Standards Search » Search Results

Texas Essential Knowledge and Skills (TEKS): Science - Grade 11

|  |
| --- |
|   |
|   | TEKS | TX.112.32. | Aquatic Science (One Credit). |
|   |   | STUDENT EXPECTATION | (10-12.1) | Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.1 (A) | Demonstrate safe practices during laboratory and field investigations, including chemical, electrical, and fire safety, and safe handling of live and preserved organisms. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials. |
|   |   | STUDENT EXPECTATION | (10-12.2) | Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (D) | Distinguish between scientific hypotheses and scientific theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (E) | Plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting, handling, and maintaining appropriate equipment and technology. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (F) | Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (G) | Demonstrate the use of course apparatuses, equipment, techniques, and procedures. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (H) | Organize, analyze, evaluate, build models, make inferences, and predict trends from data. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (I) | Perform calculations using dimensional analysis, significant digits, and scientific notation. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (J) | Communicate valid conclusions using essential vocabulary and multiple modes of expression such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. |
|   |   | STUDENT EXPECTATION | (10-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (D) | Evaluate the impact of research and technology on scientific thought, society, and the environment. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (E) | Describe the connection between aquatic science and future careers. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (F) | Research and describe the history of aquatic science and contributions of scientists. |
|   |   | STUDENT EXPECTATION | (10-12.4) | Science concepts. Students know that aquatic environments are the product of Earth systems interactions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (A) | Identify key features and characteristics of atmospheric, geological, hydrological, and biological systems as they relate to aquatic environments.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885288&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (B) | Apply systems thinking to the examination of aquatic environments, including positive and negative feedback cycles.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885289&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (C) | Collect and evaluate global environmental data using technology such as maps, visualizations, satellite data, Global Positioning System (GPS), Geographic Information System (GIS), weather balloons, buoys, etc. |
|   |   | STUDENT EXPECTATION | (10-12.5) | Science concepts. The student conducts long-term studies on local aquatic environments. Local natural environments are to be preferred over artificial or virtual environments. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (A) | Evaluate data over a period of time from an established aquatic environment documenting seasonal changes and the behavior of organisms. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (B) | Collect baseline quantitative data, including pH, salinity, temperature, mineral content, nitrogen compounds, and turbidity from an aquatic environment. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (C) | Analyze interrelationships among producers, consumers, and decomposers in a local aquatic ecosystem. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (D) | Identify the interdependence of organisms in an aquatic environment such as in a pond, river, lake, ocean, or aquifer and the biosphere.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885295&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.6) | Science concepts. The student knows the role of cycles in an aquatic environment. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (A) | Identify the role of carbon, nitrogen, water, and nutrient cycles in an aquatic environment, including upwellings and turnovers.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885297&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (B) | Examine the interrelationships between aquatic systems and climate and weather, including El Niño and La Niña, currents, and hurricanes. |
|   |   | STUDENT EXPECTATION | (10-12.7) | Science concepts. The student knows the origin and use of water in a watershed. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (A) | Identify sources and determine the amounts of water in a watershed, including rainfall, groundwater, and surface water.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885300&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (B) | Identify factors that contribute to how water flows through a watershed. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (C) | Identify water quantity and quality in a local watershed.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885302&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.8) | Science concepts. The student knows that geological phenomena and fluid dynamics affect aquatic systems. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (A) | Demonstrate basic principles of fluid dynamics, including hydrostatic pressure, density, salinity, and buoyancy.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885304&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (B) | Identify interrelationships between ocean currents, climates, and geologic features. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (C) | Describe and explain fluid dynamics in an upwelling and lake turnover.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885306&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.9) | Science concepts. The student knows the types and components of aquatic ecosystems. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (A) | Differentiate among freshwater, brackish, and saltwater ecosystems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885308&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (B) | Identify the major properties and components of different marine and freshwater life zones.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885309&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (C) | Identify biological, chemical, geological, and physical components of an aquatic life zone as they relate to the organisms in it.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885310&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.10) | Science concepts. The student knows environmental adaptations of aquatic organisms. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (A) | Classify different aquatic organisms using tools such as dichotomous keys.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885312&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (B) | Compare and describe how adaptations allow an organism to exist within an aquatic environment. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (C) | Compare differences in adaptations of aquatic organisms to fresh water and marine environments. |
|   |   | STUDENT EXPECTATION | (10-12.11) | Science concepts. The student knows about the interdependence and interactions that occur in aquatic environments. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (A) | Identify how energy flows and matter cycles through both fresh water and salt water aquatic systems, including food webs, chains, and pyramids. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (B) | Evaluate the factors affecting aquatic population cycles. |
|   |   | STUDENT EXPECTATION | (10-12.12) | Science concepts. The student understands how human activities impact aquatic environments. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (A) | Predict effects of chemical, organic, physical, and thermal changes from humans on the living and nonliving components of an aquatic ecosystem.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885319&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (B) | Analyze the cumulative impact of human population growth on an aquatic system. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (C) | Investigate the role of humans in unbalanced systems such as invasive species, fish farming, cultural eutrophication, or red tides. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (D) | Analyze and discuss how human activities such as fishing, transportation, dams, and recreation influence aquatic environments. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (E) | Understand the impact of various laws and policies such as The Endangered Species Act, right of capture laws, or Clean Water Act on aquatic systems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885323&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |
|   | TEKS | TX.112.33. | Astronomy (One Credit). |
|   |   | STUDENT EXPECTATION | (11-12.1) | Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (A) | Demonstrate safe practices during laboratory and field investigations. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials. |
|   |   | STUDENT EXPECTATION | (11-12.2) | Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (D) | Distinguish between scientific hypotheses and scientific theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (E) | Plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (F) | Collect data and make measurements with accuracy and precision. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (G) | Organize, analyze, evaluate, make inferences, and predict trends from data, including making new revised hypotheses when appropriate. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (H) | Communicate valid conclusions in writing, oral presentations, and through collaborative projects. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (I) | Use astronomical technology such as telescopes, binoculars, sextants, computers, and software.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885337&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885339&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (D) | Evaluate the impact of research on scientific thought, society, and the environment.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885342&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (E) | Describe the connection between astronomy and future careers. |
