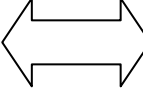
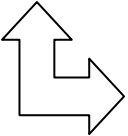
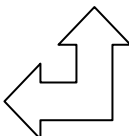


Unit Title	6.1 Introduction to the World of Earth Science and the Metric System
Time frame	2-3 Weeks
21 st Century Themes	Creativity and Innovation Critical Thinking and Problem Solving Communication and Collaboration Productivity and Accountability Leadership and Responsibility
Interdisciplinary focus and technology integration	Technology Math

Essential Questions		Big Ideas
<ul style="list-style-type: none"> Why do scientists use a standard measurement system? What constitutes useful scientific evidence? How is scientific knowledge constructed? How do we build, refine, and explain the natural and designed world? 		<ul style="list-style-type: none"> develop well written lab analyses supported by experimental results and scientific laws. demonstrate appropriate lab safety techniques. apply the metric system to scientific investigations.

	Learning Targets-students will be able to;	
	<ul style="list-style-type: none"> explain the difference between dependant and independent variables. proper lab safety techniques. Identify and explain how to create a “testable” hypothesis. Demonstrate how to follow correct protocol for identifying and reporting safety problems and violations. Compare and contrast the concepts of weight and mass. 	

Assessment	
Rubrics	Teacher-created Assessment
Lab Reports	Classroom Participation
Homework completion	Group Participation
Differentiation	

Hands-on Activities
 Diagnostic Assessment
 Kinaesthetic
 Re-teaching
 Enrichment Activities
 Cooperative Learning
 Peer Tutoring
 Tiered Instruction
 Alternative Assessment

Content Standards

What state content standards are to be addressed?

5.2.8.A
 5.2.8.B
 5.1A-D

Approaches to Learning

Observation skills- observing and communicating data in a lab report

Analyzing skills – recognizing relationships

Evaluation skills- developing criteria for judging their own work

Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments

Inquiry skills – formulate questions, hypothesize and conduct experiments

Learning Experiences

- “Review lab safety procedures and lab equipment.
- Review Scientific Method.
- Introduce unit conversions in the metric system and practice metric to metric conversions.
- Metric Measurement Labs (Practice measuring mass, length, volume, temperature) and create appropriate graphs.
- Students design and develop a class lab with a “testable hypothesis”.
- Develop well written lab report.

Teaching Strategies

- Evaluation of lab reports, rubrics to assess writing, written assessment
- Peer/group discussion, lecture, board work, evaluations, discussion of lab work, use of technology
- Utilization of key terms

Resources

Prentice Hall Science Explorer: Physical Science, 2009

Grade 6 Science

Unit Title	6.2 The Earth's Atmosphere	
Time frame	5 Weeks	
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability	
Interdisciplinary focus and technology integration	Technology-Use the internet to explore ecosystems Math-Read and analyze data found on a graph Art-Illustrate a food web	
Essential Questions		Big Ideas
<ul style="list-style-type: none">• How can we take care of the atmosphere?• What is the composition of Earth's atmosphere?• How is the atmosphere important to living things?• What are some of the properties and characteristics of the atmosphere?• What are the major sources and consequences of air pollution?• How do changes in one part of an Earth system affect other parts of the system?		<ul style="list-style-type: none">• The layers of the atmosphere• Weather occurs within an atmosphere• Predicting and Reading a weather map• Air pollution effects the atmosphere in harmful ways.

Learning Targets-students will be able to;

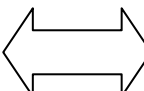
- Changes to the atmosphere affect the entire planet.
- The energy from the sun is transferred throughout the oceans and atmosphere.
- The Sun is the major source of energy for circulating the atmosphere
- Compare and contrast the difference between Weather and Climate
- Compare and contrast the layers of the atmosphere
- Identify various forms of air pollution and explain how they pose a global threat.
- Describe various weather events in the atmosphere
- Create a weather map and create/understand predictions of weather

Assessment

<ul style="list-style-type: none"> • Formal and Informal Teacher Observations • Tests / Quizzes • Diagrams and Models • Student Projects • Study Island Assignments • Supplemental NJ ASK Practice Questions from NJ ASK Workbooks • Experiment/Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment • Kinaesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities 	
Content Standards	
5.1.A 5.1.B 5.1.C 5.1.D 5.4.E 5.4.F	
Approaches to Learning	
<ul style="list-style-type: none"> • Observation Skills • Analyzing Skills • Evaluation Skills 	
Learning Experiences	Teaching Strategies
Suggested activities	
<ul style="list-style-type: none"> • Discussion question: “What is the composition of Earth’s atmosphere?” Discuss observations/findings orally and/or in writing. • Review vocabulary terms: percentage, percentage by volume, atom, molecule, and atmosphere. • Guide the students, using diagrams, models, notes, and discussion, through the composition of the atmosphere. • Discussion question: “How is the atmosphere important to living things?” Discuss student responses. • Key concepts: The atmosphere contains, among other gases, oxygen atoms; oxygen is 	<ul style="list-style-type: none"> • Direct Instruction • Differentiated Instruction • Interdisciplinary Activities • Cooperative Learning Activities • Reinforcement and Remediation

