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correlated to

**New Mexico**

**Science Content Standards,  
Benchmarks, and Performance  
Standards  
Grades 6-8**



EDUCATION GROUP



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**correlated to**  
**New Mexico Science Content Standards, Benchmarks,**  
**and Performance Standards**  
**Grade 6**

**Strand I: Scientific Thinking and Practice**

**Standard I**

Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

**Benchmark I**

Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.

Performance Standards, Grade 6	ACCESS Science
1. Construct appropriate graphs from data and develop qualitative and quantitative statements about the relationships between variables being investigated.	<b>Teacher's Edition:</b> 24, 25, 55, 91, 98
2. Examine the reasonableness of data supporting a proposed scientific explanation.	<b>Teacher's Edition:</b> 24, 25, 26, 35, 295, 303
3. Justify predictions and conclusions based on data.	<b>Teacher's Edition:</b> 17, 21, 25, 26, 27, 74, 103, 175, 182, 247, 278

**Benchmark II**

Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.

Performance Standards, Grade 6	ACCESS Science
1. Understand that scientific knowledge is continually reviewed, critiqued, and revised as new data become available.	<b>Teacher's Edition:</b> 22, 23, 27, 35

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
2. Understand that scientific investigations use common processes that include the collection of relevant data and observations, accurate measurements, the identification and control of variables, and logical reasoning to formulate hypotheses and explanations.	<b>Teacher's Edition:</b> 16-27, 31, 43, 55, 67, 79, 91, 103, 115, 127, 139, 151, 163, 175, 187, 199, 211, 223, 235, 247, 259, 268, 283, 295
3. Understand that not all investigations result in defensible scientific explanations.	<b>Teacher's Edition:</b> 18, 25

### **B e n c h m a r k I I I**

**Use mathematical ideas, tools, and techniques to understand scientific knowledge.**

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
1. Evaluate the usefulness and relevance of data to an investigation.	<b>Teacher's Edition:</b> 17, 24, 26, 295
2. Use probabilities, patterns, and relationships to explain data and observations.	<b>Teacher's Edition:</b> 20, 24, 27

## **S t r a n d I I : C o n t e n t o f S c i e n c e**

### **S t a n d a r d I ( P h y s i c a l S c i e n c e )**

**Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.**

### **B e n c h m a r k I**

**Know the forms and properties of matter and how matter interacts.**

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
1. Understand that substances have characteristic properties and identify the properties of various substances (e.g., density, boiling point, solubility, chemical reactivity).	<b>Teacher's Edition:</b> 217, 226, 227, 228, 229, 230, 231, 236, 244, 245, 250, 251
2. Use properties to identify substances (e.g., for minerals: the hardness, streak, color, reactivity to acid, cleavage, fracture).	<b>Teacher's Edition:</b> 48, 93
3. Know that there are about 100 known elements that combine to produce compounds in living organisms and nonliving substances.	<b>Teacher's Edition:</b> 215, 233, 238, 239, 243

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
4. Know the differences between chemical and physical properties and how these properties can influence the interactions of matter.	<b>Teacher's Edition:</b> 228, 229, 234, 236

## **B e n c h m a r k I I**

**Explain the physical processes involved in the transfer, change, and conservation of energy.**

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
1. Identify various types of energy (e.g., heat, light, mechanical, electrical, chemical, nuclear).	<b>Teacher's Edition:</b> 95, 96, 253, 262, 284-285
2. Understand that heat energy can be transferred through conduction, radiation and convection.	<b>Teacher's Edition:</b> 265
3. Know that there are many forms of energy transfer but that the total amount of energy is conserved (i.e., that energy is neither created nor destroyed).	<b>Teacher's Edition:</b> 253, 260-261, 265, 267
4. Understand that some energy travels as waves (e.g., seismic, light, sound), including: <ul style="list-style-type: none"> <li>• the sun as source of energy for many processes on Earth</li> <li>• different wavelengths of sunlight (e.g., visible, ultraviolet, infrared)</li> <li>• vibrations of matter (e.g., sound, earthquakes)</li> <li>• different speeds through different materials.</li> </ul>	<b>Teacher's Edition:</b> 37, 65, 68-69, 82, 117, 164-165, 270, 286, 288-289