|   |   | STUDENT EXPECTATION | (11-12.4) | Science concepts. The student recognizes the importance and uses of astronomy in civilization. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (A) | Research and describe the use of astronomy in ancient civilizations such as the Egyptians, Mayans, Aztecs, Europeans, and the native Americans. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (B) | Research and describe the contributions of scientists to our changing understanding of astronomy, including Ptolemy, Copernicus, Tycho Brahe, Kepler, Galileo, Newton, Einstein, and Hubble, and the contribution of women astronomers, including Maria Mitchell and Henrietta Swan Leavitt.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885346&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (C) | Describe and explain the historical origins of the perceived patterns of constellations and the role of constellations in ancient and modern navigation. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (D) | Explain the contributions of modern astronomy to today's society, including the identification of potential asteroid/comet impact hazards and the Sun's effects on communication, navigation, and high-tech devices. |
|   |   | STUDENT EXPECTATION | (11-12.5) | Science concepts. The student develops a familiarity with the sky. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (A) | Observe and record the apparent movement of the Sun and Moon during the day. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (B) | Observe and record the apparent movement of the Moon, planets, and stars in the nighttime sky. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (C) | Recognize and identify constellations such as Ursa Major, Ursa Minor, Orion, Cassiopeia, and constellations of the zodiac. |
|   |   | STUDENT EXPECTATION | (11-12.6) | Science concepts. The student knows our place in space. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (A) | Compare and contrast the scale, size, and distance of the Sun, Earth, and Moon system through the use of data and modeling. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (B) | Compare and contrast the scale, size, and distance of objects in the solar system such as the Sun and planets through the use of data and modeling. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (C) | Examine the scale, size, and distance of the stars, Milky Way, and other galaxies through the use of data and modeling. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (D) | Relate apparent versus absolute magnitude to the distances of celestial objects. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (E) | Demonstrate the use of units of measurement in astronomy, including Astronomical Units and light years. |
|   |   | STUDENT EXPECTATION | (11-12.7) | Science concepts. The student knows the role of the Moon in the Sun, Earth, and Moon system. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (A) | Observe and record data about lunar phases and use that information to model the Sun, Earth, and Moon system. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (B) | Illustrate the cause of lunar phases by showing positions of the Moon relative to Earth and the Sun for each phase, including new moon, waxing crescent, first quarter, waxing gibbous, full moon, waning gibbous, third quarter, and waning crescent. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (C) | Identify and differentiate the causes of lunar and solar eclipses, including differentiating between lunar phases and eclipses. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (D) | Identify the effects of the Moon on tides. |
|   |   | STUDENT EXPECTATION | (11-12.8) | Science concepts. The student knows the reasons for the seasons. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (A) | Recognize that seasons are caused by the tilt of Earth's axis. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (B) | Explain how latitudinal position affects the length of day and night throughout the year. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (C) | Recognize that the angle of incidence of sunlight determines the concentration of solar energy received on Earth at a particular location. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (D) | Examine the relationship of the seasons to equinoxes, solstices, the tropics, and the equator. |
|   |   | STUDENT EXPECTATION | (11-12.9) | Science concepts. The student knows that planets of different size, composition, and surface features orbit around the Sun. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (A) | Compare and contrast the factors essential to life on Earth such as temperature, water, mass, and gases to conditions on other planets. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (B) | Compare the planets in terms of orbit, size, composition, rotation, atmosphere, natural satellites, and geological activity. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (C) | Relate the role of Newton's law of universal gravitation to the motion of the planets around the Sun and to the motion of natural and artificial satellites around the planets.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885372&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (D) | Explore the origins and significance of small solar system bodies, including asteroids, comets, and Kuiper belt objects. |
|   |   | STUDENT EXPECTATION | (11-12.10) | Science concepts. The student knows the role of the Sun as the star in our solar system. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (A) | Identify the approximate mass, size, motion, temperature, structure, and composition of the Sun. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (B) | Distinguish between nuclear fusion and nuclear fission, and identify the source of energy within the Sun as nuclear fusion of hydrogen to helium. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (C) | Describe the eleven-year solar cycle and the significance of sunspots. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (D) | Analyze solar magnetic storm activity, including coronal mass ejections, prominences, flares, and sunspots. |
|   |   | STUDENT EXPECTATION | (11-12.11) | Science concepts. The student knows the characteristics and life cycle of stars. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (A) | Identify the characteristics of main sequence stars, including surface temperature, age, relative size, and composition. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (B) | Characterize star formation in stellar nurseries from giant molecular clouds, to protostars, to the development of main sequence stars. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (C) | Evaluate the relationship between mass and fusion on the dying process and properties of stars. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (D) | Differentiate among the end states of stars, including white dwarfs, neutron stars, and black holes. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (E) | Compare how the mass and gravity of a main sequence star will determine its end state as a white dwarf, neutron star, or black hole. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (F) | Relate the use of spectroscopy in obtaining physical data on celestial objects such as temperature, chemical composition, and relative motion. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (G) | Use the Hertzsprung-Russell diagram to plot and examine the life cycle of stars from birth to death. |
|   |   | STUDENT EXPECTATION | (11-12.12) | Science concepts. The student knows the variety and properties of galaxies. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (A) | Describe characteristics of galaxies. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (B) | Recognize the type, structure, and components of our Milky Way galaxy and location of our solar system within it. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (C) | Compare and contrast the different types of galaxies, including spiral, elliptical, irregular, and dwarf. |
|   |   | STUDENT EXPECTATION | (11-12.13) | Science concepts. The student knows the scientific theories of cosmology. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (A) | Research and describe the historical development of the Big Bang Theory, including red shift, cosmic microwave background radiation, and other supporting evidence. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (B) | Research and describe current theories of the evolution of the universe, including estimates for the age of the universe. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (C) | Research and describe scientific hypotheses of the fate of the universe, including open and closed universes and the role of dark matter and dark energy. |
|   |   | STUDENT EXPECTATION | (11-12.14) | Science concepts. The student recognizes the benefits and challenges of space exploration to the study of the universe. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (A) | Identify and explain the contributions of human space flight and future plans and challenges.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885396&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (B) | Recognize the advancement of knowledge in astronomy through robotic space flight. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (C) | Analyze the importance of ground-based technology in astronomical studies. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (D) | Recognize the importance of space telescopes to the collection of astronomical data across the electromagnetic spectrum. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (E) | Demonstrate an awareness of new developments and discoveries in astronomy. |
|   |
|   | TEKS | TX.112.34. | Biology (One Credit). |
|   |   | STUDENT EXPECTATION | (9-11.1) | Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.1 (A) | Demonstrate safe practices during laboratory and field investigations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885403&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885404&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.2) | Scientific processes. The student uses scientific methods and equipment during laboratory and field investigations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885406&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (B) | Know that hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885407&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (C) | Know scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but they may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (D) | Distinguish between scientific hypotheses and scientific theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885409&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (E) | Plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885410&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (F) | Collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885411&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (G) | Analyze, evaluate, make inferences, and predict trends from data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885412&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.2 (H) | Communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885413&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885415&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (D) | Evaluate the impact of scientific research on society and the environment.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885418&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (E) | Evaluate models according to their limitations in representing biological objects or events.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885419&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.3 (F) | Research and describe the history of biology and contributions of scientists.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885420&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.4) | Science concepts. The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.4 (A) | Compare and contrast prokaryotic and eukaryotic cells.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885422&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.4 (B) | Investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885423&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.4 (C) | Compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza. |
|   |   | STUDENT EXPECTATION | (9-11.5) | Science concepts. The student knows how an organism grows and the importance of cell differentiation. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.5 (A) | Describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885426&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.5 (B) | Examine specialized cells, including roots, stems, and leaves of plants; and animal cells such as blood, muscle, and epithelium.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885427&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.5 (C) | Describe the roles of DNA, ribonucleic acid (RNA), and environmental factors in cell differentiation.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885428&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.5 (D) | Recognize that disruptions of the cell cycle lead to diseases such as cancer.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885429&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.6) | Science concepts. The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (A) | Identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885431&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (B) | Recognize that components that make up the genetic code are common to all organisms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885432&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (C) | Explain the purpose and process of transcription and translation using models of DNA and RNA.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885433&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (D) | Recognize that gene expression is a regulated process. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (E) | Identify and illustrate changes in DNA and evaluate the significance of these changes.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885435&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (F) | Predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885436&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (G) | Recognize the significance of meiosis to sexual reproduction. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.6 (H) | Describe how techniques such as DNA fingerprinting, genetic modifications, and chromosomal analysis are used to study the genomes of organisms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885438&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.7) | Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (A) | Analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (B) | Analyze and evaluate scientific explanations concerning any data of sudden appearance, stasis, and sequential nature of groups in the fossil record. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (C) | Analyze and evaluate how natural selection produces change in populations, not individuals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885442&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (D) | Analyze and evaluate how the elements of natural selection, including inherited variation, the potential of a population to produce more offspring than can survive, and a finite supply of environmental resources, result in differential reproductive success.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885443&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (E) | Analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885444&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (F) | Analyze and evaluate the effects of other evolutionary mechanisms, including genetic drift, gene flow, mutation, and recombination.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885445&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.7 (G) | Analyze and evaluate scientific explanations concerning the complexity of the cell.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885446&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.8) | Science concepts. The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.8 (A) | Define taxonomy and recognize the importance of a standardized taxonomic system to the scientific community.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885448&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.8 (B) | Categorize organisms using a hierarchical classification system based on similarities and differences shared among groups.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885449&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.8 (C) | Compare characteristics of taxonomic groups, including archaea, bacteria, protists, fungi, plants, and animals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885450&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.9) | Science concepts. The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.9 (A) | Compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885452&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.9 (B) | Compare the reactants and products of photosynthesis and cellular respiration in terms of energy and matter.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885453&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.9 (C) | Identify and investigate the role of enzymes.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885454&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.9 (D) | Analyze and evaluate the evidence regarding formation of simple organic molecules and their organization into long complex molecules having information such as the DNA molecule for self-replicating life.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885455&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.10) | Science concepts. The student knows that biological systems are composed of multiple levels. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.10 (A) | Describe the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885457&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.10 (B) | Describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885458&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.10 (C) | Analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885459&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-11.11) | Science concepts. The student knows that biological systems work to achieve and maintain balance. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.11 (A) | Describe the role of internal feedback mechanisms in the maintenance of homeostasis.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885461&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.11 (B) | Investigate and analyze how organisms, populations, and communities respond to external factors.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885462&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.11 (C) | Summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885463&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.11 (D) | Describe how events and processes that occur during ecological succession can change populations and species diversity. |
|   |   | STUDENT EXPECTATION | (9-11.12) | Science concepts. The student knows that interdependence and interactions occur within an environmental system. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (A) | Interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885466&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (B) | Compare variations and adaptations of organisms in different ecosystems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885467&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (C) | Analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (D) | Recognize that long-term survival of species is dependent on changing resource bases that are limited.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885469&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (E) | Describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-11.12 (F) | Describe how environmental change can impact ecosystem stability.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885471&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |
|   | TEKS | TX.112.35. | Chemistry (One Credit). |
|   |   | STUDENT EXPECTATION | (10-12.1) | Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.1 (A) | Demonstrate safe practices during laboratory and field investigations, including the appropriate use of safety showers, eyewash fountains, safety goggles, and fire extinguishers. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.1 (B) | Know specific hazards of chemical substances such as flammability, corrosiveness, and radioactivity as summarized on the Material Safety Data Sheets (MSDS).[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885475&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.1 (C) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885476&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.2) | Scientific processes. The student uses scientific methods to solve investigative questions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885479&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (D) | Distinguish between scientific hypotheses and scientific theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885481&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (E) | Plan and implement investigative procedures, including asking questions, formulating testable hypotheses, and selecting equipment and technology, including graphing calculators, computers and probes, sufficient scientific glassware such as beakers, Erlenmeyer flasks, pipettes, graduated cylinders, volumetric flasks, safety goggles, and burettes, electronic balances, and an adequate supply of consumable chemicals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885482&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (F) | Collect data and make measurements with accuracy and precision.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885483&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (G) | Express and manipulate chemical quantities using scientific conventions and mathematical procedures, including dimensional analysis, scientific notation, and significant figures.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885484&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (H) | Organize, analyze, evaluate, make inferences, and predict trends from data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885485&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.2 (I) | Communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphs, journals, summaries, oral reports, and technology-based reports.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885486&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885488&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (D) | Evaluate the impact of research on scientific thought, society, and the environment.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885491&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (E) | Describe the connection between chemistry and future careers. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.3 (F) | Research and describe the history of chemistry and contributions of scientists.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885493&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.4) | Science concepts. The student knows the characteristics of matter and can analyze the relationships between chemical and physical changes and properties. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (A) | Differentiate between physical and chemical changes and properties.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885495&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (B) | Identify extensive and intensive properties.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885496&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (C) | Compare solids, liquids, and gases in terms of compressibility, structure, shape, and volume.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885497&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.4 (D) | Classify matter as pure substances or mixtures through investigation of their properties.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885498&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.5) | Science concepts. The student understands the historical development of the Periodic Table and can apply its predictive power. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (A) | Explain the use of chemical and physical properties in the historical development of the Periodic Table.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885500&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (B) | Use the Periodic Table to identify and explain the properties of chemical families, including alkali metals, alkaline earth metals, halogens, noble gases, and transition metals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885501&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.5 (C) | Use the Periodic Table to identify and explain periodic trends, including atomic and ionic radii, electronegativity, and ionization energy.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885502&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.6) | Science concepts. The student knows and understands the historical development of atomic theory. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (A) | Understand the experimental design and conclusions used in the development of modern atomic theory, including Dalton's Postulates, Thomson's discovery of electron properties, Rutherford's nuclear atom, and Bohr's nuclear atom.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885504&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (B) | Understand the electromagnetic spectrum and the mathematical relationships between energy, frequency, and wavelength of light.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885505&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (C) | Calculate the wavelength, frequency, and energy of light using Planck's constant and the speed of light.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885506&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (D) | Use isotopic composition to calculate average atomic mass of an element.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885507&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.6 (E) | Express the arrangement of electrons in atoms through electron configurations and Lewis valence electron dot structures.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885508&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.7) | Science concepts. The student knows how atoms form ionic, metallic, and covalent bonds. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (A) | Name ionic compounds containing main group or transition metals, covalent compounds, acids, and bases, using International Union of Pure and Applied Chemistry (IUPAC) nomenclature rules.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885510&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (B) | Write the chemical formulas of common polyatomic ions, ionic compounds containing main group or transition metals, covalent compounds, acids, and bases.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885511&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (C) | Construct electron dot formulas to illustrate ionic and covalent bonds.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885512&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (D) | Describe the nature of metallic bonding and apply the theory to explain metallic properties such as thermal and electrical conductivity, malleability, and ductility.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885513&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.7 (E) | Predict molecular structure for molecules with linear, trigonal planar, or tetrahedral electron pair geometries using Valence Shell Electron Pair Repulsion (VSEPR) theory. |
|   |   | STUDENT EXPECTATION | (10-12.8) | Science concepts. The student can quantify the changes that occur during chemical reactions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (A) | Define and use the concept of a mole.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885516&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (B) | Use the mole concept to calculate the number of atoms, ions, or molecules in a sample of material.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885517&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (C) | Calculate percent composition and empirical and molecular formulas. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (D) | Use the law of conservation of mass to write and balance chemical equations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885519&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.8 (E) | Perform stoichiometric calculations, including determination of mass relationships between reactants and products, calculation of limiting reagents, and percent yield.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885520&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.9) | Science concepts. The student understands the principles of ideal gas behavior, kinetic molecular theory, and the conditions that influence the behavior of gases. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (A) | Describe and calculate the relations between volume, pressure, number of moles, and temperature for an ideal gas as described by Boyle's law, Charles' law, Avogadro's law, Dalton's law of partial pressure, and the ideal gas law.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885522&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (B) | Perform stoichiometric calculations, including determination of mass and volume relationships between reactants and products for reactions involving gases.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885523&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.9 (C) | Describe the postulates of kinetic molecular theory.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885524&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.10) | Science concepts. The student understands and can apply the factors that influence the behavior of solutions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (A) | Describe the unique role of water in chemical and biological systems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885526&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (B) | Develop and use general rules regarding solubility through investigations with aqueous solutions. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (C) | Calculate the concentration of solutions in units of molarity.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885528&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (D) | Use molarity to calculate the dilutions of solutions.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885529&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (E) | Distinguish between types of solutions such as electrolytes and nonelectrolytes and unsaturated, saturated, and supersaturated solutions.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885530&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (F) | Investigate factors that influence solubilities and rates of dissolution such as temperature, agitation, and surface area. |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (G) | Define acids and bases and distinguish between Arrhenius and Bronsted-Lowry definitions and predict products in acid base reactions that form water.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885532&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (H) | Understand and differentiate among acid-base reactions, precipitation reactions, and oxidation-reduction reactions.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885533&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (I) | Define pH and use the hydrogen or hydroxide ion concentrations to calculate the pH of a solution.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885534&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.10 (J) | Distinguish between degrees of dissociation for strong and weak acids and bases.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885535&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.11) | Science concepts. The student understands the energy changes that occur in chemical reactions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (A) | Understand energy and its forms, including kinetic, potential, chemical, and thermal energies.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885537&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (B) | Understand the law of conservation of energy and the processes of heat transfer.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885538&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (C) | Use thermochemical equations to calculate energy changes that occur in chemical reactions and classify reactions as exothermic or endothermic.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885539&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (D) | Perform calculations involving heat, mass, temperature change, and specific heat.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885540&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.11 (E) | Use calorimetry to calculate the heat of a chemical process.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885541&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (10-12.12) | Science concepts. The student understands the basic processes of nuclear chemistry. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (A) | Describe the characteristics of alpha, beta, and gamma radiation.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885543&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (B) | Describe radioactive decay process in terms of balanced nuclear equations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885544&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 10-12.12 (C) | Compare fission and fusion reactions.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885545&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |
|   | TEKS | TX.112.36. | Earth and Space Science (One Credit). |
|   |   | STUDENT EXPECTATION | (11-12.1) | Scientific processes. The student conducts laboratory and field investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (A) | Demonstrate safe practices during laboratory and field investigations. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (C) | Use the school's technology and information systems in a wise and ethical manner. |
|   |   | STUDENT EXPECTATION | (11-12.2) | Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (D) | Distinguish between scientific hypotheses and scientific theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (E) | Demonstrate the use of course equipment, techniques, and procedures, including computers and web-based computer applications.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885556&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (F) | Use a wide variety of additional course apparatuses, equipment, techniques, and procedures as appropriate such as satellite imagery and other remote sensing data, Geographic Information Systems (GIS), Global Positioning System (GPS), scientific probes, microscopes, telescopes, modern video and image libraries, weather stations, fossil and rock kits, bar magnets, coiled springs, wave simulators, tectonic plate models, and planetary globes.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885557&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (G) | Organize, analyze, evaluate, make inferences, and predict trends from data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885558&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (H) | Use mathematical procedures such as algebra, statistics, scientific notation, and significant figures to analyze data using the International System (SI) units. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (I) | Communicate valid conclusions supported by data using several formats such as technical reports, lab reports, labeled drawings, graphic organizers, journals, presentations, and technical posters.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885560&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885562&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (D) | Evaluate the impact of research on scientific thought, society, and public policy.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885565&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (E) | Explore careers and collaboration among scientists in Earth and space sciences. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (F) | Learn and understand the contributions of scientists to the historical development of Earth and space sciences. |
|   |   | STUDENT EXPECTATION | (11-12.4) | Earth in space and time. The student knows how Earth-based and space-based astronomical observations reveal differing theories about the structure, scale, composition, origin, and history of the universe. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (A) | Evaluate the evidence concerning the Big Bang model such as red shift and cosmic microwave background radiation and current theories of the evolution of the universe, including estimates for the age of the universe. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (B) | Explain how the Sun and other stars transform matter into energy through nuclear fusion. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (C) | Investigate the process by which a supernova can lead to the formation of successive generation stars and planets. |
|   |   | STUDENT EXPECTATION | (11-12.5) | Earth in space and time. The student understands the solar nebular accretionary disk model. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (A) | Analyze how gravitational condensation of solar nebular gas and dust can lead to the accretion of planetesimals and protoplanets. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (B) | Investigate thermal energy sources, including kinetic heat of impact accretion, gravitational compression, and radioactive decay, which are thought to allow protoplanet differentiation into layers. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (C) | Contrast the characteristics of comets, asteroids, and meteoroids and their positions in the solar system, including the orbital regions of the terrestrial planets, the asteroid belt, gas giants, Kuiper Belt, and Oort Cloud. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (D) | Explore the historical and current hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (E) | Compare terrestrial planets to gas-giant planets in the solar system, including structure, composition, size, density, orbit, surface features, tectonic activity, temperature, and suitability for life. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (F) | Compare extra-solar planets with planets in our solar system and describe how such planets are detected. |
|   |   | STUDENT EXPECTATION | (11-12.6) | Earth in space and time. The student knows the evidence for how Earth's atmospheres, hydrosphere, and geosphere formed and changed through time. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (A) | Analyze the changes of Earth's atmosphere that could have occurred through time from the original hydrogen-helium atmosphere, the carbon dioxide-water vapor-methane atmosphere, and the current nitrogen-oxygen atmosphere. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (B) | Evaluate the role of volcanic outgassing and impact of water-bearing comets in developing Earth's atmosphere and hydrosphere. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (C) | Investigate how the formation of atmospheric oxygen and the ozone layer impacted the formation of the geosphere and biosphere. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (D) | Evaluate the evidence that Earth's cooling led to tectonic activity, resulting in continents and ocean basins. |
|   |   | STUDENT EXPECTATION | (11-12.7) | Earth in space and time. The student knows that scientific dating methods of fossils and rock sequences are used to construct a chronology of Earth's history expressed in the geologic time scale. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (A) | Evaluate relative dating methods using original horizontality, rock superposition, lateral continuity, cross-cutting relationships, unconformities, index fossils, and biozones based on fossil succession to determine chronological order. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (B) | Calculate the ages of igneous rocks from Earth and the Moon and meteorites using radiometric dating methods.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885586&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (C) | Understand how multiple dating methods are used to construct the geologic time scale, which represents Earth's approximate 4.6-billion-year history. |
|   |   | STUDENT EXPECTATION | (11-12.8) | Earth in space and time. The student knows that fossils provide evidence for geological and biological evolution. Students are expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (A) | Analyze and evaluate a variety of fossil types such as transitional fossils, proposed transitional fossils, fossil lineages, and significant fossil deposits with regard to their appearance, completeness, and alignment with scientific explanations in light of this fossil data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885589&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (B) | Explain how sedimentation, fossilization, and speciation affect the degree of completeness of the fossil record.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885590&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (C) | Evaluate the significance of the terminal Permian and Cretaceous mass extinction events, including adaptive radiations of organisms after the events. |
|   |   | STUDENT EXPECTATION | (11-12.9) | Solid Earth. The student knows Earth's interior is differentiated chemically, physically, and thermally. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (A) | Evaluate heat transfer through Earth's subsystems by radiation, convection, and conduction and include its role in plate tectonics, volcanism, ocean circulation, weather, and climate. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (B) | Examine the chemical, physical, and thermal structure of Earth's crust, mantle, and core, including the lithosphere and asthenosphere. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (C) | Explain how scientists use geophysical methods such as seismic wave analysis, gravity, and magnetism to interpret Earth's structure. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (D) | Describe the formation and structure of Earth's magnetic field, including its interaction with charged solar particles to form the Van Allen belts and auroras. |
|   |   | STUDENT EXPECTATION | (11-12.10) | Solid Earth. The student knows that plate tectonics is the global mechanism for major geologic processes and that heat transfer, governed by the principles of thermodynamics, is the driving force. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (A) | Investigate how new conceptual interpretations of data and innovative geophysical technologies led to the current theory of plate tectonics. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (B) | Describe how heat and rock composition affect density within Earth's interior and how density influences the development and motion of Earth's tectonic plates. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (C) | Explain how plate tectonics accounts for geologic processes and features, including sea floor spreading, ocean ridges and rift valleys, subduction zones, earthquakes, volcanoes, mountain ranges, hot spots, and hydrothermal vents. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (D) | Calculate the motion history of tectonic plates using equations relating rate, time, and distance to predict future motions, locations, and resulting geologic features. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (E) | Distinguish the location, type, and relative motion of convergent, divergent, and transform plate boundaries using evidence from the distribution of earthquakes and volcanoes. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.10 (F) | Evaluate the role of plate tectonics with respect to long-term global changes in Earth's subsystems such as continental buildup, glaciation, sea level fluctuations, mass extinctions, and climate change. |
|   |   | STUDENT EXPECTATION | (11-12.11) | Solid Earth. The student knows that the geosphere continuously changes over a range of time scales involving dynamic and complex interactions among Earth's subsystems. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (A) | Compare the roles of erosion and deposition through the actions of water, wind, ice, gravity, and igneous activity by lava in constantly reshaping Earth's surface. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (B) | Explain how plate tectonics accounts for geologic surface processes and features, including folds, faults, sedimentary basin formation, mountain building, and continental accretion. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (C) | Analyze changes in continental plate configurations such as Pangaea and their impact on the biosphere, atmosphere, and hydrosphere through time. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (D) | Interpret Earth surface features using a variety of methods such as satellite imagery, aerial photography, and topographic and geologic maps using appropriate technologies. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.11 (E) | Evaluate the impact of changes in Earth's subsystems on humans such as earthquakes, tsunamis, volcanic eruptions, hurricanes, flooding, and storm surges and the impact of humans on Earth's subsystems such as population growth, fossil fuel burning, and use of fresh water. |
|   |   | STUDENT EXPECTATION | (11-12.12) | Solid Earth. The student knows that Earth contains energy, water, mineral, and rock resources and that use of these resources impacts Earth's subsystems. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (A) | Evaluate how the use of energy, water, mineral, and rock resources affects Earth's subsystems. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (B) | Describe the formation of fossil fuels, including petroleum and coal. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (C) | Discriminate between renewable and nonrenewable resources based upon rate of formation and use. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (D) | Analyze the economics of resources from discovery to disposal, including technological advances, resource type, concentration and location, waste disposal and recycling, and environmental costs. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.12 (E) | Explore careers that involve the exploration, extraction, production, use, and disposal of Earth's resources. |
|   |   | STUDENT EXPECTATION | (11-12.13) | Fluid Earth. The student knows that the fluid Earth is composed of the hydrosphere, cryosphere, and atmosphere subsystems that interact on various time scales with the biosphere and geosphere. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (A) | Quantify the components and fluxes within the hydrosphere such as changes in polar ice caps and glaciers, salt water incursions, and groundwater levels in response to precipitation events or excessive pumping. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (B) | Analyze how global ocean circulation is the result of wind, tides, the Coriolis effect, water density differences, and the shape of the ocean basins. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (C) | Analyze the empirical relationship between the emissions of carbon dioxide, atmospheric carbon dioxide levels, and the average global temperature trends over the past 150 years. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (D) | Discuss mechanisms and causes such as selective absorbers, major volcanic eruptions, solar luminance, giant meteorite impacts, and human activities that result in significant changes in Earth's climate. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (E) | Investigate the causes and history of eustatic sea-level changes that result in transgressive and regressive sedimentary sequences. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.13 (F) | Discuss scientific hypotheses for the origin of life by abiotic chemical processes in an aqueous environment through complex geochemical cycles given the complexity of living systems. |
|   |   | STUDENT EXPECTATION | (11-12.14) | Fluid Earth. The student knows that Earth's global ocean stores solar energy and is a major driving force for weather and climate through complex atmospheric interactions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (A) | Analyze the uneven distribution of solar energy on Earth's surface, including differences in atmospheric transparency, surface albedo, Earth's tilt, duration of insolation, and differences in atmospheric and surface absorption of energy. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (B) | Investigate how the atmosphere is heated from Earth's surface due to absorption of solar energy, which is re-radiated as thermal energy and trapped by selective absorbers. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.14 (C) | Explain how thermal energy transfer between the ocean and atmosphere drives surface currents, thermohaline currents, and evaporation that influence climate. |
|   |   | STUDENT EXPECTATION | (11-12.15) | Fluid Earth. The student knows that interactions among Earth's five subsystems influence climate and resource availability, which affect Earth's habitability. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.15 (A) | Describe how changing surface-ocean conditions, including El Niño-Southern Oscillation, affect global weather and climate patterns. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.15 (B) | Investigate evidence such as ice cores, glacial striations, and fossils for climate variability and its use in developing computer models to explain present and predict future climates. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.15 (C) | Quantify the dynamics of surface and groundwater movement such as recharge, discharge, evapotranspiration, storage, residence time, and sustainability. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.15 (D) | Explain the global carbon cycle, including how carbon exists in different forms within the five subsystems and how these forms affect life. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.15 (E) | Analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on evaporation, sea level, algal growth, coral bleaching, hurricane intensity, and biodiversity. |
|   |
|   | TEKS | TX.112.37. | Environmental Systems (One Credit). |
|   |   | STUDENT EXPECTATION | (11-12.1) | Scientific processes. The student, for at least 40% of instructional time, conducts hands-on laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (A) | Demonstrate safe practices during laboratory and field investigations, including appropriate first aid responses to accidents that could occur in the field such as insect stings, animal bites, overheating, sprains, and breaks. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials. |
|   |   | STUDENT EXPECTATION | (11-12.2) | Scientific processes. The student uses scientific methods during laboratory and field investigations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (D) | Distinguish between scientific hypotheses and scientific theories. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (E) | Follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (F) | Collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885643&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (G) | Demonstrate the use of course apparatuses, equipment, techniques, and procedures, including meter sticks, rulers, pipettes, graduated cylinders, triple beam balances, timing devices, pH meters or probes, thermometers, calculators, computers, Internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 100-foot appraiser's tapes, tarps, shovels, trowels, screens, buckets, and rock and mineral samples.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885644&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (H) | Use a wide variety of additional course apparatuses, equipment, techniques, materials, and procedures as appropriate such as air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, densiometers, clinometers, and field journals.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885645&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (I) | Organize, analyze, evaluate, build models, make inferences, and predict trends from data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885646&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (J) | Perform calculations using dimensional analysis, significant digits, and scientific notation. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.2 (K) | Communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. |