<p>essential to survival; atmosphere-dependent organisms affect the atmosphere through respiration and pollution; the atmosphere insulates and shields the Earth from meteorites and harmful solar radiation; and the atmosphere can be weakened or chemically altered by human activity.</p> <ul style="list-style-type: none"> • Discussion question: “What are some of the properties of air?” Discuss observations/findings orally and/or in writing. • Review vocabulary terms: mass, volume, density, pressure • Key concept: Understand and distinguish mass and weight. • Discussion question: “What are the characteristics of the atmosphere?” • Discussion: The concepts of mass, volume, and density as they relate to air pressure • Review vocabulary terms: air pressure, barometer, and altitude. • The teacher may also wish to explore mercury and aneroid barometers. • Key concept: The interrelationships among mass, volume, density and pressure • Demonstration: Introduce the concept that the atmosphere is layered, with more pressure towards the bottom and less pressure towards the top • Review vocabulary terms: troposphere, stratosphere, mesosphere, thermosphere, ionosphere, and exosphere. • Key concepts: The different layers of the atmosphere: As one gets closer to sea-level, atmospheric pressure increases, and inversely, as one gains altitude, the atmospheric pressure decreases. 	
Resources	
<p>Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER</p> <p>Nonfiction trade books</p> <p>Videos</p> <p>Internet</p> <p>Equipment</p> <p>Posters</p> <p>Pictures</p> <p>Models</p>	

Grade 6 Science

Unit Title	6.3 Outside Our Atmosphere		
Time frame	5 Weeks		
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability		
Interdisciplinary focus and technology integration	Technology-Use the internet to explore ecosystems Math-Read and analyze data found on a graph Art-Illustrate a food web		
Essential Questions			Big Ideas
<ul style="list-style-type: none">• What predictable, observable patterns occur as a result of the interaction between the Earth, Moon, and Sun? (ex. Tides, Moon Phases)• What are the differences among the objects of our solar system?• How are stars created? What are their characteristics?• How can the objects in space be represented in a meaningful and understandable way?			<ul style="list-style-type: none">• Natural Phenomena on Earth (tides, moon phases) are affected by the relationship between the sun, earth, and moon• Scale drawings and models to show differences and relative size of objects throughout outer space.• Stars Cycle plays a part in renewing resources in the universe.



Learning Targets-students will be able to;



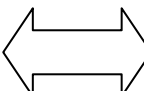
- Describe the height of the path of the Sun in the sky and the length of a shadow change over the course of a year.
- Describe that moon phases are created based on the relative position of the earth, sun, and moon.
- Describe how Earth's position relative to the Sun, and the rotation of Earth on its axis, result in patterns and defines seasons.
- Explain the Sun's gravity holds planets and other objects in the solar system in orbit, and planets' gravity holds moons in orbit.
- Earth has a magnetic field that is detectable at the surface with a compass.
- Describe that stars are formed over long periods of time.
- Observable, predictable patterns of movement in the Sun, Earth, Moon system occur because of gravitational interaction to produce tides

Assessment

<ul style="list-style-type: none"> • Formal and Informal Teacher Observations • Tests / Quizzes • Diagrams and Models • Student Projects • Study Island Assignments • Supplemental NJ ASK Practice Questions from NJ ASK Workbooks • Experiment/Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment • Kinaesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities 	
Content Standards	
5.1.A 5.1.B 5.1.C 5.1.D 5.4.A	
Approaches to Learning	
<ul style="list-style-type: none"> • Observation Skills • Analyzing Skills • Evaluation Skills 	
Learning Experiences	Teaching Strategies
Suggested activities	
<ul style="list-style-type: none"> • Introduce the idea that all objects in space are classified according to where they are in relation to other objects and according to their characteristics. • Discussion question: “What makes a planet a planet, a moon a moon, or a star a star?” Enhance discussion by creating a comparison table of students’ prior knowledge and the teacher’s instruction. • Key concepts: Each term defines a particular body in space that is classified according to its characteristics and its location. • Discussion question: “Why does the moon stay in orbit?” Hypothesize what would happen to the tethered ball if the rope used as a model of gravity were not present. 	<ul style="list-style-type: none"> • Direct Instruction • Differentiated Instruction • Interdisciplinary Activities • Cooperative Learning Activities • Reinforcement and Remediation

<p>Demonstrate this condition in a large, clear area, by swinging the tethered ball overhead, round and round, and then letting go of the tether. Observe and discuss.</p> <ul style="list-style-type: none"> • Review vocabulary terms: inertia, gravity, momentum, friction, and balanced. • Discussion question: “How are stars formed?” • Review vocabulary terms: critical mass, star, nebula, protostar, binary stars, star cluster, and nuclear fusion. • Discussion question: “How are stars classified?” • Review vocabulary terms: main sequence star, super giant star, giant star, white dwarf star, neutron star, apparent magnitude, and absolute magnitude. • Key concepts: Scale drawings are used to model the relative size differences among the star groups; star temperature and star color are related; and star brightness and star distance are somewhat related. 	
Resources	
<p>Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER</p> <p>Nonfiction trade books</p> <p>Videos</p> <p>Internet</p> <p>Equipment</p> <p>Posters</p> <p>Pictures</p> <p>Models</p>	

Grade 6 Science

Unit Title	6.4 Ecology		
Time frame	3-4 Weeks		
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration Initiative and Self-Direction Productivity and Accountability		
Interdisciplinary focus and technology integration	Technology-Use the internet to explore ecosystems Math-Read and analyze data found on a graph Art-Illustrate a food web		
Essential Questions			Big Ideas
<ul style="list-style-type: none">•How do the living and nonliving parts of an ecosystem interact?•How do matter and energy flow through ecosystems?•What are the main types of environmental issues?			<ul style="list-style-type: none">• The population of any organism in an ecosystem is dependent upon the supply of a- biotic and biotic resources within that ecosystem .• There can be interdependent relationships between organisms in an ecosystem.• Energy from sunlight is not recycled, but moves through organisms in food webs and food chains



Learning Targets-students will be able to;



- Identify needs met by an organism's environment.
- Describe the levels of organization within an ecosystem
- Describe how an organism's adaptations help it to survive
- Explain an organism's energy role in an ecosystem
- Understand the components of the cycles of matter
- Understand that various human activities have changed the capacity of the environment to support some life forms.
- Compare and contrast a Food Web and Food Chain and their relationship to an ecosystem.
- Describe the 3 environmental issues that we face today (resource use, population growth, & pollution)

Assessment

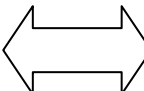
- Formal and Informal Teacher Observations

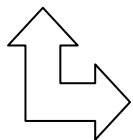
<ul style="list-style-type: none"> •Tests / Quizzes •Diagrams and Models •Student Projects •Study Island Assignments •Supplemental NJ ASK Practice Questions from NJ ASK Workbooks •Experiment/Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment • Kinaesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities 	
Content Standards	
<p>5.1.8.A.1- Core scientific concepts and principles represent the conceptual basis for model-building and facilitate the generation of new and productive questions.</p> <p>5.1.8.A.2-Results of observation and measurement can be used to build conceptual-based models and to search for core explanations.</p> <p>5.1.8.A.3-Predictions and explanations are revised based on systematic observations, accurate measurements, and structured data/evidence.</p> <p>5.3 Life Science All students will understand that life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modelled and predicted through the use of mathematics.</p> <p>C. Interdependence: All animals and most plants depend on both other organisms and their environment to meet their basic needs.</p> <p>5.3.6.C.1 Explain the impact of meeting human needs and wants on local and global environments</p> <p>5.3.6.C.2 Predict the impact that altering biotic and abiotic factors has on an ecosystem.</p> <p>5.3.6.C.3 Describe how one population of organisms may affect other plants and/or animals in an ecosystem</p> <p>5.3.8.C.1 Model the effect of positive and negative changes in population size on a symbiotic pairing.</p> <p>E. Evolution and Diversity: Sometimes, differences between organisms of the same kind provide advantages for surviving and reproducing in different environments. These selective differences may lead to dramatic changes in characteristics of organisms in a population over extremely long periods of time.</p> <p>5.3.6.E.1 Describe the impact on the survival of species during specific times in geologic history when environmental conditions changed.</p> <p>5.3.8.E.1 Organize and present evidence to show how the extinction of a species is related to an inability to adapt to changing environmental conditions using quantitative and qualitative data.</p> <p>5.3.8.E.2 Compare the anatomical structures of a living species with fossil records to derive a line of descent.</p>	
Approaches to Learning	
<ul style="list-style-type: none"> •Observation Skills •Analyzing Skills •Evaluation Skills 	
Learning Experiences	Teaching Strategies

Suggested activities	
<ul style="list-style-type: none"> • Preview the essential questions and connect to the learning throughout the unit. • Discuss how organisms interact in a community. • Discuss the components of an ecosystem. • Determine how living things interact with each other and non-living things in the environment. • Describe how physical factors affect the organisms in an ecosystem. • Project: relate the carbon dioxide/oxygen cycles with the nitrogen cycle and explain how they are essential parts of all ecosystems. • Food web construction • Discuss populations, food chains, ecological changes. 	<ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation
Resources	
<p>Text: PRENTICE HALL, LIFE SCIENCE, SCIENCE EXPLORER</p> <p>Nonfiction trade books</p> <p>Videos</p> <p>Internet</p> <p>Equipment</p> <p>Posters</p> <p>Pictures</p> <p>Models</p>	

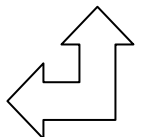
Grade 6 Science

Unit Title	6.5 Earth's Waters
Time frame	5 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology: Internet Art: Illustrate the water cycle Language Arts- Reading Comprehension

Essential Questions		Big Ideas
<ul style="list-style-type: none"> •Where is freshwater found and how is it used, conserved and polluted? •What are the causes of wave's currents and tides? •How do scientists divide the ocean and ocean floor into zones? 		<ul style="list-style-type: none"> •The Earth has fresh and salt water.



Learning Targets-students will be able to;
<ul style="list-style-type: none"> •.Describe the water cycle •Identify where fresh water and salt water found on Earth •Identify characteristics of river systems, ponds, and lakes •Compare and contrast how people use, conserve, and obtain fresh water from aquifers •Classify sources of water pollution •Identify the factors affect drinking water quality and why is it often treated before people drink it •Understand how waves form, change, and affect shorelines •What causes tides and affect their height •Identify tides as a source of energy •Describe how conditions in the ocean change with depth •List the causes and effect of surface and deep currents •Define upwelling and describe how it affect the distribution of nutrients in the oceans •Name the main section and zones of the ocean •Understand the classification of marine organisms and what conditions must they



tolerate in the zones of the oceans

- Identify the living and nonliving oceans resources and what are the sources of ocean pollution

Assessment

- Formal and Informal Teacher Observations
- Tests / Quizzes
- Student Projects
- Diagrams and Models
- Experiment and Investigation

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities and Assessments

Content Standards

5.4 Earth Systems Science B, C

Approaches to Learning

Observation Skills- observing and communicating data in a lab report

Analyzing Skills – recognizing relationships

Evaluation Skills- developing criteria for judging their own work

Scientific Inquiry Skills – formulate questions, hypothesize and conduct experiments

Inquiry Skills – formulate questions, hypothesize and conduct experiments

Learning Experiences and Suggested Activities

- Preview the essential questions and connect to learning throughout the unit.
- Demonstration: Introduce the topics of ocean currents and ocean circulation by adding colored, room temperature, fresh water to an equal sample of salt water or to a warmer/cooler sample of salt water. Reverse the conditions for observation and comparison purposes. Explain that

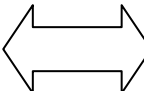
Teaching Strategies

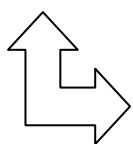
- Direct Instruction
- Differentiated Instruction
- Interdisciplinary Activities
- Cooperative Learning Activities
- Reinforcement and Remediation

<p>seawater is layered due to differences in temperature, salinity, and density.</p> <ul style="list-style-type: none"> • Discussion question: “What is an ocean current, and how is it different from a wave?” Discuss observations orally and/or in writing. • Review vocabulary terms: surface current, horizontal movement, vertical mixing, salinity, deep ocean current, and any other pertinent terms that arise during discussions. • Key concepts: The wind has little effect on ocean currents. Density, temperature, and salinity differences affect current. Students should understand that different layers in seawater support different, specially adapted, forms of life. • Demonstration: The Difficulty of Mapping the Ocean Floor: Introduce the idea that the ocean floor is difficult to map and the need for technology using mystery content boxes, push-pin imaging toys, and/or tabletop sounding cans • Discussion question: “How does the ocean floor get its shape?” Discuss orally and/or in writing and relate the discussion to continental crust lessons. • Review vocabulary terms: mid-ocean ridge, trench, subduction zone, submersible, plate boundary, and any other pertinent term that may arise during discussions. 	
Resources	
<ul style="list-style-type: none"> •Internet Diagram/ models •Text: Prentice Hall Science Explorer- Earth Science Grade 6 •Tradebooks •Equipment : Videos 	

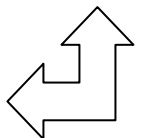
Grade 6 Science

Unit Title	6.6 Water as A Resource
Time frame	2 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology: Internet Art: Illustrate the water cycle Language Arts- Reading Comprehension

Essential Questions		Big Ideas
<ul style="list-style-type: none"> Why is water unique? How do humans affect the water supply? How is water used? From where does the water supply originate? How can our water resources be conserved and maintained? 		<ul style="list-style-type: none"> The properties that make water unique are surface tension, viscosity, capillary action, adhesion, and cohesion Conservation of water The effect humans have on the water supply



Learning Targets-students will be able to;
<ul style="list-style-type: none"> Describe how people use water in many different ways and that some uses are more essential to life than others. Create a map and explain how water gets into our homes. Identify and explain how water quality is affected by both human activity and natural events describe ways we can conserve water



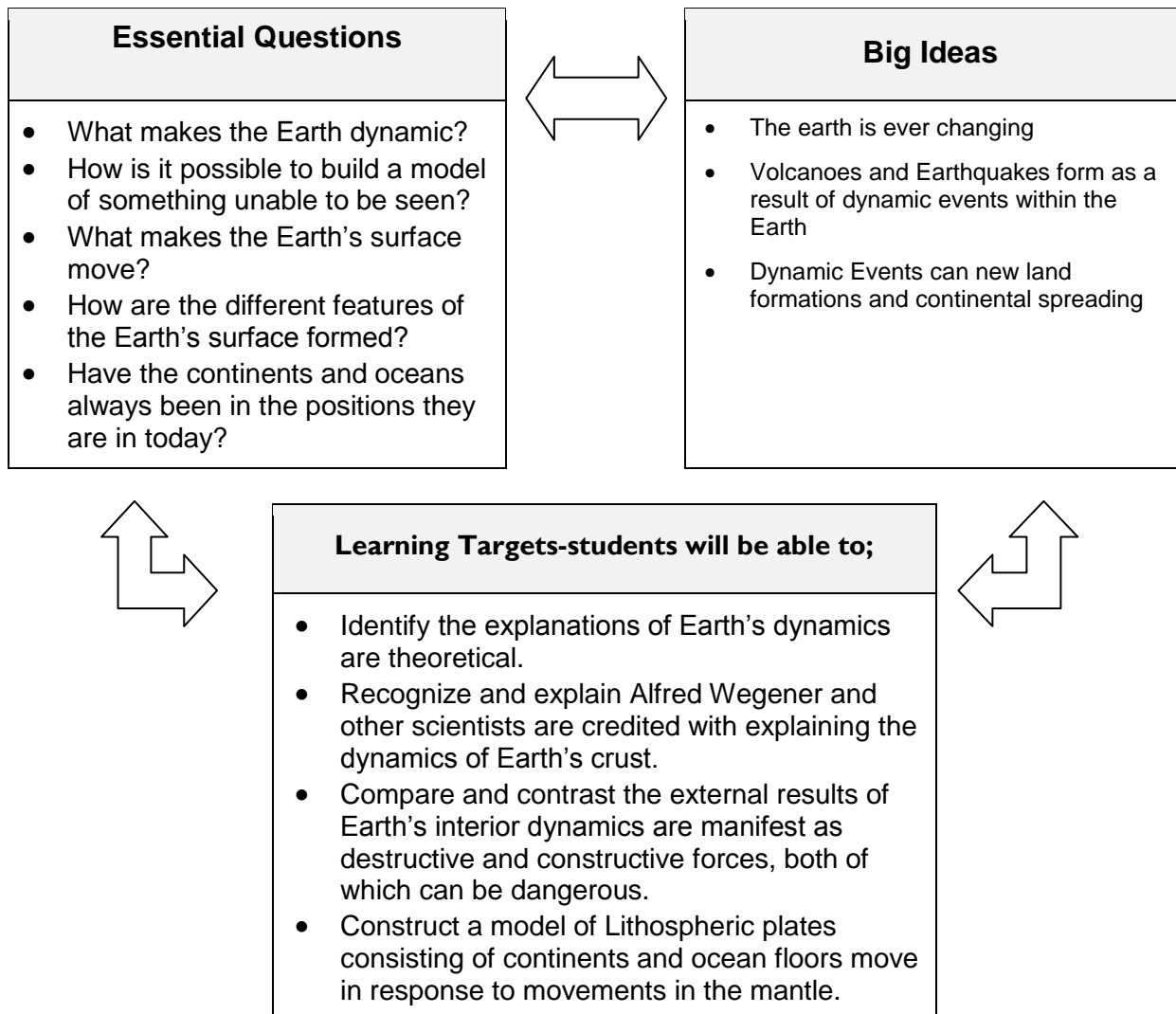
Assessment
<ul style="list-style-type: none"> Formal and Informal Teacher Observations Tests / Quizzes Student Projects Diagrams and Models Experiment and Investigation

Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment (based on content /skill pre-tests) • Kinesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities and Assessments 	
Content Standards	
5.4 Earth Systems Science B, C	
Approaches to Learning	
<u>Observation Skills</u> - observing and communicating data in a lab report <u>Analyzing Skills</u> – recognizing relationships <u>Evaluation Skills</u> - developing criteria for judging their own work <u>Scientific Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments <u>Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments	
Learning Experiences and Suggested Activities	Teaching Strategies
<ul style="list-style-type: none"> • Preview the essential questions and connect to learning throughout the unit. • Discussion question: “Why is water an important resource?” • Review vocabulary terms: distillation, evaporation, condensation, and any other pertinent terms that arise during discussion • Key concept: The process of evaporation separates impurities to form pure water. • Demonstration: Introduce the idea that water has unique properties. Use a series of demonstrations that emphasize water’s role as a solvent, a buoyant force, a thermal insulator, and a polar molecule. Demonstrate water’s behavior in its different phases, as well as water’s surface tension and capillary actions. The teacher may wish to set up a different station for each of the properties of water being investigated. • Discussion: The potential for pollution based on the demonstration: Discuss orally and/or in writing the experiences of the students with common activities and habits leading to source point and non-source point pollution. • Key concepts: The water supply can become contaminated from many different sources and the contaminants might enter the supply 	<ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation

<p>from remote locations. A clean, natural water supply is a community responsibility.</p> <ul style="list-style-type: none"> • Discussion question: “How is the water supply cleaned and tested for cleanliness?” 	
Resources	
<ul style="list-style-type: none"> •Internet Diagram/ models •Text: Prentice Hall Science Explorer- Earth Science Grade 6 •Tradebooks •Equipment : Videos 	

Grade 6 Science

Unit Title	6.7 Dynamic Planet
Time frame	6-8 Weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology: Internet Art: Create a fossil Language Arts- Reading Comprehension



Assessment	
<ul style="list-style-type: none"> • Formal and Informal Teacher Observations • Tests / Quizzes • Student Projects • Diagrams and Models • Experiment and Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment (based on content /skill pre-tests) • Kinesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities and Assessments 	
Content Standards	
5.4 Earth Systems Science B, C	
Approaches to Learning	
<u>Observation Skills</u> - observing and communicating data in a lab report <u>Analyzing Skills</u> – recognizing relationships <u>Evaluation Skills</u> - developing criteria for judging their own work <u>Scientific Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments <u>Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments	
Learning Experiences	Teaching Strategies
<ul style="list-style-type: none"> • Discussion: The salient points of the energy wave models and how energy waves might be used to identify Earth's interior • Review vocabulary terms: seismic, refraction, matter, solid, liquid, gas, transfer, particle motion, and any other pertinent terms that arise during discussions. • Review vocabulary terms: inner core, outer core, mantle, lithosphere, asthenosphere, crust, convection current, heat source, earthquake, epicenter, focus, seismic shock wave, aftershock, and any other pertinent terms that arise during discussions. • Key concepts: Earthquakes are used as evidence of movement under the crust and this movement is used as evidence of a super- 	<ul style="list-style-type: none"> • Direct Instruction • Differentiated Instruction • Interdisciplinary Activities • Cooperative Learning Activities • Reinforcement and Remediation

heated core. The ongoing cycle of convection currents in the mantle is what causes earthquakes.