## **B e n c h m a r k I I I**

**Describe and explain forces that produce motion in objects.**

<b>Performance Standards, Grade 6</b>	<b>ACCESS Science</b>
1. Know that every object exerts gravitational force on every other object dependent on the masses and distance of separation (e.g., motions of celestial objects, tides).	<b>Teacher's Edition:</b> 84, 294, 298, 299
2. Know that gravitational force is hard to detect unless one of the objects (e.g., Earth) has a lot of mass.	<b>Teacher's Edition:</b> 59, 84, 274

## Standard II (Life Science)

Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.

### Benchmark I

Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.

Performance Standards, Grade 6	ACCESS Science
1. Understand how organisms interact with their physical environments to meet their needs (i.e., food, water, air) and how the water cycle is essential to most living systems.	<b>Teacher's Edition:</b> 70-71, 75, 113, 114, 115, 117, 118-119, 120-121, 122, 123
2. Describe how weather and geologic events (e.g., volcanoes, earthquakes) affect the function of living systems.	<b>Teacher's Edition:</b> 36, 37, 65
3. Describe how organisms have adapted to various environmental conditions.	<b>Teacher's Edition:</b> 174, 176-177, 178-179, 182

### Benchmark II

Understand how traits are passed from one generation to the next and how species evolve.

Performance Standards, Grade 6	ACCESS Science
1. Understand that the fossil record provides data for how living organisms have evolved.	<b>Teacher's Edition:</b> 198-199, 204
2. Describe how species have responded to changing environmental conditions over time (e.g., extinction, adaptation).	<b>Teacher's Edition:</b> 117, 196, 197, 198, 200-201, 202, 207

### Benchmark III

Understand the structure of organisms and the function of cells in living systems.

Performance Standards, Grade 6	ACCESS Science
1. Explain how fossil fuels were formed from animal and plant cells.	<b>Teacher's Edition:</b> 90-91, 95
2. Describe the differences between substances that were produced by living organisms (e.g., fossil fuels) and substances that result from nonliving processes (e.g., igneous rocks).	<b>Teacher's Edition:</b> 41, 42, 46, 48, 49, 90-91

## 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.

### Benchmark 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.

Performance Standards, Grade 6	ACCESS Science
<p><b>Universe</b></p> <p>1. Describe the objects in the universe, including:</p> <ul style="list-style-type: none"> <li>• billions of galaxies, each containing billions of stars</li> <li>• different sizes, temperatures, and colors of stars in the Milky Way galaxy.</li> </ul>	<p><b>Teacher's Edition:</b> 293, 297</p>
<p><b>Solar System</b></p> <p>2. Locate the solar system in the Milky Way galaxy.</p>	<p><b>Teacher's Edition:</b> 293, 299-300</p>
<p>3. Identify the components of the solar system, and describe their defining characteristics and motions in space, including:</p> <ul style="list-style-type: none"> <li>• sun as a medium sized star</li> <li>• sun's composition (i.e., hydrogen, helium) and energy production</li> <li>• nine planets, their moons, asteroids.</li> </ul>	<p><b>Teacher's Edition:</b> 293, 294, 299-300</p>
<p>4. Know that the regular and predictable motions of the Earth-moon-sun system explain phenomena on Earth, including:</p> <ul style="list-style-type: none"> <li>• Earth's motion in relation to a year, a day, the seasons, the phases of the moon, eclipses, tides, and shadows</li> <li>• moon's orbit around Earth once in 28 days in relation to the phases of the moon.</li> </ul>	<p><b>Teacher's Edition:</b> 78-79, 80-81, 82-83, 84, 85, 87</p>

### Benchmark II

Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.

Performance Standards, Grade 6	ACCESS Science
<p><b>Structure of Earth</b></p> <p>1. Know that Earth is composed of layers that include a crust, mantle, and core.</p>	<p><b>Teacher's Edition:</b> 29, 30, 32</p>
<p>2. Know that Earth's crust is divided into plates that move very slowly, in response to movements in the mantle.</p>	<p><b>Teacher's Edition:</b> 29, 30, 32, 33, 34-35, 36-37, 38, 39</p>

Performance Standards, Grade 6	ACCESS Science
3. Know that sedimentary, igneous, and metamorphic rocks contain evidence of the materials, temperatures, and forces that created them.	<b>Teacher's Edition:</b> 41, 42-43, 46, 47, 48-49, 50, 51, 60
<b>Weather and Climate</b> 4. Describe the composition (i.e., nitrogen, oxygen, water vapor) and strata of Earth's atmosphere, and differences between the atmosphere of Earth and those of other planets.	<b>Teacher's Edition:</b> 32, 68, 108, 301
5. Understand factors that create and influence weather and climate, including: <ul style="list-style-type: none"> <li>• heat, air movement, pressure, humidity, oceans</li> <li>• how clouds form by condensation of water vapor</li> <li>• how weather patterns are related to atmospheric pressure</li> <li>• global patterns of atmospheric movement (e.g., El Niño)</li> <li>• factors that can impact Earth's climate (e.g., volcanic eruptions, impacts of asteroids, glaciers).</li> </ul>	<b>Teacher's Edition:</b> 36, 44, 61, 62, 66-67, 68, 69, 70, 71, 74
6. Understand how to use weather maps and data (e.g., barometric pressure, wind speeds, humidity) to predict weather.	<b>Teacher's Edition:</b> 66
<b>Changes to Earth</b> 7. Know that landforms are created and change through a combination of constructive and destructive forces, including: <ul style="list-style-type: none"> <li>• weathering of rock and soil, transportation, deposition of sediment, and tectonic activity</li> <li>• similarities and differences between current and past processes on Earth's surface (e.g., erosion, plate tectonics, changes in atmospheric composition)</li> <li>• impact of volcanoes and faults on New Mexico geology.</li> </ul>	<b>Teacher's Edition:</b> 29, 30-31, 34-35, 36, 37, 38, 44, 46, 48-49, 60
8. Understand the history of Earth and how information about it comes from layers of sedimentary rock, including: <ul style="list-style-type: none"> <li>• sediments and fossils as a record of a very slowly changing world</li> <li>• evidence of asteroid impact, volcanic and glacial activity.</li> </ul>	<b>Teacher's Edition:</b> 42, 60, 61, 198-199

## Strand III: Science and Society

### Standard I

Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

### Benchmark I

Explain how scientific discoveries and inventions have changed individuals and societies.

Performance Standards, Grade 6	ACCESS Science
1. Examine the role of scientific knowledge in decisions (e.g., space exploration, what to eat, preventive medicine and medical treatment).	<b>Teacher's Edition:</b> 132, 144, 156, 162-163, 167, 168, 169, 180, 202, 214
2. Describe the technologies responsible for revolutionizing information processing and communications (e.g., computers, cellular phones, Internet).	<b>Teacher's Edition:</b> 22, 229



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and Performance Standards**

**Grade 7**

**Strand I: Scientific Thinking and Practice**

**Standard I**

Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

**Benchmark I**

Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.

Performance Standards, Grade 7	ACCESS Science
1. Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis.	<b>Teacher's Edition:</b> 20, 24, 26, 29, 41, 53, 59, 63, 65, 71, 85, 89, 101, 104, 117, 122, 125, 146, 149, 158, 173, 179, 185, 197, 209, 214, 221, 230, 233, 242, 245, 254, 257, 266, 276, 278, 293, 295, 302
2. Use models to explain the relationships between variables being investigated.	<b>Teacher's Edition:</b> 22, 23, 27, 79

**Benchmark II**

Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.

Performance Standards, Grade 7	ACCESS Science
2. Critique procedures used to investigate a hypothesis.	<b>Teacher's Edition:</b> 20, 21, 22, 25
3. Analyze and evaluate scientific explanations.	<b>Teacher's Edition:</b> 24, 25, 26, 31, 110, 122, 254, 295

## B e n c h m a r k   I I I

**Use mathematical ideas, tools, and techniques to understand scientific knowledge.**

Performance Standards, Grade 7	ACCESS Science
1. Understand that the number of data (sample size) influences the reliability of a prediction.	<b>Teacher's Edition:</b> 24, 25, 74
2. Use mathematical expressions to represent data and observations collected in scientific investigations.	<b>Teacher's Edition:</b> 24, 91, 163, 283
3. Select and use an appropriate model to examine a phenomenon.	<b>Teacher's Edition:</b> 79

## S t r a n d   I I :   C o n t e n t   o f   S c i e n c e

### S t a n d a r d   I   ( P h y s i c a l   S c i e n c e )

**Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.**

## B e n c h m a r k   I

**Know the forms and properties of matter and how matter interacts.**

Performance Standards, Grade 7	ACCESS Science
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).	<b>Teacher's Edition:</b> 70-71, 118-119, 120-121
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).	<b>Teacher's Edition:</b> 210
3. Identify characteristics of radioactivity, including: <ul style="list-style-type: none"><li>• decay in time of some elements to others</li><li>• release of energy</li><li>• damage to cells.</li></ul>	<b>Teacher's Edition:</b> 214
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).	<b>Teacher's Edition:</b> 166, 217

Performance Standards, Grade 7	ACCESS Science
5. Know that chemical reactions are essential to life processes.	<b>Teacher's Edition:</b> 217, 245, 250, 252, 253

## B e n c h m a r k I I

**Explain the physical processes involved in the transfer, change, and conservation of energy.**

Performance Standards, Grade 7	ACCESS Science
1. Know how various forms of energy are transformed through organisms and ecosystems, including: <ul style="list-style-type: none"> <li>• sunlight and photosynthesis</li> <li>• energy transformation in living systems (e.g., cellular processes changing chemical energy to heat and motion)</li> <li>• effect of mankind's use of energy and other activities on living systems (e.g., global warming, water quality).</li> </ul>	<b>Teacher's Edition:</b> 101, 107, 108, 141, 164, 165, 166

## B e n c h m a r k I I I

**Describe and explain forces that produce motion in objects.**

Performance Standards, Grade 7	ACCESS Science
1. Know that forces cause motion in living systems, including: <ul style="list-style-type: none"> <li>• the principle of a lever and how it gives mechanical advantage to a muscular/skeletal system to lift objects</li> <li>• forces in specific systems in the human body (e.g., how the heart generates blood pressure, how muscles contract and expand to produce motion).</li> </ul>	<b>Teacher's Edition:</b> 150-151, 153, 154-155, 271

## Standard II (Life Science)

**Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.**

### Benchmark I

**Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.**

Performance Standards, Grade 7	ACCESS Science
<p><b>Populations and Ecosystems</b></p> <p>1. Identify the living and nonliving parts of an ecosystem and describe the relationships among these components.</p>	<p><b>Teacher's Edition:</b> 116, 117, 118-119, 120-121</p>
<p>2. Explain biomes (i.e., aquatic, desert, rainforest, grasslands, tundra) and describe the New Mexico biome.</p>	<p><b>Teacher's Edition:</b> 114, 115, 116</p>
<p>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).</p>	<p><b>Teacher's Edition:</b> 102, 104, 108, 110, 111, 116, 121, 123, 200</p>
<p>4. Explain the conditions and resources needed to sustain life in specific ecosystems.</p>	<p><b>Teacher's Edition:</b> 113, 114, 115, 117, 118-119, 120, 122, 123</p>
<p>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>	<p><b>Teacher's Edition:</b> 97, 118-119</p>
<p><b>Biodiversity</b></p> <p>6. Understand how diverse species fill all niches in an ecosystem.</p>	<p><b>Teacher's Edition:</b> 124, 125, 126, 127, 128, 129, 130, 131, 132, 133</p>
<p>7. Know how to classify organisms: domain, kingdom, phylum, class, order, family, genus, species.</p>	<p><b>Teacher's Edition:</b> 126, 128-132, 133, 134</p>

