

Texas Tutorials are designed specifically for the Texas Essential Knowledge and Skills (TEKS).

Science Tutorials offer targeted instruction, practice, and review designed to help students develop fluency, deepen conceptual understanding, and apply scientific thinking skills. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing their ability to explain and analyze biological 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 through focused content, guided analysis, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. 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.

1. NATURE OF SCIENCE

• WHAT IS SCIENCE?

- **3.D** relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content.
- **3.A** analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;

• TYPES OF INVESTIGATIONS

- **2.A** plan and implement comparative and descriptive investigations by making observations, asking well defined questions, and using appropriate equipment and technology;
- **2.B** design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology;

• USING MODELS

- **3.C** identify advantages and limitations of models such as size, scale, properties, and materials; and
- **3.B** use models to represent aspects of the natural world such as a model of Earth's layers;

2. MEASUREMENT AND DATA

• TOOLS AND MEASUREMENT

- **2.C** collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- **4.A** use appropriate tools, including journals/notebooks, beakers, Petri dishes, meter sticks, graduated cylinders, hot plates, test tubes, balances, microscopes, thermometers, calculators, computers, timing devices, and other necessary equipment to collect, record, and analyze information; and

• DISPLAYING AND INTERPRETING DATA

- **2.B** design and implement experimental investigations by making observations, asking well defined questions, formulating testable hypotheses, and using appropriate equipment and technology;
- **2.C** collect and record data using the International System of Units (SI) and qualitative means such as labeled drawings, writing, and graphic organizers;
- **2.D** construct tables and graphs, using repeated trials and means, to organize data and identify patterns; and

- **2.E** analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

3. NATURE OF MATTER

- **WHAT IS MATTER?**

- **5.B** recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere; and
- **5.C** identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.
- **5.A** know that an element is a pure substance represented by a chemical symbol and that a compound is a pure substance represented by a chemical formula;

- **THE PERIODIC TABLE**

- **6.A** compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;

4. DESCRIBING MATTER

- **PROPERTIES OF MATTER**

- **6.A** compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;
- **6.B** calculate density to identify an unknown substance; and

- **PHYSICAL AND CHEMICAL CHANGES**

- **5.C** identify the formation of a new substance by using the evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.

5. FORCES

- **DESCRIBING FORCES**

- **8.B** identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces;

- **EFFECTS OF FORCES**

- **8.B** identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces;
- **8.D** measure and graph changes in motion; and

- **GRAVITATIONAL FORCE**

- **11.B** understand that gravity is the force that governs the motion of our solar system; and

6. MOTION AND WORK

- **DESCRIBING MOTION**

- **8.B** identify and describe the changes in position, direction, and speed of an object when acted upon by unbalanced forces;
- **8.C** calculate average speed using distance and time measurements;
- **8.D** measure and graph changes in motion; and

- **WORK AND SIMPLE MACHINES**

- **8.E** investigate how inclined planes can be used to change the amount of force to move an object.

7. ENERGY

- **DESCRIBING ENERGY**

- **8.A** compare and contrast potential and kinetic energy;

- **ENERGY TRANSFER AND TRANSFORMATION**

- **9.C** demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy.

8. THERMAL ENERGY AND HEAT

- **THERMAL ENERGY AND TEMPERATURE**

- **9.B** verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting; and

- **HEAT AND THERMAL ENERGY**

- **9.B** verify through investigations that thermal energy moves in a predictable pattern from warmer to cooler until all the substances attain the same temperature such as an ice cube melting; and
- **9.A** investigate methods of thermal energy transfer, including conduction, convection, and radiation;

- **ENERGY TRANSFER AND TECHNOLOGY**

- **9.C** demonstrate energy transformations such as energy in a flashlight battery changes from chemical energy to electrical energy to light energy.
- **6.A** compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;

9. THERMAL ENERGY AND EARTH

- **THE EARTH SYSTEM**

- **5.B** recognize that a limited number of the many known elements comprise the largest portion of solid Earth, living matter, oceans, and the atmosphere; and
- **10.A** build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere;

- **PLATE TECTONICS**

- **10.C** identify the major tectonic plates, including Eurasian, African, Indo-Australian, Pacific, North American, and South American; and
- **10.D** describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and mountain building.

10. EARTH'S GEOSPHERE

- **MINERALS**

- **6.A** compare metals, nonmetals, and metalloids using physical properties such as luster, conductivity, or malleability;
- **6.C** test the physical properties of minerals, including hardness, color, luster, and streak.

- **THE ROCK CYCLE**

- **10.B** classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation;

- **SOIL**

- **10.A** build a model to illustrate the compositional and mechanical layers of Earth, including the inner core, outer core, mantle, crust, asthenosphere, and lithosphere;
- **12.E** describe biotic and abiotic parts of an ecosystem in which organisms interact; and

11. HUMANS AND EARTH'S RESOURCES

- **NATURAL RESOURCES**

- **7.A** research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources.

- **IMPACTS OF HUMANS**

- **7.A** research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources.

12. EARTH'S PLACE IN SPACE

- **OUR SOLAR SYSTEM**

- **11.B** understand that gravity is the force that governs the motion of our solar system; and
- **11.A** describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets;

- **OUR SUN AND OTHER STARS**

- **11.A** describe the physical properties, locations, and movements of the Sun, planets, moons, meteors, asteroids, and comets;

- **SPACE EXPLORATION**

- **11.C** describe the history and future of space exploration, including the types of equipment and transportation needed for space travel.

13. LIFE ON EARTH

- **CELL STRUCTURE**

- **12.A** understand that all organisms are composed of one or more cells;
- **12.B** recognize that the presence of a nucleus is a key factor used to determine whether a cell is prokaryotic or eukaryotic;

- **DOMAINS AND KINGDOMS OF LIFE**

- **12.C** recognize that the broadest taxonomic classification of living organisms is divided into currently recognized domains;
- **12.D** identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms;

- **CHARACTERISTICS OF ECOSYSTEMS**

- **12.E** describe biotic and abiotic parts of an ecosystem in which organisms interact; and
- **12.F** diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem.