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correlated to

**Virginia**

**Science Standards of Learning  
Grades 5-6**



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**correlated to**  
**Virginia Science Standards of Learning**  
**Grade 5**

**Scientific Investigation, Reasoning, and Logic**

| Standards of Learning, Grade 5   | ACCESS Science  |
|--|---|
| 5.1 The student will plan and conduct investigations in which  | <b>Student Book:</b> 43, 50, 51, 131, 132, 133, 134   |
| a) rocks, minerals, and organisms are identified using a classification key;   |   |
| b) estimations of length, mass, and volume are made;   | <b>Student Book:</b> 19, 24, 26, 210, 212, 228, 229, 299  |
| c) appropriate instruments are selected and used for making quantitative observations of length, mass, volume, and elapsed time; | <b>Student Book:</b> 19, 27, 183, 219, 283  |
| d) accurate measurements are made using basic tools (thermometer, meter stick, balance, graduated cylinder);                     | <b>Student Book:</b> 19, 27, 183, 219, 222  |
| e) data are collected, recorded, and reported using the appropriate graphical representation (graphs, charts, diagrams);         | <b>Student Book:</b> 24, 25, 26, 31, 38, 50, 51, 55, 62, 91, 123, 134, 199, 206, 242  |
| f) predictions are made using patterns, and simple graphical data are extrapolated;  | <b>Student Book:</b> 67, 74, 187, 194   |
| g) manipulated and responding variables are identified; and  | <b>Student Book:</b> 23, 27   |
| h) an understanding of the nature of science is developed and reinforced.  | <b>Student Book:</b> 17, 18, 19, 20, 21, 22, 25, 26, 31, 38, 39, 50, 51, 55, 62, 63, 67, 74, 75, 79, 86, 87, 99, 103, 110, 111, 115, 122, 123, 127, 134, 135, 146, 147, 151, 159, 171, 175, 182, 183, 187, 195, 199, 206, 207, 219, 230, 231, 242, 243, 247, 255, 259, 266, 267, 271, 278, 279, 283, 290, 291, 295, 303 |

## Force, Motion, and Energy

| Standards of Learning, Grade 5   | ACCESS Science   |
|--|--|
| <p>5.2 The student will investigate and understand how sound is transmitted and is used as a means of communication. Key concepts include</p> <p>a) frequency, waves, wavelength, vibration;</p> | <b>Student Book:</b> 283, 284, 285, 288, 289, 290, 291 |
| <p>b) the ability of different media (solids, liquids, and gases) to transmit sound; and</p>   | <b>Student Book:</b> 289                               |
| <p>c) uses and applications (voice, sonar, animal sounds, and musical instruments).</p>  | <b>Student Book:</b> 262, 282, 288, 289, 291           |
| <p>5.3 The student will investigate and understand basic characteristics of visible light and how it behaves. Key concepts include</p> <p>a) the visible spectrum and light waves;</p>           | <b>Student Book:</b> 286, 287, 291                     |
| <p>b) refraction of light through water and prisms;</p>  | <b>Student Book:</b> 286                               |
| <p>c) reflection of light from reflective surfaces (mirrors);</p>  | <b>Student Book:</b> 287                               |
| <p>d) opaque, transparent, and translucent; and</p>  | <b>Student Book:</b> 262, 263                          |

## Matter

| Standards of Learning, Grade 5  | ACCESS Science   |
|---|--|
| 5.4 The student will investigate and understand that matter is anything that has mass, takes up space, and occurs as a solid, liquid, or gas. Key concepts include<br><br>a) atoms, elements, molecules, and compounds; | <b>Student Book:</b> 209, 211, 212, 213, 214, 215, 216, 217, 218, 219, 223, 225, 226, 227, 229, 236, 237, 238, 239, 240, 241, 242, 243, 245, 246, 248, 249, 250, 251, 254, 255 |
| b) mixtures including solutions; and  | <b>Student Book:</b> 217, 219  |
| c) the effect of heat on the states of matter.  | <b>Student Book:</b> 225, 226, 227, 231, 264, 265  |