## B e n c h m a r k I I

**Understand how traits are passed from one generation to the next and how species evolve.**

Performance Standards, Grade 7	ACCESS Science
<p><b>Reproduction</b></p> <p>1. Know that reproduction is a characteristic of all living things and is essential to the continuation of a species.</p>	<p><b>Teacher’s Edition:</b> 139, 184, 185, 186, 187, 188, 189, 191</p>
<p>2. Identify the differences between sexual and asexual reproduction.</p>	<p><b>Teacher’s Edition:</b> 188, 189, 191</p>
<p>3. Know that, in sexual reproduction, an egg and sperm unite to begin the development of a new individual.</p>	<p><b>Teacher’s Edition:</b> 186, 189</p>
<p>4. Know that organisms that sexually reproduce fertile offspring are members of the same species.</p>	<p><b>Teacher’s Edition:</b> 189, 191</p>
<p><b>Heredity</b></p> <p>5. Understand that some characteristics are passed from parent to offspring as inherited traits and others are acquired from interactions with the environment.</p>	<p><b>Teacher’s Edition:</b> 186, 188, 197, 200, 201</p>
<p>6. Know that hereditary information is contained in genes that are located in chromosomes, including:</p> <ul style="list-style-type: none"> <li>• determination of traits by genes</li> <li>• traits determined by one or many genes</li> <li>• more than one trait sometimes influenced by a single gene.</li> </ul>	<p><b>Teacher’s Edition:</b> 190, 192</p>
<p><b>Biological Evolution</b></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><b>Teacher’s Edition:</b> 197, 198, 199, 202, 203</p>
<p>8. Explain that diversity within a species is developed by gradual changes over many generations.</p>	<p><b>Teacher’s Edition:</b> 196, 203</p>
<p>9. Know that organisms can acquire unique characteristics through naturally occurring genetic variations.</p>	<p><b>Teacher’s Edition:</b> 185, 188, 192, 193</p>

<b>Performance Standards, Grade 7</b>	<b>ACCESS Science</b>
10. Identify adaptations that favor the survival of organisms in their environments (e.g., camouflage, shape of beak).	<b>Teacher's Edition:</b> 197, 198, 200-201, 202, 203
11. Understand the process of natural selection.	<b>Teacher's Edition:</b> 197, 198, 202, 203
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.	<b>Teacher's Edition:</b> 117, 201
13. Know that the fossil record documents the appearance, diversification, and extinction of many life forms.	<b>Teacher's Edition:</b> 204

### **B e n c h m a r k   I I I**

#### **Understand the structure of organisms and the function of cells in living systems.**

<b>Performance Standards, Grade 7</b>	<b>ACCESS Science</b>
<b>Structure of Organisms</b> 1. Understand that organisms are composed of cells and identify unicellular and multicellular organisms.	<b>Teacher's Edition:</b> 129, 130, 131, 132, 133
2. Explain how organs are composed of tissues of different types of cells (e.g., skin, bone, muscle, heart, intestines).	<b>Teacher's Edition:</b> 149, 154, 155, 158
<b>Function of Cells</b> 3. Understand that many basic functions of organisms are carried out in cells, including: <ul style="list-style-type: none"> <li>• growth and division to produce more cells (mitosis)</li> <li>• specialized functions of cells (e.g., reproduction, nerve-signal transmission, digestion, excretion, movement, transport of oxygen).</li> </ul>	<b>Teacher's Edition:</b> 137, 144, 145, 149, 153, 154, 155, 156, 157, 158, 159, 191
4. Compare the structure and processes of plant cells and animal cells.	<b>Teacher's Edition:</b> 137, 141, 142
5. Describe how some cells respond to stimuli (e.g., light, heat, pressure, gravity).	<b>Teacher's Edition:</b> 173, 174-175, 177, 178, 179, 181, 182

Performance Standards, Grade 7	ACCESS Science
6. Describe how factors (radiation, UV light, drugs) can damage cellular structure or function.	Teacher's Edition: 214

## **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.**

### **Benchmark 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.**

Performance Standards, Grade 7	ACCESS Science
1. Explain why Earth is unique in our solar system in its ability to support life.	Teacher's Edition: 301
2. Explain how energy from the sun supports life on Earth.	Teacher's Edition: 65, 68, 92, 108, 117, 164-165, 262

