

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: How do we use the scientific method to understand our world?					
STRAND I: Scientific Thinking and Practice		BENCHMARK I. Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings. II. Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge. III. Use mathematical ideas, tools, and techniques to understand scientific knowledge.			
STANDARD I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
A L L Y E A R	1. Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis. 2. Use models to explain the relationships between variables being investigated. 1. Describe how bias can affect scientific investigation and conclusions. 2. Critique procedures used to investigate a hypothesis. 3. Analyze and evaluate scientific explanations. 1. Understand that the number of data (sample size) influences the reliability of a prediction. 2. Use mathematical expressions to represent data and observations collected in scientific investigations. 3. Select and use an appropriate model to examine a phenomenon.	Students will develop their understanding and abilities to evaluate the scientific method.	Students will apply the terminology of the scientific method throughout the year in written assignments and research. The students will conduct the “mini” research assignments &/or science fair projects, to develop the scientific method research and inquiry skills. Students will follow scientific method processes including developing a hypothesis, recording & analyzing data, and forming a conclusion during labs/projects throughout the year.	Vocabulary tests and use of terminology in assignments. Guidelines required for research assignments &/or rubrics for science fair projects. Worksheet &/or written conclusions in journal/notebooks	Life Science Textbook Internet/Laptops Science fair websites: http://tinyurl.com/2uhr9e Scotch science fair central Guidelines/rubric for projects Worksheet/journal/notebook

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: How has science influenced society?					
STRAND III: Science and Society			BENCHMARK I: Explain how scientific discoveries and inventions have changed individuals and societies.		
STANDARD I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.					
9 w k s	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
A L L Y E A R	<p>1. Analyze the contributions of science to health as they relate to personal decisions about smoking, drugs, alcohol, and sexual activity.</p> <p>2. Analyze how technologies have been responsible for advances in medicine (e.g., vaccines, antibiotics, microscopes, DNA technologies).</p> <p>3. Describe how scientific information can help individuals and communities respond to health emergencies (e.g., CPR, epidemics, HIV, bio-terrorism).</p>	<p>Students will be able to explain how science discoveries have influenced inventions, medicines, and how humans live.</p>	<p>The students will conduct the “mini” research assignments to develop research and inquiry skills.</p> <p>Students will research and write about various discoveries and careers in science.</p>	<p>Guidelines required for research assignments.</p> <p>Complete required writing assignments.</p>	<p>Internet/Laptops</p> <p>Guidelines for research</p>

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: What role do cells play in organisms?					
STRAND II: Content of Science			BENCHMARK III: Understand the structure of organisms and the function of cells in living systems.		
STANDARD II: LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
1st	<p><i>Structure of Organisms</i></p> <p>1. Understand that organisms are composed of cells and identify unicellular and multicellular organisms.</p> <p>2. Explain how organs are composed of tissues of different types of cells (e.g., skin, bone, muscle, heart, intestines).</p> <p><i>Function of Cells</i></p> <p>3. Understand that many basic functions of organisms are carried out in cells, including:</p> <ul style="list-style-type: none"> • growth and division to produce more cells (mitosis) • specialized functions of cells (e.g., reproduction, nerve-signal transmission, digestion, excretion, movement, transport of oxygen). <p>4. Compare the structure and processes of plant cells and animal cells.</p> <p>5. Describe how some cells respond to stimuli (e.g., light, heat, pressure, gravity).</p> <p>6. Describe how factors (radiation, UV light, drugs) can damage cellular structure or function.</p>	<p>Students will be able to describe the components of cells and the relation of cells to tissues, organs, and organisms.</p> <p>Students will be able to distinguish between unicellular and multicellular organisms and their characteristics.</p> <p>Students will compare the differences between plant and animal cells regarding form, function, and responses to stimuli.</p>	<p>Students will use the unit vocabulary correctly in their diagrams and writings regarding the cell and its components.</p> <p>Students will draw and label prokaryotic & eukaryotic cells and plant & animal cells.</p> <p>Students will participate in small group and class discussions to compare the differences between cell compositions. Ex: simple to complex organization.</p>	<p>Vocabulary quizzes, diagram/models, writings, and tests.</p> <p>Drawing requirements.</p> <p>Create cell model using everyday items and present model with explanations of organelle functions.</p> <p>Student participation will demonstrate understanding in discussions, writings, and tests.</p>	<p>Life Science Textbook</p> <p>Cell models</p> <p>Websites: www.cellsalive.com http://tinurl.com/dauoh9 cell model gallery</p>

