Grade 6	Unit 1: Astronomy		Suggested Length: 9 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. Explain how the universe and our solar system formed. 2. Compare the main characteristics of the planets. 3. Explain what Scientists have learned about the moon from space exploration. 4. How does rotation and revolution affect the Earth's climate and the location of other astronomical objects in our sky? (Moon, constellations, sun, etc.)	**Program of Studies** ❑ *6-ESS-1 Model the solar system (e.g., structure, number of planets) and its components (e.g., planets, moons, asteroids).* ❑ *6-ESS*-2 Model motion (e.g., orbits) of astronomical objects (e.g., planets, constellations, galaxies) to explain phenomena such as days, years, and eclipses. ❑ *6-ESS-3 Recognize that gravitational force causes motion in the solar system*. ❑ *7-ESS-3* Examine Earth's processes and catastrophes (e.g., asteroid impact). ❑ *8-ESS-3 Investigate the Earth as a component of the solar system (e.g., Sun, planets, and motion).* **Core Content** ❑ **SC-05-2.3.5 Students will compare components of our solar system, including using models/representations that illustrate the system and resulting interactions.** **Earth is the third planet from the Sun in a system that includes the moon, the Sun, eight other planets and their moons, and smaller objects. The Sun, an average star, is the central and largest body in the solar system. Models/diagrams provide understanding of scale within the solar system. DOK 2** ❑ **SC-06-2.3.1 Students will explain and predict phenomena (e.g., day, year, moon phases, eclipses) based on models/representations or data related to the motion of objects in the solar system**	❑ Astronomy ❑ Earth ❑ Season ❑ Equinox ❑ Vernal equinox ❑ Autumnal equinox ❑ Day (rotation) ❑ Year (revolution) ❑ Moon Phases ❑ Eclipses ❑ 9 Planets ❑ Inertia ❑ Stars ❑ Constellations ❑ Sun ❑ Galaxies ❑ Asteroids ❑ Comet ❑ Gravity ❑ Tides	❑ Examine characteristics of the Planets DOK 1 ❑ Model how Earth's tilt on its axis and its revolution around the sun creates seasons. DOK 1 ❑ Construct a scale model of the solar system including planets, their moons, and the sun OR Research 2 or 3 planets and present your findings orally using visual aids. DOK 3 ❑ Make a model of the Earth, moon, and sun system to explore the different phases of the moon. DOK 2 ❑ Complete project "Where's the Moon?" and present findings using logs, drawings and graphs. DOK 4 ❑ Draw and color a diagram of the phases of the moon to show lighted side. DOK 1 ❑ Explore why only one side of the moon faces the Earth using two coins. DOK 2 ❑ Activity Gravity. DOK 2 ❑ Activity Comets/Asteroids. DOK 3 ❑ Open Response: Classifying Pluto DOK 2 ❑ CTBS-like test on each chapter

Grade 6	Unit 1: Astronomy		Suggested Length: 9 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	(e.g., earth, sun, moon). **Observations and investigations of patterns indicate that most objects in the solar system are in regular and predictable motion. Evaluation of this data explains such phenomena as the day, the year, phases of the moon, and eclipses. DOK 3** ❑ **SC-06-4.6.2 Students will describe:** ❑ **the effect of the Suns' energy on the Earth system;** ❑ **the connection/relationship between the Sun's energy and seasons.** **The Sun is the major source of energy for Earth. The water cycle, winds, ocean currents, and growth of plants are affected by the Sun's energy. Seasons result from variations in the amount of the Sun's energy hitting Earth's surface. DOK 3** ❑ **SC-07-2.3.1 Students will make inferences and predictions related to changes in the Earth's surface or atmosphere based on data/evidence.** **The Earth's processes we see today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are predictable and similar to those that occurred in the past. Analysis of evidence from Earth's history substantiates the conclusion that the planet has also been influenced by occasional catastrophes such as the impact of an asteroid or comet. DOK 3**		

Grade 6	Unit 1: Astronomy		Suggested Length: 9 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	❑ **SC-07-2.3.3 Students will describe the concept of gravity and the effect of gravitational force between the sun, moon and Earth.** **The gravitational pull of the Sun and moon on Earth's oceans as the major cause of tides can be understood from generalizations based on evidence. DOK 2** ❑ SC-07-4.6.1 Students will understand that Earth systems have sources of energy that are internal and external to the Earth. The Sun is the major external source of energy		