### **Benchmark II**

**Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.**

Performance Standards, Grade 7	ACCESS Science
1. Understand how the remains of living things give us information about the history of Earth, including: <ul style="list-style-type: none"> <li>• 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.</li> </ul>	Teacher's Edition: 42, 46, 48, 49, 204
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).	Teacher's Edition: 108
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.	Teacher's Edition: 94, 95, 101, 106, 107

## **Strand III: Science and Society**

### **Standard I**

**Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.**

#### **Benchmark I**

**Explain how scientific discoveries and inventions have changed individuals and societies.**

<b>Performance Standards, Grade 7</b>	<b>ACCESS Science</b>
2. Analyze how technologies have been responsible for advances in medicine (e.g., vaccines, antibiotics, microscopes, DNA technologies).	<b>Teacher's Edition:</b> 132, 144, 156, 180, 190, 202



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# New Mexico Science Content Standards, Benchmarks, and Performance Standards Grade 8

### Strand I: Scientific Thinking and Practice

#### Standard I

Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

#### Benchmark I

Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.

Performance Standards, Grade 8	ACCESS Science
1. Evaluate the accuracy and reproducibility of data and observations.	Teacher's Edition: 24, 91
2. Use a variety of technologies to gather, analyze and interpret scientific data.	Teacher's Edition: 24, 55, 91, 151
3. Know how to recognize and explain anomalous data.	Teacher's Edition: 25, 26

#### Benchmark II

Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.

Performance Standards, Grade 8	ACCESS Science
1. Examine alternative explanations for observations.	Teacher's Edition: 50, 51, 127, 135
2. Describe ways in which science differs from other ways of knowing and from other bodies of knowledge (e.g., experimentation, logical arguments, skepticism).	Teacher's Edition: 22

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
3. Know that scientific knowledge is built on questions posed as testable hypotheses, which are tested until the results are accepted by peers.	<b>Teacher's Edition:</b> 17, 18, 19, 20, 21, 22, 175

### **B e n c h m a r k   I I I**

**Use mathematical ideas, tools, and techniques to understand scientific knowledge.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
1. Use mathematical expressions and techniques to explain data and observations and to communicate findings (e.g., formulas and equations, significant figures, graphing, sampling, estimation, mean).	<b>Teacher's Edition:</b> 24, 91
2. Create models to describe phenomena.	<b>Teacher's Edition:</b> 22, 79

## **S t r a n d   I I :   C o n t e n t   o f   S c i e n c e**

### **S t a n d a r d   I   ( P h y s i c a l   S c i e n c e )**

**Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.**

### **B e n c h m a r k   I**

**Know the forms and properties of matter and how matter interacts.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
<b>Properties of Matter</b> 1. Know how to use density, boiling point, freezing point, conductivity, and color to identify various substances.	<b>Teacher's Edition:</b> 227, 228, 231, 236
2. Distinguish between metals and non-metals.	<b>Teacher's Edition:</b> 234-235, 238, 239, 240-241
3. Understand the differences among elements, compounds, and mixtures by: <ul style="list-style-type: none"> <li>• classification of materials as elements, compounds, or mixtures</li> <li>• interpretation of chemical formulas</li> <li>• separation of mixtures into compounds by methods including evaporation, filtration, screening, magnetism.</li> </ul>	<b>Teacher's Edition:</b> 96, 209, 215, 217, 229, 232-243

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
<p><b>Structure of Matter</b></p> <p>4. Identify the protons, neutrons, and electrons within an atom and describe their locations (i.e., in the nucleus or in motion outside the nucleus).</p>	<b>Teacher's Edition:</b> 213, 214, 215, 237
<p>5. Explain that elements are organized in the periodic table according to their properties.</p>	<b>Teacher's Edition:</b> 233, 238-239, 240, 241
<p>6. Know that compounds are made of two or more elements, but not all sets of elements can combine to form compounds.</p>	<b>Teacher's Edition:</b> 209, 217, 251
<p><b>Changes in Matter</b></p> <p>7. Know that phase changes are physical changes that can be reversed (e.g., evaporation, condensation, melting).</p>	<b>Teacher's Edition:</b> 70, 71, 226, 227
<p>8. Describe various familiar physical and chemical changes that occur naturally (e.g., snow melting, photosynthesis, rusting, burning).</p>	<b>Teacher's Edition:</b> 56, 141, 164, 165, 234
<p>9. Identify factors that influence the rate at which chemical reactions occur (e.g., temperature, concentration).</p>	<b>Teacher's Edition:</b> 217, 250, 251, 252, 253
<p>10. Know that chemical reactions can absorb energy (endothermic reactions) or release energy (exothermic reactions).</p>	<b>Teacher's Edition:</b> 252