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: Why do organisms resemble their parents?					
STRAND II: Content of Science			BENCHMARK II: Understand how traits are passed from one generation to the next and how species evolve.		
STANDARD II: LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I= Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
2 nd	<p><i>Reproduction</i></p> <ol style="list-style-type: none"> 1. Know that reproduction is a characteristic of all living things and is essential to the continuation of a species. 2. Identify the differences between sexual and asexual reproduction. 3. Know that, in sexual reproduction, an egg and sperm unite to begin the development of a new individual. 4. Know that organisms that sexually reproduce fertile offspring are members of the same species. <p><i>Heredity</i></p> <ol style="list-style-type: none"> 5. Understand that some characteristics are passed from parent to offspring as inherited traits and others are acquired from interactions with the environment. 6. Know that hereditary information is contained in genes that are located in chromosomes, including: determination of traits by genes , traits determined by one or many genes, more than one trait sometimes influenced by a single gene. 	<p>Students will understand that reproduction is necessary for the survival of a species.</p> <p>Students will be able to compare sexual and asexual reproduction.</p> <p>Students will understand that traits are passed from parent to offspring.</p> <p>Students will be able to identify and contrast the genetic & physical expressions of heredity.</p> <p>Students will understand the role dominant and recessive genes play in the genetic makeup of an organism.</p>	<p>Students will use the unit vocabulary correctly in their diagrams and writings regarding reproduction and heredity.</p> <p>Students will compare the asexual reproduction of plants with organisms that reproduce sexually using worksheets.</p> <p>Students will complete a genetic worksheet to identify phenotype and genotype.</p> <p>Students will manipulate dominant and recessive traits in a punnett square worksheet to determine genotype and phenotype probability.</p>	<p>Vocabulary quizzes, diagram/models, writings, and tests.</p> <p>Worksheets and tests</p> <p>Genetic worksheets obtained from www.sciencespot.net.</p>	<p>Life Science Textbook</p> <p>SpongeBob square pants worksheets and quizzes</p>

Portales Municipal Schools
CURRICULUM MAP

Subject: Science	2009	Grade Level 7
-------------------------	-------------	----------------------

ESSENTIAL QUESTIONS: How does matter move through the environment? Is matter lost?					
STRAND II: Content of Science		BENCHMARK I: Know the forms and properties of matter and how matter interacts. II: Explain the physical processes involved in the transfer, change, and conservation of energy. II.III.I. Describe how the concepts of energy, matter, and force can be used to explain the observed behavior of the solar system, the universe, and their structures.			
STANDARD I: PHYSICAL SCIENCE: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy. STANDARD III: EARTH AND SPACE SCIENCE: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS I = Introduce R= Review/Extend M = Master	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
2nd	1. Explain how matter is transferred from one organism to another and between organisms and their environment (e.g., consumption, the water cycle, the carbon cycle, the nitrogen cycle). 2. Know that the total amount of matter (mass) remains constant although its form, location, and properties may change (e.g., matter in the food web). 3. Identify characteristics of radioactivity, including: decay in time of some elements to others, release of energy, damage to cells. 4. Describe how substances react chemically in characteristic ways to form new substances (compounds) with different properties (e.g., carbon and oxygen combine to form carbon dioxide in respiration). 5. Know that chemical reactions are essential to life processes: sunlight and photosynthesis, energy transformation in living systems (e.g., cellular processes changing chemical energy to heat and motion), effect of mankind's use of energy and other activities on living systems (e.g., global warming, water quality). 1. Explain why Earth is unique in our solar system in its ability to support life. 2. Explain how energy from the sun supports life on Earth.	Students will be use information from the water, carbon, and nitrogen cycles to explain how matter moves in the environment. Students will understand the processes of photosynthesis and cellular respiration. Students will be introduced to the effects of radioactivity on elements and cells.	Students will use the unit vocabulary correctly in their diagrams and writings regarding properties of matter. Students will diagram and label the element cycles and be able to explain the movement of matter. Students will compare and contrast the processes of photosynthesis and cellular respiration on worksheets and class discussions. Students will apply the rules of half-life to a radioactive element and determine the decay of an element.	Vocabulary quizzes, diagram/models, writings, and tests. Diagrams correctly labeled & explained, and tests. Worksheets, class discussions, and tests. Practice worksheet	Life Science Textbook Worksheet Worksheet