Grade 6	Unit 2: Outside and Inside Earth		Suggested Length: 6 wks**.**
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. How do the plate boundaries affect the Earth's topography? 2. How can volcanic activity change the Earth's surface? 3. Explain how geologist determines earthquake risks.	**Program of Studies** ❑ *7-ESS-1 Model Earth's layers.* ❑ *5-AC-1 Examine the role of Science in explaining and prediction natural events (e.g., floods, earthquakes, and volcanoes)* **Core Content** ❑ **SC-06-2.3.3 Students will compare constructive and destructive forces on Earth in order to make predictions about the nature of landforms.** **Landforms are a result of a combination of constructive and destructive forces. Collection and analysis of data indicates that constructive forces include crustal**	❑ Earth's Topography: ❑ (Plains, Mountains, and Plateaus) ❑ Earth's layers: ❑ (Crust, Mantle, Outer and Inner Core) ❑ Continental drift ❑ Alfred Wegner ❑ Plate tectonics ❑ Convection Currents ❑ Density ❑ Asthenosphere ❑ Earthquakes ❑ Epicenter ❑ P and S Waves ❑ Richter Scale ❑ Types of Volcanoes	❑ Construct a model that shows a cutaway view of Earth's interior layers and at least three of the plates that make up the Earth's surface. DOK 2 ❑ Research and make a documentary about life in a volcanic region. DOK 3 ❑ Create a puzzle on the plates of the Earth. DOK 1 ❑ Write a paragraph explaining how the eruption of a volcano affects living things. DOK 2 ❑ Draw labeled diagrams that show how heat is transferred by radiation, conduction, and convection. DOK 1 ❑ Construct a model of seafloor spreading at the mid-ocean ridge. DOK 1 ❑ Use the Internet to participate in a web quest (http://geocities.com/le6th/psaproject)"When Disaster Strikes" to make a public announcement on how to survive a natural disaster OR create a poster or brochure to promote earthquake safety. DOK 3

Grade 6	Unit 2: Outside and Inside Earth		Suggested Length: 6 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	deformation, faulting, volcanic eruption, and deposition of sediment, while destructive forces include weathering and erosion. DOK 2 ❑ **SC-07-2.3.1 Students will make inferences and predictions related to changes in the Earth's surface or atmosphere based on data/evidence.** **The Earth's processes we see today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are predictable and similar to those that occurred in the past. Analysis of evidence from Earth's history substantiates the conclusion that the planet has also been influenced by occasional catastrophes such as the impact of an asteroid or comet. DOK 3** ❑ **SC-07-2.3.2 Students will explain the layers of the Earth and their interactions.** **The use of models/diagrams/graphs helps illustrate that the Earth is layered. The lithosphere is the thin crust and the upper part of the mantle. Lithospheric plates move slowly in response to movements in the mantle. There is a dense core at the center of the Earth. DOK 2**	❑ Types of Eruptions ❑ Ring of Fire ❑ Landforms ❑ Anticline ❑ Syncline ❑ Pangaea ❑ Seismology ❑ Transform Plate ❑ Boundary ❑ Divergent Plate ❑ Boundary ❑ Convergent Plate ❑ Boundary ❑ Lithospheric Plates	❑ Construct models of and identify different faults. DOK 2 ❑ Collaborate with Social Studies to construct models of three different types of volcanoes. DOK 2 ❑ CTBS-like tests on each chapter

Grade 6	Unit 3: Exploring Earth's Planet- Rocks and Minerals		Suggested Length: 5 wks.
Essential Questions	***Program of Studies* and Core Content**	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	Program of Studies		