## Living Systems

| Standards of Learning, Grade 5  | ACCESS Science  |
|---|---|
| 5.5 The student will investigate and understand that organisms are made of cells and have distinguishing characteristics. Key concepts include<br><br>a) basic cell structures and functions; | <b>Student Book:</b> 129, 130, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 166, 181, 189, 191 |
| b) kingdoms of living things;   | <b>Student Book:</b> 128, 131, 132, 133, 135  |
| c) vascular and nonvascular plants; and   | <b>Student Book:</b> 133, 156, 157  |
| d) vertebrates and invertebrates.   | <b>Student Book:</b> 133  |

## Interrelationships in Earth/Space Systems

| Standards of Learning, Grade 5  | ACCESS Science                               |
|---|--|
| 5.6 The student will investigate and understand characteristics of the ocean environment. Key concepts include<br><br>a) geological characteristics (continental shelf, slope, rise); | <b>Student Book:</b> 33, 35, 45, 54, 70, 108 |

| <b>Standards of Learning, Grade 5</b>                              | <b>ACCESS Science</b>    |
|--|--------------------------|
| b) physical characteristics (depth, salinity, major currents); and | <b>Student Book:</b> 33  |
| c) biological characteristics (ecosystems).                        | <b>Student Book:</b> 114 |

## Earth Patterns, Cycles, and Change

| <b>Standards of Learning, Grade 5</b>   | <b>ACCESS Science</b>  |
|---|--|
| 5.7 The student will investigate and understand how the Earth's surface is constantly changing. Key concepts include<br><br>a) the rock cycle including identification of rock types; | <b>Student Book:</b> 41, 42, 43, 46, 47, 48, 49, 50, 51            |
| b) Earth history and fossil evidence;   | <b>Student Book:</b> 30, 31, 57, 196, 197, 198, 199, 204, 205, 207 |
| c) the basic structure of the Earth's interior;   | <b>Student Book:</b> 29, 30, 32, 33                                |
| d) plate tectonics (earthquakes and volcanoes);   | <b>Student Book:</b> 33, 34, 35, 36, 37, 38, 39, 42, 43, 44, 45    |
| e) weathering and erosion; and  | <b>Student Book:</b> 53, 54, 55, 56, 57, 58, 59, 61, 63            |
| f) human impact.  | <b>Student Book:</b> 90, 91, 94, 95, 102, 103, 106, 109            |



**ACCESS Science © 2005**  
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**Virginia Science Standards of Learning**  
**Grade 6**

**Scientific Investigation, Reasoning, and Logic**

| Standards of Learning, Grade 6   | ACCESS Science                                    |
|--|---|
| 6.1 The student will plan and conduct investigations in which<br><br>a) observations are made involving fine discrimination between similar objects and organisms; | <b>Student Book:</b> 134, 195, 207, 231, 243, 302 |
| b) a classification system is developed based on multiple attributes;  | <b>Student Book:</b> 128, 135, 195, 207, 243      |
| c) precise and approximate measurements are recorded;  | <b>Student Book:</b> 19, 27, 219                  |
| d) scale models are used to estimate distance, volume, and quantity;   | <b>Student Book:</b> 79, 211, 218, 303            |
| e) hypotheses are stated in ways that identify the independent (manipulated) and dependent (responding) variables;   | <b>Student Book:</b> 17, 18, 19, 20, 21, 23, 27   |
| f) a method is devised to test the validity of predictions and inferences;   | <b>Student Book:</b> 25, 27                       |
| g) one variable is manipulated over time, using many repeated trials;  | <b>Student Book:</b> 23, 26, 27                   |
| h) data are collected, recorded, analyzed, and reported using appropriate metric measurements;   | <b>Student Book:</b> 26, 27                       |

| <b>Standards of Learning, Grade 6</b>   | <b>ACCESS Science</b>   |
|---|---|
| i) data are organized and communicated through graphical representation (graphs, charts, and diagrams); | <b>Student Book:</b> 24, 25, 26, 31, 38, 50, 51, 55, 62, 91, 123, 134, 199, 206, 242  |
| j) models are designed to explain a sequence; and   | <b>Student Book:</b> 22, 86, 158, 171, 218, 255, 291, 303   |
| k) an understanding of the nature of science is developed and reinforced.                               | <b>Student Book:</b> 17, 18, 19, 20, 21, 22, 25, 26, 31, 38, 39, 50, 51, 55, 62, 63, 67, 74, 75, 79, 86, 87, 99, 103, 110, 111, 115, 122, 123, 127, 134, 135, 146, 147, 151, 159, 171, 175, 182, 183, 187, 195, 199, 206, 207, 219, 230, 231, 242, 243, 247, 255, 259, 266, 267, 271, 278, 279, 283, 290, 291, 295, 303 |