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: What factors influence the survival of a species?					
STRAND II: Content of Science		BENCHMARK LS II: Understand how traits are passed from one generation to the next and how species evolve. ESS II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.			
STANDARD II: LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.					
STANDARD III: EARTH AND SPACE SCIENCE: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3rd	<p><i>Biological Evolution</i></p> <p>7. Describe how typical traits may change from generation to generation due to environmental influences (e.g., color of skin, shape of eyes, camouflage, shape of beak).</p> <p>8. Explain that diversity within a species is developed by gradual changes over many generations.</p> <p>9. Know that organisms can acquire unique characteristics through naturally occurring genetic variations.</p> <p>10. Identify adaptations that favor the survival of organisms in their environments (e.g., camouflage, shape of beak).</p> <p>11. Understand the process of natural selection.</p> <p>12. Explain how species adapt to changes in the environment or become extinct and that extinction of species is common in the history of living things.</p> <p>13. Know that the fossil record documents the appearance, diversification, and extinction of many life forms.</p>	<p>Students will identify environmental factors and how they influence genetic inheritance.</p> <p>Students will identify the types of adaptations that can occur due to environmental factors.</p> <p>Students will compare natural selection to human directed selection.</p> <p>Students will be able to identify organisms that are endangered or extinct using data found from fossil records.</p>	<p>Students will use the unit vocabulary correctly in their diagrams, writings, and research regarding biological evolution.</p> <p>Students will compare and contrast adaptations that have helped animals survive in their environment through class discussions and research projects.</p> <p>Students will compare traits of domesticated animals to similar species in the wild through class/small group discussions.</p> <p>Students will research endangered and extinct animals and the theorized reasons for their decline and provide information on worksheet.</p>	<p>Vocabulary quizzes, diagram/models, writings, and tests.</p> <p>Worksheets with requirements/rubrics for research</p> <p>Class participation</p> <p>Worksheet</p>	<p>Life Science Textbook</p> <p>Internet/Laptops</p> <p>Worksheets</p> <p>Worksheet</p> <p>Websites : www.encyclopedia.com www.britannica.com www.sanddiegozoo.org http://tinyurl.com/yrr4ys Smithsonian zoological park</p>

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: What factors influence the survival of a species?					
STRAND II: Content of Science		BENCHMARK LS II: Understand how traits are passed from one generation to the next and how species evolve. ESS II: Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.			
STANDARD II: LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.					
STANDARD III: EARTH AND SPACE SCIENCE: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3rd	<p>1. Understand how the remains of living things give us information about the history of Earth, including:</p> <ul style="list-style-type: none"> • layers of sedimentary rock, the fossil record, and radioactive dating showing that life has been present on Earth for more than 3.5 billion years. <p>2. Understand how living organisms have played many roles in changes of Earth's systems through time (e.g., atmospheric composition, creation of soil, impact on Earth's surface).</p> <p>3. Know that changes to ecosystems sometimes decrease the capacity of the environment to support some life forms and are difficult and/or costly to remediate.</p>	<p>Students will be able to describe how fossils are formed in sedimentary rock.</p> <p>Students will determine the age of fossils using the law of superposition.</p> <p>Students will understand the role of primary & secondary succession.</p> <p>Students will be able to identify situations that can change organism's environment.</p>	<p>Students will use the unit vocabulary correctly in their diagrams and writings regarding fossils.</p> <p>Students will describe how fossils are formed in sedimentary rock by completing a fossil worksheet.</p> <p>Students will complete a fossil worksheet and determine the age of fossils using the law of superposition.</p> <p>Using prior knowledge and observation skills, students will predict the next step in succession in a given scenario.</p> <p>Students will evaluate the response of organisms to industrial changes to their environment through class activity and research.</p>	<p>Vocabulary quizzes, diagram/models, writings, and tests.</p> <p>Fossil record worksheet</p> <p>Worksheet</p> <p>Scenario worksheet</p> <p>Activity participation and response.</p>	<p>Life Science Textbook</p> <p>Worksheet</p> <p>Worksheet</p> <p>Worksheet</p> <p>Large piece of butcher paper, small manipulatives (beans, macaroni, etc...), markers/colored pencils</p> <p>Internet/Laptops</p>