## B e n c h m a r k   I I

**Explain the physical processes involved in the transfer, change, and conservation of energy.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
<p><b>Energy Transformation</b></p> <p>1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat.</p>	<b>Teacher's Edition:</b> 68, 92, 117, 222, 257, 262
<p>2. Know that kinetic energy is a measure of the energy of an object in motion and potential energy is a measure of an object's position or composition, including:</p> <ul style="list-style-type: none"> <li>• transformation of gravitational potential energy of position into kinetic energy of motion by a falling object.</li> </ul>	<b>Teacher's Edition:</b> 225, 253, 258, 260, 261

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
3. Distinguish between renewable and nonrenewable sources of energy.	<b>Teacher's Edition:</b> 89, 90, 94, 95
4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: <ul style="list-style-type: none"> <li>• electrical current paths through parallel and series circuits</li> <li>• production of electricity by fossil-fueled and nuclear power plants, wind generators, geothermal plants, and solar cells</li> <li>• use of electricity by appliances and equipment (e.g., calculators, hair dryers, light bulbs, motors).</li> </ul>	<b>Teacher's Edition:</b> 92, 94, 95, 96, 258-259, 262
<b>Waves</b> 5. Understand how light and radio waves carry energy through vacuum or matter by: <ul style="list-style-type: none"> <li>• straight-line travel unless an object is encountered</li> <li>• reflection by a mirror, refraction by a lens, absorption by a dark object</li> <li>• separation of white light into different wavelengths by prisms</li> <li>• visibility of objects due to light emission or scattering.</li> </ul>	<b>Teacher's Edition:</b> 281, 282, 286, 287
6. Understand that vibrations of matter (e.g., sound, earthquakes, water waves) carry wave energy, including: <ul style="list-style-type: none"> <li>• sound transmission through solids, liquids, and gases</li> <li>• relationship of pitch and loudness of sound to rate and distance (amplitude) of vibration</li> <li>• ripples made by objects dropped in water.</li> </ul>	<b>Teacher's Edition:</b> 37, 283, 284, 285, 288

## B e n c h m a r k I I I

**Describe and explain forces that produce motion in objects.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
<b>Forces</b> 1. Know that there are fundamental forces in nature (e.g., gravity, electromagnetic forces, nuclear forces).	<b>Teacher's Edition:</b> 59, 269, 272, 273, 274
2. Know that a force has both magnitude and direction.	<b>Teacher's Edition:</b> 269, 272, 273, 274

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
3. Analyze the separate forces acting on an object at rest or in motion (e.g., gravity, elastic forces, friction), including how multiple forces reinforce or cancel one another to result in a net force that acts on an object.	<b>Teacher's Edition:</b> 269, 272-273, 274
4. Know that electric charge produces electrical fields and magnets produce magnetic fields.	<b>Teacher's Edition:</b> 210-211
5. Know how a moving magnetic field can produce an electric current (generator) and how an electric current can produce a magnetic field (electromagnet).	<b>Teacher's Edition:</b> 286
<b>Motion</b> 7. Know that an object's motion is always described relative to some other object or point (i.e., frame of reference).	<b>Teacher's Edition:</b> 261, 269, 275, 276, 277
8. Understand and apply Newton's Laws of Motion: <ul style="list-style-type: none"> <li>• Objects in motion will continue in motion and objects at rest will remain at rest unless acted upon by an unbalanced force (inertia).</li> <li>• If a greater force is applied to an object a proportionally greater acceleration will occur.</li> <li>• If an object has more mass the effect of an applied force is proportionally less.</li> </ul>	<b>Teacher's Edition:</b> 276, 277, 278, 279