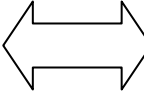
- Demonstration: Introduce the concept of lithospheric plates and provide information to describe each of the plate boundaries. A model of the cracked nature of lithospheric plates can be presented in the form of wooden splints being stressed to the point of fracturing and cracking as they are curved around a softball. Introduce the concept that the motion of Earth's crust is observable as earthquakes, faults, trenches, mountains, and rifts.
- Discussion question: "What happens where lithospheric plates meet?"
- Discussion: Student observations made during the demonstration
- Review vocabulary terms: convergent, divergent, transform, subduction zone, trench, continental crust, oceanic crust, tectonic plate, deformation, fault, reverse fault, normal fault, fault-block mountain, transform fault, San Andreas Fault, Mid-Ocean Ridge, Great Rift Valley, and any other pertinent terms that arise during discussions.
- Demonstrations: Introduce the concept of continental drift through a series of demonstrations that include connecting modern day continents according to geologic evidence, such as mountain ranges, fossil finds, and rock strata, and based on Alfred Wegener's theories. This involves extrapolations of continental positions in the ancient past and the distant future based on current positions using calculations and estimated rates of motion.
- Review vocabulary terms: Pangea, continental shelf, continental slope, continental drift, divergent boundary, Alfred Wegener, plate motion, geologic time, and any other pertinent terms that arise during discussions.
- Research project: Surface disruptions caused by motion of the mantle (earthquakes, volcanoes, tsunamis) are powerful natural events that change the landscape and can be dangerous to humans. Assign independent or small group research projects, PowerPoint presentations, modeling, acting/role playing, learning stations, or student-made posters that would inform the general public of the safety precautions to be used in case of an earthquake, volcano, or tsunami. Students can create informative brochures to be mailed to relatives and friends who live in areas prone to such hazards.
- Review vocabulary terms: hazard, tsunami, earthquake, volcano, liquification, pyroclastics, eruption, and any other pertinent terms that arise during discussions.

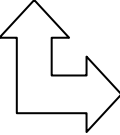
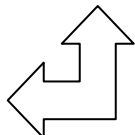
Resources

- Internet
- Text: Prentice Hall Science Explorer- Earth Science Grade 6
- Tradebooks
- Equipment
- Videos
- Mineral and Rock Samples

Grade 6 Science

Unit Title	6.8 Geology: Minerals, Rocks, and Soil
Time frame	4-5 Weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology: Internet Art: Rock Cycle Illustration Language Arts- Reading Comprehension

Essential Questions		Big Ideas
<ul style="list-style-type: none"> What are minerals and how are they formed and used? What are the three main types of rocks and how are they formed and used? What are the processes of weathering and soil formation? 		<ul style="list-style-type: none"> Different rocks and minerals are found on Earth. Soil Formation

Learning Targets-students will be able to:
 <ul style="list-style-type: none"> Identify minerals and their properties. Explain how minerals form and are used. Use characteristics to identify the three main groups of rocks. Identify how the three main groups of rocks are formed and used. Label the rock cycle diagram. Identify and describe the causes of mechanical and chemical weathering Define soil and describe how it forms 

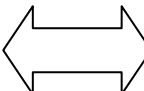
Assessment
<ul style="list-style-type: none"> Formal and Informal Teacher Observations Tests / Quizzes Student Projects Diagrams and Models

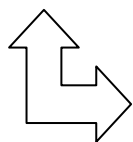
<ul style="list-style-type: none"> •Experiment and Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment (based on content /skill pre-tests) • Kinesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities and Assessments 	
Content Standards	
5.4 Earth Systems Science 5.4.B 5.4.C	
Approaches to Learning	
<u>Observation Skills</u> - observing and communicating data in a lab report <u>Analyzing Skills</u> – recognizing relationships <u>Evaluation Skills</u> - developing criteria for judging their own work <u>Scientific Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments <u>Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments	
Learning Experiences	Teaching Strategies
<ul style="list-style-type: none"> •Assessments •Chapter Outline/Notes •Notebook Tests •Presentations •Create crystals and compare •Examine and compare mineral and rock samples •Observe, sketch and identify rocks •Test how rocks react to acids •Predict the effects of pressure on rocks. 	<ul style="list-style-type: none"> •Direct Instruction •Differentiated Instruction •Interdisciplinary Activities •Cooperative Learning Activities •Reinforcement and Remediation
Resources	
<ul style="list-style-type: none"> •Internet •Text: Prentice Hall Science Explorer- Earth Science Grade 6 •Trade Books •Equipment 	

- Videos
- Mineral and Rock Samples

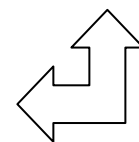
Grade 6 Science

Unit Title	6.9 Energy Resources
Time frame	2 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology Math Art History Language Arts

Essential Questions		Big Ideas
<ul style="list-style-type: none"> • How do fuels provide energy? • What are the three main fossil fuels? • What are some forms of renewable energy? • How do fossil fuels influence acid rain? 		<ul style="list-style-type: none"> • Renewable and non-renewable energy resources differ in cost and availability. • The earth's resources differ in the environmental effects of producing and using them. • Effects that acid rain can have on Earth