## Force, Motion, and Energy

| <b>Standards of Learning, Grade 6</b>  | <b>ACCESS Science</b>                                  |
|--|--|
| 6.2 The student will investigate and understand basic sources of energy, their origins, transformations, and uses. Key concepts include<br><br>a) potential and kinetic energy;  | <b>Student Book:</b> 225, 253, 258, 260, 261, 264      |
| b) the role of the sun in the formation of most energy sources on Earth;   | <b>Student Book:</b> 68, 69, 108, 117, 164, 165        |
| c) nonrenewable energy sources (fossil fuels including petroleum, natural gas, and coal);  | <b>Student Book:</b> 89, 90, 91, 92, 95, 96, 97, 99    |
| d) renewable energy sources (wood, wind, hydro, geothermal, tidal, and solar); and   | <b>Student Book:</b> 89, 90, 92, 94, 95, 97, 98        |
| e) energy transformations (heat/light to mechanical, chemical, and electrical energy).   | <b>Student Book:</b> 257, 258, 259, 262, 263, 264, 265 |
| 6.3 The student will investigate and understand the role of solar energy in driving most natural processes within the atmosphere, the hydrosphere, and on the Earth's surface. Key concepts include<br><br>a) the Earth's energy budget; | <b>Student Book:</b> 65, 68, 69, 71                    |

| <b>Standards of Learning, Grade 6</b>   | <b>ACCESS Science</b>                   |
|---|---|
| b) the role of radiation and convection in the distribution of energy;                          | <b>Student Book:</b> 265                |
| c) the motion of the atmosphere and the oceans;   | <b>Student Book:</b> 54, 68, 69, 70, 71 |
| d) cloud formation; and   | <b>Student Book:</b> 70, 72             |
| e) the role of heat energy in weather-related phenomena including thunderstorms and hurricanes. | <b>Student Book:</b> 73                 |

## Matter

| <b>Standards of Learning, Grade 6</b>   | <b>ACCESS Science</b>  |
|---|--|
| 6.4 The student will investigate and understand that all matter is made up of atoms. Key concepts include                       | <b>Student Book:</b> 209, 211, 213, 214, 215, 218, 237, 238                |
| a) atoms are made up of electrons, protons, and neutrons;   |  |
| b) atoms of any element are alike but are different from atoms of other elements;   | <b>Student Book:</b> 215, 238, 239, 240, 241, 243                          |
| c) elements may be represented by chemical symbols;   | <b>Student Book:</b> 226, 238, 239, 243, 246, 248, 250, 251, 252, 254, 255 |
| d) two or more atoms may be chemically combined;  | <b>Student Book:</b> 216, 245, 246, 248, 249                               |
| e) compounds may be represented by chemical formulas;   | <b>Student Book:</b> 164, 165, 166, 246, 251, 254, 255                     |
| f) chemical equations can be used to model chemical changes; and  | <b>Student Book:</b> 164, 165, 166, 246, 251, 254, 255                     |
| g) a limited number of elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere. | <b>Student Book:</b> 164, 165, 166, 215, 216                               |