Grade 6	Unit 3: Exploring Earth's Planet- Rocks and Minerals		Suggested Length: 5 wks.
Essential Questions	***Program of Studies* and Core Content**	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. Why are minerals important to our health and to our economy? 2. List and describe the characteristics needed to distinguish one kind of mineral from another. 3. How are different kinds of rocks used by society in their every day lives? 4. List and describe the characteristics needed to distinguish one kind of rock from another.	❑ *7-ESS-2* Demonstrates the rock cycle (e.g., weathered rocks produce soil, weathered rocks are often recrystallized into new rock) and examine characteristics of soils. ❑ *8-ESS-1 Investigate the structure of the Earth system (e.g., rock cycle)* **Core Content** ❑ **SC-06-2.3.2 Students will explain cause and effect relationships in the Rock cycle.** **Materials found in the lithosphere and mantle are changed in a continuous process called the rock cycle, which can be investigated using a variety of models. DOK 2**	❑ Minerals ❑ Mineral ❑ Identification ❑ Mohs Hardness Scale ❑ Use of Minerals ❑ Rock cycle ❑ Igneous Rocks ❑ Metamorphic Rocks ❑ Sedimentary Rocks	❑ Group project: "Growing a Crystal Garden". Design a crystal garden using at least two different crystal growth solutions. Observe and record growth rate to gain a better understanding of how mineral crystals form. DOK 2 ❑ Lab – find the density of different minerals using water. DOK 3 ❑ Create a flow chart that includes information about the processes involved from the formation of an ore to its use in a manufactured process (how ore is formed, located, mined, and smelted). DOK 2 ❑ Use the Mohs Scale to classify minerals according to hardness. DOK 3 ❑ Draw a circle diagram of the rock cycle. DOK 1 ❑ Classify rocks in "Mystery Rock" activity (pg. 93 of text). DOK 3 ❑ Real World Lab- test rock flooring to predict the best type for a kitchen floor. DOK 3 ❑ Group web quest: http://www.webmonkeyplus.com/rocks DOK 3 ❑ Open Response: Fish fossil in a rock DOK 2 ❑ CTBS-like tests on each chapter.

Grade 6	Unit 4**:** Earth's Changing Surface		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. Explain how water erosion is mainly responsible for	**Program of Studies** ❑ *7-ESS-2 Demonstrates the rock cycle (e.g., weathered rocks produce soil, weathered rocks are often recrystallized into new rock) and examines characteristics of soils.*	❑ Chemical and Mechanical ❑ Weathering ❑ Soil	❑ Experiment – *Rock Shake* to compare the effects of both mechanical and chemical weathering. DOK 3 ❑ Experiment- *Crack-up* to determine if freezing water causes rock movement. DOK 3

Grade 6	Unit 4**:** Earth's Changing Surface		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
shaping Earth's land surface. 2. Why is soil important for all the ecosystems? 3. What natural and artificial structures prevent soil erosion?	❑ 7-ESS-3 Examine Earth's processes (e.g., erosion, deposition) and catastrophes (e.g., asteroid impact). **Core Content** ❑ **SC-05-2.3.2 Students will explain interactions of water with Earth materials and results of those interactions (e.g., dissolving minerals, moving minerals and gases).** **Water dissolves minerals and gases and may carry them to the oceans. DOK 3** ❑ **SC-06-2.3.3 Students will compare constructive and destructive forces on Earth in order to make predictions about the nature of landforms.** **Landforms are a result of a combination of constructive and destructive forces. Collection and analysis of data indicates that constructive forces include crustal deformation, faulting, volcanic eruption, and deposition of sediment, while destructive forces include weathering and erosion. DOK 2** ❑ **SC-07-2.3.1 Students will make inferences and predictions related to changes in the Earth's surface or atmosphere based on data/evidence.** **The Earth's processes we see today, including erosion, movement of lithospheric plates, and changes in atmospheric composition, are predictable and similar to**	❑ Sediment ❑ Running Water ❑ Erosion ❑ Deposition ❑ Tributary ❑ Glaciers ❑ Wind ❑ River system	❑ Construct a compare/contrast table that includes every agent of mechanical and chemical weathering. DOK 3 ❑ Draw a diagram of A; B, and C soil horizons with a brief description of each. DOK 1 ❑ Write a magazine article recounting what happened on the Great Plains in the 1930's describing the causes, and explaining what methods are used today to prevent another "Dust Bowl". DOK 3 ❑ Open Response- Landfills or recycle DOK 3 ❑ Create a poster showing drawings or pictures of slump, creep, mudslides, and landslides. DOK 1 ❑ Experiment – *Sand Hills* to show the effect of gravity on mass land movement. DOK 2 ❑ Experiment to show how glaciers and moving ice can change the Earth's surface. DOK 2 ❑ CTBS-like tests on each chapter.

Grade 6	Unit 4**:** Earth's Changing Surface		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	those that occurred in the past. Analysis of evidence from Earth's history substantiates the conclusion that the planet has also been influenced by occasional catastrophes such as the impact of an asteroid or comet. **DOK 3**		