|   |   | STUDENT EXPECTATION | (11-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (D) | Evaluate the impact of research on scientific thought, society, and the environment. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (E) | Describe the connection between environmental science and future careers. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.3 (F) | Research and describe the history of environmental science and contributions of scientists.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885655&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.4) | Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (A) | Identify native plants and animals using a dichotomous key.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885657&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (B) | Assess the role of native plants and animals within a local ecosystem and compare them to plants and animals in ecosystems within four other biomes. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (C) | Diagram abiotic cycles, including the rock, hydrologic, carbon, and nitrogen cycles. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (D) | Make observations and compile data about fluctuations in abiotic cycles and evaluate the effects of abiotic factors on local ecosystems and local biomes. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (E) | Measure the concentration of solute, solvent, and solubility of dissolved substances such as dissolved oxygen, chlorides, and nitrates and describe their impact on an ecosystem. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (F) | Predict how the introduction or removal of an invasive species may alter the food chain and affect existing populations in an ecosystem. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (G) | Predict how species extinction may alter the food chain and affect existing populations in an ecosystem. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.4 (H) | Research and explain the causes of species diversity and predict changes that may occur in an ecosystem if species and genetic diversity is increased or reduced.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885664&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.5) | Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (A) | Summarize methods of land use and management and describe its effects on land fertility. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (B) | Identify source, use, quality, management, and conservation of water.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885667&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (C) | Document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (D) | Identify renewable and non-renewable resources that must come from outside an ecosystem such as food, water, lumber, and energy. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (E) | Analyze and evaluate the economic significance and interdependence of resources within the environmental system. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.5 (F) | Evaluate the impact of waste management methods such as reduction, reuse, recycling, and composting on resource availability. |
|   |   | STUDENT EXPECTATION | (11-12.6) | Science concepts. The student knows the sources and flow of energy through an environmental system. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (A) | Define and identify the components of the geosphere, hydrosphere, cryosphere, atmosphere, and biosphere and the interactions among them. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (B) | Describe and compare renewable and non-renewable energy derived from natural and alternative sources such as oil, natural gas, coal, nuclear, solar, geothermal, hydroelectric, and wind. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (C) | Explain the flow of energy in an ecosystem, including conduction, convection, and radiation.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885675&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (D) | Investigate and explain the effects of energy transformations in terms of the laws of thermodynamics within an ecosystem. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.6 (E) | Investigate and identify energy interactions in an ecosystem.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885677&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.7) | Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (A) | Relate carrying capacity to population dynamics. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (B) | Calculate birth rates and exponential growth of populations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885680&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (C) | Analyze and predict the effects of non-renewable resource depletion. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.7 (D) | Analyze and make predictions about the impact on populations of geographic locales due to diseases, birth and death rates, urbanization, and natural events such as migration and seasonal changes.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885682&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (11-12.8) | Science concepts. The student knows that environments change naturally. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (A) | Analyze and describe the effects on areas impacted by natural events such as tectonic movement, volcanic events, fires, tornadoes, hurricanes, flooding, tsunamis, and population growth. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (B) | Explain how regional changes in the environment may have a global effect. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (C) | Examine how natural processes such as succession and feedback loops restore habitats and ecosystems.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885686&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (D) | Describe how temperature inversions impact weather conditions, including El Niño and La Niña oscillations. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.8 (E) | Analyze the impact of temperature inversions on global warming, ice cap and glacial melting, and changes in ocean currents and surface temperatures. |
|   |   | STUDENT EXPECTATION | (11-12.9) | Science concepts. The student knows the impact of human activities on the environment. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (A) | Identify causes of air, soil, and water pollution, including point and nonpoint sources. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (B) | Investigate the types of air, soil, and water pollution such as chlorofluorocarbons, carbon dioxide, pH, pesticide runoff, thermal variations, metallic ions, heavy metals, and nuclear waste. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (C) | Examine the concentrations of air, soil, and water pollutants using appropriate units. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (D) | Describe the effect of pollution on global warming, glacial and ice cap melting, greenhouse effect, ozone layer, and aquatic viability. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (E) | Evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all terrain vehicles, and small personal watercraft, on the environment.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885694&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (F) | Evaluate cost-benefit trade-offs of commercial activities such as municipal development, farming, deforestation, over-harvesting, and mining. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (G) | Analyze how ethical beliefs can be used to influence scientific practices such as methods for increasing food production.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885696&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (H) | Analyze and evaluate different views on the existence of global warming. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (I) | Discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885698&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (J) | Research the advantages and disadvantages of ''going green'' such as organic gardening and farming, natural methods of pest control, hydroponics, xeriscaping, energy-efficient homes and appliances, and hybrid cars. |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (K) | Analyze past and present local, state, and national legislation, including Texas automobile emissions regulations, the National Park Service Act, the Clean Air Act, the Clean Water Act, the Soil and Water Resources Conservation Act, and the Endangered Species Act.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885700&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 11-12.9 (L) | Analyze past and present international treaties and protocols such as the environmental Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885701&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |
|   | TEKS | TX.112.39. | Physics (One Credit). |
|   |   | STUDENT EXPECTATION | (9-12.1) | Scientific processes. The student conducts investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. These investigations must involve actively obtaining and analyzing data with physical equipment, but may also involve experimentation in a simulated environment as well as field observations that extend beyond the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.1 (A) | Demonstrate safe practices during laboratory and field investigations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885704&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.1 (B) | Demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885705&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-12.2) | Scientific processes. The student uses a systematic approach to answer scientific laboratory and field investigative questions. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (A) | Know the definition of science and understand that it has limitations, as specified in subsection (b)(2) of this section. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (B) | Know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885708&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (C) | Know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (D) | Distinguish between scientific hypotheses and scientific theories.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885710&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (E) | Design and implement investigative procedures, including making observations, asking well-defined questions, formulating testable hypotheses, identifying variables, selecting appropriate equipment and technology, and evaluating numerical answers for reasonableness. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (F) | Demonstrate the use of course apparatus, equipment, techniques, and procedures, including multimeters (current, voltage, resistance), triple beam balances, batteries, clamps, dynamics demonstration equipment, collision apparatus, data acquisition probes, discharge tubes with power supply (H, He, Ne, Ar), hand-held visual spectroscopes, hot plates, slotted and hooked lab masses, bar magnets, horseshoe magnets, plane mirrors, convex lenses, pendulum support, power supply, ring clamps, ring stands, stopwatches, trajectory apparatus, tuning forks, carbon paper, graph paper, magnetic compasses, polarized film, prisms, protractors, resistors, friction blocks, mini lamps (bulbs) and sockets, electrostatics kits, 90-degree rod clamps, metric rulers, spring scales, knife blade switches, Celsius thermometers, meter sticks, scientific calculators, graphing technology, computers, cathode ray tubes with horseshoe magnets, ballistic carts or equivalent, resonance tubes, spools of nylon thread or string, containers of iron filings, rolls of white craft paper, copper wire, Periodic Table, electromagnetic spectrum charts, slinky springs, wave motion ropes, and laser pointers.