| Standards of Learning, Grade 6   | ACCESS Science   |
|--|--|
| <p>6.5 The student will investigate and understand the unique properties and characteristics of water and its roles in the natural and human-made environment. Key concepts include</p> <p>b) the properties of water in all three states;</p> | <p><b>Student Book:</b> 226, 227</p>                   |
| <p>c) the action of water in physical and chemical weathering;</p>   | <p><b>Student Book:</b> 53, 54, 56, 57, 58, 61</p>     |
| <p>d) the ability of large bodies of water to store heat and moderate climate;</p>   | <p><b>Student Book:</b> 68, 69</p>                     |
| <p>e) the origin and occurrence of water on Earth;</p>   | <p><b>Student Book:</b> 54, 55, 301</p>                |
| <p>f) the importance of water for agriculture, power generation, and public health; and</p>  | <p><b>Student Book:</b> 92, 95</p>                     |
| <p>g) the importance of protecting and maintaining water resources.</p>  | <p><b>Student Book:</b> 107, 109</p>                   |
| <p>6.6 The student will investigate and understand the properties of air and the structure and dynamics of the Earth’s atmosphere. Key concepts include</p> <p>a) air as a mixture of gaseous elements and compounds;</p>                      | <p><b>Student Book:</b> 105, 301</p>                   |
| <p>b) air pressure, temperature, and humidity;</p>   | <p><b>Student Book:</b> 66, 67, 68, 69, 71, 72, 74</p> |
| <p>c) how the atmosphere changes with altitude;</p>  | <p><b>Student Book:</b> 68</p>                         |
| <p>d) natural and human-caused changes to the atmosphere;</p>  | <p><b>Student Book:</b> 68, 72, 73, 107</p>            |
| <p>e) the relationship of atmospheric measures and weather conditions;</p>   | <p><b>Student Book:</b> 66, 67, 72, 73</p>             |
| <p>f) basic information from weather maps including fronts, systems, and basic measurements; and</p>   | <p><b>Student Book:</b> 66, 67</p>                     |

| <b>Standards of Learning, Grade 6</b>                        | <b>ACCESS Science</b>    |
|--|--------------------------|
| g) the importance of protecting and maintaining air quality. | <b>Student Book:</b> 107 |

## Living Systems

| <b>Standards of Learning, Grade 6</b>   | <b>ACCESS Science</b>       |
|---|-----------------------------|
| 6.7 The student will investigate and understand the natural processes and human interactions that affect the watershed systems. Key concepts include<br><br>a) the health of ecosystems and the abiotic factors of a watershed; | <b>Student Book:</b> 107    |
| c) divides, tributaries, river systems, and river and stream processes;   | <b>Student Book:</b> 61, 70 |
| f) major conservation, health, and safety issues associated with watersheds; and  | <b>Student Book:</b> 107    |

## Interrelationships in Earth/Space Systems

| <b>Standards of Learning, Grade 6</b>   | <b>ACCESS Science</b>                                   |
|---|---|
| 6.8 The student will investigate and understand the organization of the solar system and the relationships among the various bodies that comprise it. Key concepts include<br><br>a) the sun, moon, Earth, other planets and their moons, meteors, asteroids, and comets; | <b>Student Book:</b> 77, 79, 83, 86, 293, 294, 295, 299 |
| b) relative size of and distance between planets;   | <b>Student Book:</b> 300, 301, 302, 303                 |
| c) the role of gravity;   | <b>Student Book:</b> 84, 294, 298, 299                  |
| d) revolution and rotation;   | <b>Student Book:</b> 78, 79, 80, 84                     |
| e) the mechanics of day and night and the phases of the moon;   | <b>Student Book:</b> 77, 78, 79, 80, 81, 84, 87         |
| f) the unique properties of Earth as a planet;  | <b>Student Book:</b> 301                                |

| <b>Standards of Learning, Grade 6</b>                    | <b>ACCESS Science</b>               |
|--|-------------------------------------|
| g) the relationship of the Earth's tilt and the seasons; | <b>Student Book:</b> 82, 83, 86, 87 |
| h) the cause of tides; and                               | <b>Student Book:</b> 84             |
| i) the history and technology of space exploration.      | <b>Student Book:</b> 296, 297       |

## Resources

| <b>Standards of Learning, Grade 6</b>  | <b>ACCESS Science</b>             |
|--|-----------------------------------|
| 6.9 The student will investigate and understand public policy decisions relating to the environment. Key concepts include<br><br>a) management of renewable resources (water, air, soil, plant life, animal life); | <b>Student Book:</b> 97, 107, 109 |
| b) management of nonrenewable resources (coal, oil, natural gas, nuclear power, mineral resources);  | <b>Student Book:</b> 97, 107, 109 |
| c) the mitigation of land-use and environmental hazards through preventive measures; and   | <b>Student Book:</b> 109          |
| d) cost/benefit tradeoffs in conservation policies.  | <b>Student Book:</b> 89, 97, 109  |



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