates static electricity;
 - PS.9.b: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include materials have different conductive properties;
 - PS.9.c: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include electric circuits transfer energy;
 - PS.9.d: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include magnetic fields cause the magnetic effects of certain materials;
 - PS.9.e: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include electric current and magnetic fields are related; and
 - PS.9.f: The student will investigate and understand that there are basic principles of electricity and magnetism. Key ideas include many technologies use electricity and magnetism.