## **S t a n d a r d I I ( L i f e S c i e n c e )**

**Understand the properties, structures, and processes of living things and the interdependence of living things and their environment.**

### **B e n c h m a r k I**

**Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
1. Describe how matter moves through ecosystems (e.g., water cycle, carbon cycle).	<b>Teacher's Edition:</b> 70-71, 119
2. Describe how energy flows through ecosystems (e.g., sunlight, green plants, food for animals).	<b>Teacher's Edition:</b> 177, 120-121

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
3. Explain how a change in the flow of energy can impact an ecosystem (e.g., the amount of sunlight available for plant growth, global climate change).	<b>Teacher's Edition:</b> 101, 106, 107, 108

## **B e n c h m a r k I I**

**Understand how traits are passed from one generation to the next and how species evolve.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
1. Understand that living organisms are made mostly of molecules consisting of a limited number of elements (e.g., carbon, hydrogen, nitrogen, oxygen).	<b>Teacher's Edition:</b> 177
2. Identify DNA as the chemical compound involved in heredity in living organisms.	<b>Teacher's Edition:</b> 190
3. Describe the widespread role of carbon in the chemistry of living systems.	<b>Teacher's Edition:</b> 118, 119

## **B e n c h m a r k I I I**

**Understand the structure of organisms and the function of cells in living systems.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
1. Describe how cells use chemical energy obtained from food to conduct cellular functions (i.e., respiration).	<b>Teacher's Edition:</b> 166
2. Explain that photosynthesis in green plants captures the energy from the sun and stores it chemically.	<b>Teacher's Edition:</b> 164-165
3. Describe how chemical substances can influence cellular activity (e.g., pH).	<b>Teacher's Edition:</b> 106, 107

## 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.

### Benchmark 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.

Performance Standards, Grade 8	ACCESS Science
1. Understand how energy from the sun and other stars, in the form of light, travels long distances to reach Earth.	<b>Teacher's Edition:</b> 296
2. Explain how the properties of light (e.g., emission, reflection, refraction) emitted from the sun and stars are used to learn about the universe, including: <ul style="list-style-type: none"> <li>• distances in the solar system and the universe</li> <li>• temperatures of different stars.</li> </ul>	<b>Teacher's Edition:</b> 296, 297, 298, 299
3. Understand how gravitational force acts on objects in the solar system and the universe, including: <ul style="list-style-type: none"> <li>• similar action on masses on Earth and on other objects in the solar system</li> <li>• explanation of the orbits of the planets around the sun.</li> </ul>	<b>Teacher's Edition:</b> 294, 298, 299

### Benchmark II

Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.

Performance Standards, Grade 8	ACCESS Science
1. Describe the role of pressure (and heat) in the rock cycle.	<b>Teacher's Edition:</b> 48-49
2. Understand the unique role water plays on Earth, including: <ul style="list-style-type: none"> <li>• ability to remain liquid at most Earth temperatures</li> <li>• properties of water related to processes in the water cycle: evaporation, condensation, precipitation, surface run-off, percolation</li> <li>• dissolving of minerals and gases and transport to the oceans</li> <li>• fresh and salt water in oceans, rivers, lakes, and glaciers</li> <li>• reactant in photosynthesis.</li> </ul>	<b>Teacher's Edition:</b> 54-55, 58, 61, 70, 71, 75

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
3. Understand the geologic conditions that have resulted in energy resources (e.g., oil, coal, natural gas) available in New Mexico.	<b>Teacher's Edition:</b> 90, 95

## **S t r a n d   I I I :   S c i e n c e   a n d   S o c i e t y**

### **S t a n d a r d   I**

**Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.**

### **B e n c h m a r k   I**

**Explain how scientific discoveries and inventions have changed individuals and societies.**

<b>Performance Standards, Grade 8</b>	<b>ACCESS Science</b>
1. Analyze the interrelationship between science and technology (e.g., germ theory, vaccines).	<b>Teacher's Edition:</b> 180, 181
2. Describe how scientific information can help to explain environmental phenomena (e.g., floods, earthquakes, volcanoes, fire, extreme weather).	<b>Teacher's Edition:</b> 36, 37, 38, 44, 73



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