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: How can you identify the basic needs of organisms in their environment?					
STRAND II: Content of Science		BENCHMARK I: Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.			
STANDARD II: LIFE SCIENCE: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments. .					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
3rd	<p><i>Populations and Ecosystems</i></p> <ol style="list-style-type: none"> 1. Identify the living and nonliving parts of an ecosystem and describe the relationships among these components. 2. Explain biomes (i.e., aquatic, desert, rainforest, grasslands, tundra) and describe the New Mexico biome. 3. Explain how individuals of species that exist together interact with their environment to create an ecosystem (e.g., populations, communities, niches, habitats, food webs). 4. Explain the conditions and resources needed to sustain life in specific ecosystems. 5. Describe how the availability of resources and physical factors limit growth (e.g., quantity of light and water, range of temperature, composition of soil) and how the water, carbon, and nitrogen cycles contribute to the availability of those resources to support living systems. <p><i>Biodiversity</i></p> <ol style="list-style-type: none"> 6. Understand how diverse species fill all niches in an ecosystem. 7. Know how to classify organisms: domain, kingdom, phylum, class, order, family, genus, species. 	<p style="color: green;">Students will be able to identify the biotic and abiotic factors in biomes.</p> <p style="color: green;">Students will be able to classify the organisms found in New Mexico's biomes.</p> <p style="color: green;">Students will be able to analyze the results of limiting factors in a given environment.</p> <p style="color: blue;">Students will learn the levels of classification.</p>	<p>Students will use the unit vocabulary correctly in their diagrams and writings regarding biomes and biodiversity.</p> <p>Students will analyze factors of biomes by providing a report/research on New Mexico &/or other organisms.</p> <p>Students will apply the levels of classification by developing a pneumonic device.</p>	<p>Vocabulary quizzes, diagram/models, writings, and tests.</p> <p>Requirements/rubrics for report/research</p> <p>Quizzes and tests</p>	<p>Life Science Textbook</p> <p>Internet/Laptops</p>

Portales Municipal Schools
CURRICULUM MAP

Subject:	Science	2009	Grade Level 7
-----------------	---------	-------------	----------------------

ESSENTIAL QUESTIONS: How can you recognize the fundamental forces of nature? How can you predict the charge of an atom?					
STRAND II: Content of Science		BENCHMARK III: Describe and explain forces that produce motion in objects.			
STRAND I: Scientific Thinking and Process		BENCHMARK III: Use mathematical ideas, tools, and techniques to understand scientific knowledge.			
STANDARD I: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.					
STANDARD I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.					
9 wks	PERFORMANCE STANDARD	CONCEPTS/SKILLS <small>I = Introduce R= Review/Extend M = Master</small>	STUDENT ACTIVITIES AND INSTRUCTIONAL STRATEGIES	ASSESSMENTS	STUDENT MATERIALS AND RESOURCES
4th	<p>Motion: 7. Know that an object's motion is always described relative to some other object or point.</p> <p>8. Understand and apply Newton's Laws of Motion:</p> <p>I.II.III 1. Use mathematical expressions and techniques to explain data and observations and to communicate findings (formulas and equations, significant figures, graphing, sampling, estimation, mean)</p>	<p>Students will become familiar with Newton's Laws of Motion as it relates to frame of reference.</p> <p>Students will be able to count atoms and relate to balancing equations.</p>	<p>Student worksheet per internet source listed in resources</p> <p>Counting atoms lab: students will work in groups while using manipulatives to count atoms in equations.</p>	<p>Frame of Reference Data Table</p> <p>Write up and counting atom table</p>	<p>http://tinyurl.com/qkfdj7 Frame of Reference</p> <p>Physical Science book page 392</p>