Grade 6	Unit 5: Earth's Geologic Time and Energy Resources		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. Explain what evidence can be found to show how the Earth has changed over time and explain how this evidence formed. 2. Explain how the sun provides energy and describe ways to collect that energy.	**Program of Studies** ❑ *7-ESS-4 Examine evidence (e.g., fossils) for changes in life and environmental conditions.* ❑ *8-ESS-2 Analyze Earth's history (e.g., Earth processes, catastrophes, evidence for changes).* ❑ *8-AC-3* Recognize how science is used to understand changes in populations, issues related to resources, and changes in environments. **Core Content** ❑ **SC-07-3.5.1 Students will** ❑ **describe the usefulness of fossil information to make conclusions about past life forms and environmental conditions;** ❑ **explain the cause and effect relationship of the extinction of a species and environmental changes.** **Extinction of species is common and occurs when the adaptive characteristics of a species are insufficient to allow its survival.**	❑ Fossils ❑ Ages of Rock ❑ Radioactive Decay ❑ Geological Time ❑ Scale (Precambrian, ❑ Paleozoic, Mesozoic, and ❑ Cenozoic Era's) ❑ Pangaea ❑ Law of Superposition ❑ Extinct ❑ Evolution ❑ Fossil Fuels ❑ Renewable Resources ❑ Non –Renewable ❑ Resources	❑ Project "Journey Back In Time". DOK 3 ❑ Make a drawing that includes sedimentary rock layers, an unconformity, a fault, an intrusion, an extrusion and several index fossils. DOK 1 ❑ Determine the relative age of rock layers using "Rock Layers" activity in text that is based on the use of fossils and geologic features. Write a lab report to communicate findings. DOK 2 ❑ Make a model of geologic time. DOK 1 ❑ Create a flow chart showing how fossil fuels are formed. DOK 1 ❑ In a group create a presentation, using visual aides, that shows the advantages and disadvantages of one type of fossil fuel. DOK 2 ❑ Create a solar cooker using aluminum foil. DOK 1 ❑ CTBS-like tests

Grade 6	Unit 5: Earth's Geologic Time and Energy Resources		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	Most of the species that have lived on Earth no longer exist. Fossils provide evidence of how environmental conditions and life have changed. DOK 3 ❑ **SC-08-2.3.1 Students will describe various techniques for estimating geological time (radioactive dating, observing rock sequences, comparing fossils);** **Techniques used to estimate geological time include using radioactive dating, observing rock sequences, and comparing fossils to correlate the rock sequences at various locations. Deductions can be made based on available data and observation of models as to the age of rocks/fossils. DOK 2** ❑ SC-08-2.3.4 Students will understand that the Sun, Earth, and the rest of the solar system formed approximately 4.6 billion years ago. ❑ **SC-08-3.5.1 Students will draw conclusions and make inferences about the consequences of change over time that can account for the similarities among diverse species.** **The consequences of change over time provide a scientific explanation for the fossil record of ancient life forms and for the striking molecular similarities observed among the diverse species of living organisms. DOK 3** ❑ **SC-08-4.6.2 Students will** ❑ **describe or explain energy transfer and energy conservation;**		

Grade 6	Unit 5: Earth's Geologic Time and Energy Resources		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	❑ **evaluate alternative solutions to energy problems.** **Energy can be transferred in many ways, but it can neither be created nor destroyed. DOK 3**		

Grade 6	Unit 6: Earth's Waters		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. What effects do tides have on the Earth's surface? 2. Explain why the water cycle is important to the survival of all life on Earth.	**Program of Studies** ❑ *6-ESS-4 Identify phenomena (e.g., growth of plants, wind, water cycle, ocean currents) on the Earth caused by the sun's energy.* ❑ *8-ESS-1 Investigate the structure of the Earth's system (e.g., lithosphere, rock cycle, water cycle, weather, and climate).* **Core Content** ❑ **SC-06-4.6.2 Students will describe** ❑ **the effect of the Suns' energy on the Earth system;** ❑ **the connection/relationship between the Sun's energy and seasons.** **The Sun is the major source of energy for Earth. The water cycle, winds, ocean currents, and growth of plants are affected by the Sun's energy. Seasons result from variations in the amount of the Sun's energy hitting Earth's surface. DOK 3** ❑ **SC-07-2.3.3 Students will describe the concept of gravity and the effect of**	❑ Sun energy ❑ Ocean currents ❑ Wave Characteristics: ❑ (Wavelength, Crest, and ❑ Trough) ❑ El Nino ❑ Plankton ❑ Nekton ❑ Benthos ❑ Coral Reef ❑ Ocean waves ❑ Water Cycle ❑ Underground water ❑ Freshwater ❑ Saltwater ❑ High and Low Tides	❑ Explore the water cycle by determining how much water a tree gives off in a 24-hour period using "Water From" activity in text. Write a lab report to communicate findings. DOK 3 ❑ Design an experiment to answer the question: What effect do excess fertilizers have on the growth of algae and/or water plants? DOK 4 ❑ Experiment to discover how distilled water, spring water, and mineral water differ from tap water in terms of visible solids, Ph level, taste, and softness. DOK 3 ❑ Determine how various factors affect the density of ocean water using a hydrometer. DOK 3 ❑ Model ocean currents using modeling clay, straws, and a baking pan. Analyze and make conclusions in writing. DOK 2 ❑ Open Response: Preventing Water Pollution DOK 3 ❑ Open Response: Surface Currents DOK 3 ❑ Activity- Tides DOK 2 ❑ CTBS-like tests