Learning Targets-students will be able to;
<ul style="list-style-type: none"> • Name the three main fossil fuels • Explain why fossil fuels are considered non renewable resources • Name three forms of renewable energy • Name and describe two ways we can conserve energy • Explain the influence of burning fossil fuels on acid rain • Explain how acid rain impacts our Earth

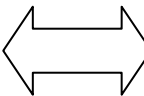


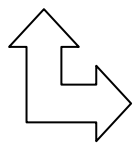
Assessment
<ul style="list-style-type: none"> • Formal and Informal Teacher Observations • Tests / Quizzes

<ul style="list-style-type: none"> •Student Projects •Diagrams and Models •Experiment and Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment (based on content /skill pre-tests) • Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities and Assessments 	
Content Standards	
5.4 Earth Systems Science B, C	
Approaches to	
<u>Observation skills</u> - observing and communicating data in a lab report <u>Analyzing skills</u> – recognizing relationships <u>Evaluation skills</u> - developing criteria for judging their own work <u>Scientific Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments <u>Inquiry skills</u> – formulate questions, hypothesize and conduct experiments	
Learning Experiences and Suggested Activities	Teaching Strategies
<ul style="list-style-type: none"> •Assessments •Chapter outline/notes •Notebook tests •Presentations •Design and Build a Solar Toy •“Keeping Comfortable” pg 379 	<ul style="list-style-type: none"> •Direct instruction •Differentiated instruction •Interdisciplinary activities •Cooperative learning activities •Reinforcement and remediation
Resources	
Text: Prentice Hall Science Explorer- Earth Science Grade 6	

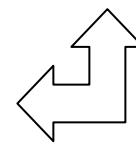
Grade 6 Science

Unit Title	6.10 Geologic Changes Through Time: Fossils
Time frame	4-5 Weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Technology: Internet Art: Create a fossil Language Arts- Reading Comprehension

Essential Questions		Big Ideas
<ul style="list-style-type: none"> •What have geologists learned from the study of Earth's past? 		<ul style="list-style-type: none"> •There are many things to be learned from the Earth's past



Learning Targets-students will be able to;
<ul style="list-style-type: none"> •Identify fossils, how they are formed and what they tell about organisms and environments of the past. •Identify how the law of superposition helps determine age of rocks. •Identify how index fossils are useful to geologists. •Identify what is radioactive decay and what can be learned from radioactive dating. •Identify what are the units of the geologic time scale and how does it show Earth's history. •Identify when Earth was formed. •How did Earth's physical features develop during Precambrian time and what were the early organisms like. •What were the major events in the Palaeozoic, Mesozoic and Cainozoic Eras



Assessment

<ul style="list-style-type: none"> • Formal and Informal Teacher Observations • Tests / Quizzes • Student Projects • Diagrams and Models • Experiment and Investigation 	
Differentiation	
<ul style="list-style-type: none"> • Hands-On Activities • Diagnostic Assessment (based on content /skill pre-tests) • Kinesthetic Activities • Re-teach and Enrichment Activities • Cooperative Learning (Flexible Grouping) • Peer Tutoring • Tiered Activities and Assessments 	
Content Standards	
5.4 Earth Systems Science B, C	
Approaches to Learning	
<u>Observation Skills</u> - observing and communicating data in a lab report <u>Analyzing Skills</u> – recognizing relationships <u>Evaluation Skills</u> - developing criteria for judging their own work <u>Scientific Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments <u>Inquiry Skills</u> – formulate questions, hypothesize and conduct experiments	
Learning Experiences	Teaching Strategies
<ul style="list-style-type: none"> • Preview the essential questions and connect to learning throughout the unit. • Observation: Distribute sample fossils to the students to observe. Investigate specific characteristics of various sample organisms that either tend to form fossils or tend to decompose. Use cleanliness precautions. • Discussion question: “Why are fossils important?” • Discussion: Student observations made about the characteristics of fossils and the characteristics of the types of organisms that tend to fossilize • Discussion question: “Where can fossils form?” • Review vocabulary terms: billion, carbon-14, geologic time, period, era, epoch, superposition, scientific law, missing link, and any other pertinent 	<ul style="list-style-type: none"> • Direct Instruction • Differentiated Instruction • Interdisciplinary Activities • Cooperative Learning Activities • Reinforcement and Remediation

<p>terms that arise during discussions.</p> <ul style="list-style-type: none"> • Discussion question: “What do fossils show about life on Earth?” 	
Resources	
<ul style="list-style-type: none"> •Internet •Text: Prentice Hall Science Explorer- Earth Science Grade 6 •Tradebooks •Equipment •Videos •Mineral and Rock Samples 	