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885712&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (G) | Use a wide variety of additional course apparatus, equipment, techniques, materials, and procedures as appropriate such as ripple tank with wave generator, wave motion rope, micrometer, caliper, radiation monitor, computer, ballistic pendulum, electroscope, inclined plane, optics bench, optics kit, pulley with table clamp, resonance tube, ring stand screen, four inch ring, stroboscope, graduated cylinders, and ticker timer.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885713&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (H) | Make measurements with accuracy and precision and record data using scientific notation and International System (SI) units.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885714&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (I) | Identify and quantify causes and effects of uncertainties in measured data.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885715&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (J) | Organize and evaluate data and make inferences from data, including the use of tables, charts, and graphs.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885716&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (K) | Communicate valid conclusions supported by the data through various methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885717&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.2 (L) | Express and manipulate relationships among physical variables quantitatively, including the use of graphs, charts, and equations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885718&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-12.3) | Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (A) | In all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885720&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (B) | Communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (C) | Draw inferences based on data related to promotional materials for products and services. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (D) | Explain the impacts of the scientific contributions of a variety of historical and contemporary scientists on scientific thought and society. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (E) | Research and describe the connections between physics and future careers. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.3 (F) | Express and interpret relationships symbolically in accordance with accepted theories to make predictions and solve problems mathematically, including problems requiring proportional reasoning and graphical vector addition.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885725&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-12.4) | Science concepts. The student knows and applies the laws governing motion in a variety of situations. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (A) | Generate and interpret graphs and charts describing different types of motion, including the use of real-time technology such as motion detectors or photogates.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885727&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (B) | Describe and analyze motion in one dimension using equations with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, and acceleration.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885728&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (C) | Analyze and describe accelerated motion in two dimensions using equations, including projectile and circular examples.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885729&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (D) | Calculate the effect of forces on objects, including the law of inertia, the relationship between force and acceleration, and the nature of force pairs between objects.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885730&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (E) | Develop and interpret free-body force diagrams.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885731&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.4 (F) | Identify and describe motion relative to different frames of reference. |
|   |   | STUDENT EXPECTATION | (9-12.5) | Science concepts. The student knows the nature of forces in the physical world. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (A) | Research and describe the historical development of the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885734&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (B) | Describe and calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (C) | Describe and calculate how the magnitude of the electrical force between two objects depends on their charges and the distance between them.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885736&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (D) | Identify examples of electric and magnetic forces in everyday life.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885737&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (E) | Characterize materials as conductors or insulators based on their electrical properties.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885738&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (F) | Design, construct, and calculate in terms of current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel combinations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885739&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (G) | Investigate and describe the relationship between electric and magnetic fields in applications such as generators, motors, and transformers.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885740&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.5 (H) | Describe evidence for and effects of the strong and weak nuclear forces in nature. |
|   |   | STUDENT EXPECTATION | (9-12.6) | Science concepts. The student knows that changes occur within a physical system and applies the laws of conservation of energy and momentum. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (A) | Investigate and calculate quantities using the work-energy theorem in various situations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885743&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (B) | Investigate examples of kinetic and potential energy and their transformations.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885744&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (C) | Calculate the mechanical energy of, power generated within, impulse applied to, and momentum of a physical system.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885745&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (D) | Demonstrate and apply the laws of conservation of energy and conservation of momentum in one dimension.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885746&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (E) | Describe how the macroscopic properties of a thermodynamic system such as temperature, specific heat, and pressure are related to the molecular level of matter, including kinetic or potential energy of atoms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885747&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (F) | Contrast and give examples of different processes of thermal energy transfer, including conduction, convection, and radiation.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885748&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.6 (G) | Analyze and explain everyday examples that illustrate the laws of thermodynamics, including the law of conservation of energy and the law of entropy.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885749&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-12.7) | Science concepts. The student knows the characteristics and behavior of waves. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (A) | Examine and describe oscillatory motion and wave propagation in various types of media.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885751&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (B) | Investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationship between wavespeed, frequency, and wavelength.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885752&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (C) | Compare characteristics and behaviors of transverse waves, including electromagnetic waves and the electromagnetic spectrum, and characteristics and behaviors of longitudinal waves, including sound waves.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885753&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (D) | Investigate behaviors of waves, including reflection, refraction, diffraction, interference, resonance, and the Doppler effect.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885754&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (E) | Describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885755&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.7 (F) | Describe the role of wave characteristics and behaviors in medical and industrial applications.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885756&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   | STUDENT EXPECTATION | (9-12.8) | Science concepts. The student knows simple examples of atomic, nuclear, and quantum phenomena. The student is expected to: |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.8 (A) | Describe the photoelectric effect and the dual nature of light. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.8 (B) | Compare and explain the emission spectra produced by various atoms.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885759&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.8 (C) | Describe the significance of mass-energy equivalence and apply it in explanations of phenomena such as nuclear stability, fission, and fusion. |
|   |   |   | GRADE LEVEL EXPECTATION | 9-12.8 (D) | Give examples of applications of atomic and nuclear phenomena such as radiation therapy, diagnostic imaging, and nuclear power and examples of applications of quantum phenomena such as digital cameras.[**materials correlated to this standard →**](https://correlation.edgate.com/services/cui/?function=listCorrelatedUnits&iStandardId=671885761&iGradeIds=52&iStateIds=19928&iSubjectIds=Science&iPublisherId=465768687&PHPSESSID=mg23e58vli78u88nh0sdi2h350)  |