Grade 6	Unit 6: Earth's Waters		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	gravitational force between the sun, moon and Earth. **The gravitational pull of the Sun and moon on Earth's oceans as the major cause of tides can be understood from generalizations based on evidence. DOK 2** ❑ **SC-05-2.3.2 Students will explain interactions of water with Earth materials and results of those interactions (e.g., dissolving minerals, moving minerals and gases).** **Water dissolves minerals and gases and may carry them to the oceans. DOK 3** ❑ **SC-06-4.6.1 Students will describe or explain the cause and effect relationships between oceans and climate.** **Oceans have a major effect on climate, because water in the oceans holds a large amount of heat. DOK 2**		

Grade 6	Unit 7: Weather and Climate		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. How does the transfer of the Sun's powerful energy to the Earth generate weather?	**Program of Studies** **Core Content** ❑ **SC-05-2.3.3 Students will** ❑ **describe Earth's atmosphere as a relatively thin blanket of air consisting of a mixture of nitrogen, oxygen, and**	❑ Layers of the ❑ Atmosphere ❑ Acid Rain ❑ Greenhouse Effect ❑ Air Quality ❑ Ozone layer ❑ Precipitation	❑ Use a barometer to record air pressure for 5 days and analyze and graph the results. DOK 3 ❑ By experimenting, determine whether water or soil absorbs and holds radiation longer and analyze data. DOK 2 ❑ Create a cloud poster that includes: ❑ Picture of each type.

Grade 6	Unit 7: Weather and Climate		Suggested Length: 5 wks.
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
2. How does the water cycle affect weather? 3. How do the movements of the Earth and atmosphere affect weather? 4. How are clouds formed and why are there different types? 5. Explain the difference between weather and climate.	**trace gases, including water vapor;** ❑ **analyze atmospheric data in order to draw conclusions about real life phenomena related to atmospheric changes and conditions.** **Earth is surrounded by a relatively thin blanket of air called the atmosphere. The atmosphere is a mixture of nitrogen, oxygen, and trace gases that include water vapor. The atmosphere has different properties at different elevations. Conclusions based on the interpretation of atmospheric data can be used to explain real life phenomena (e.g., pressurized cabins in airplanes, mountain-climber's need for oxygen). DOK 3** ❑ **SC-05-2.3.4 Students will** ❑ **analyze global patterns of atmospheric movement;** ❑ **explain the basic relationships of patterns of atmospheric movement to local weather.** **Global patterns of atmospheric movement can be observed and/or analyzed by interpreting patterns within data. Atmospheric movements influence local weather. Oceans have a major effect on climate, because water in the oceans holds a large amount of heat. Related data can be used to predict change in weather and climate. DOK 3.**	❑ Fronts ❑ Meteorologists ❑ Thunderstorms ❑ Tornadoes ❑ Hurricanes ❑ Climate ❑ Winds ❑ El Nino ❑ Coriolis force ❑ Cirrus ❑ Cumulus ❑ Stratus	❑ Meaning of the word. ❑ Written description of each type. ❑ Determination of the type of weather associated with each type of cloud. DOK 2 ❑ Do activity "Where's The Wind" from text. DOK 2 ❑ Experiment to discover which direction the wind blows the fastest or the most. DOK 3 ❑ Construct a Venn diagram of precipitation. DOK 1 ❑ Use a hygrometer to determine relative humidity and describe in writing their conclusions. DOK 3 ❑ Create a small poster or chart of the 4 main types of storms, their major dangers, and at least 1 safety precaution. DOK 1 ❑ Interpret data by tracking a hurricane to predict where it will come ashore. DOK 3 ❑ Research a country from an assigned climate zone and report to the class how the climate affects the people who live there. DOK 2 ❑ Open Response: Heat Transfer DOK 2 ❑ Open Response: Weather Change DOK 3 ❑ Open Response: Differing Climates on each side of the Rockies DOK 3 ❑ CTBS-like tests