

ASOL SCIENCE SCOPE AND SEQUENCE MATRIX: GRADE 5

| ASOL SCIENCE – MATRIX | | | |
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| Based on the 2010 Science Standards of Learning | | | |
| Reporting Category | Grade 5 | Grade 8 | High School |
| Scientific Investigation | 5S-SI 1 5S-SI 2 | 8S-SI 1 8S-SI 2 8S-SI 3 | |
| Scientific Investigation and the Nature of Science | | | HSS-SI 1 HSS-SI 2 |
| Force, Motion, Energy and Matter | 5S-FME 1 5S-FME 2 5S-FME 3 5S-FME 4 5S-FME 5 | 8S-FME 1 8S-FME 2 8S-FME 3 8S-FME 4 8S-FME 5 | |
| Life Processes and Living Systems | 5S-LPS 1 5S-LPS 2 5S-LPS 3 5S-LPS 4 | | |
| Life Systems | | 8S-LS 1 8S-LS 2 8S-LS 3 8S-LS 4 8S-LS 5 8S-LS 6 | |
| Earth/Space Systems and Cycles | 5S-ESS 1 5S-ESS 2 5S-ESS 3 5S-ESS 4 5S-ESS 5 5S-ESS 6 | | |
| Ecosystems | | 8S-ECO 1 | |

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| | | 8S-ECO 2 8S-ECO 3 8S-ECO 4 8S-ECO 5 8S-ECO 6 8S-ECO 7 | |
| Earth and Space Systems | | 8S-ESS 1 8S-ESS 2 8S-ESS 3 8S-ESS 4 8S-ESS 5 8S-ESS 6 8S-ESS 7 | HSS-ESS 1 HSS-ESS 2 HSS-ESS 3 |
| Earth Materials and Processes | | | HSS-EMP 1 HSS-EMP 2 HSS-EMP 3 HSS-EMP 4 |
| Cosmology, Origins, and Time | | | HSS-COT 1 |
| Earth Resources and Human Interactions | | | HSS-ERH 1 HSS-ERH 2 HSS-ERH 3 |

| REPORTING CATEGORIES | GRADE 5 ASOL BLUEPRINT | UNDERSTANDING THE STANDARD |
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| Scientific Investigation | 5S-SI 1 (SOL 4.1) | The skills described in this standard are intended to define the “investigate” component of all of the other science standards. The intent of this standard is that students will continue to develop a range of inquiry skills, achieve proficiency with those skills in the context of the concepts developed at the fourth-grade level, and strengthen their understanding of the nature of science. This standard does not require a discrete unit be taught on scientific investigation and the nature of science because the skills that make up the standard should be incorporated in all the other science standards. It is also intended that by developing these skills, students will achieve greater understanding of scientific inquiry and the nature of science as well as more fully grasp the content-related concepts. |
| | 5 S-SI 2 (SOL 5.1) | The skills in this standard intended to define the “investigate” component and the understanding of the nature of science for all of the other science standards. The intent of standard is for students to continue to develop a range of inquiry skills, achieve proficiency with those skills, and develop and reinforce their understanding of the nature of science in the context of the concepts developed at the fifth-grade level. This standard does not require a discrete unit be taught on scientific investigation because the skills that make up the standard should be incorporated in all the other fifth-grade standards. It is also intended that by developing these skills, students will achieve a greater understanding of scientific inquiry and the nature of science and will more fully grasp the content-related concepts. |
| Force, Motion, Energy and Matter | 5S-FME1 (SOL 4.2) | This standard is introduced in first grade and prepares students for a more in-depth study of energy in eighth grade. This standard focuses on the characteristics of moving objects. Key concepts include the effect of forces, such as friction, on moving objects. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-FME 2 (SOL 4.3) | This standard focuses on the characteristics of electricity as related to circuits and circuit components, magnetism, static charges, and historical contributions important to the understanding of electricity. As electrical energy is an integral part of modern civilization (e.g., powering our computers; lighting, heating and cooling our homes and businesses; and making the information age possible), it is critical that students begin to understand basic electricity concepts. This standard will be the basis for a more in-depth study in the eighth grade. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-FME 3 (SOL 5.2) | This standard introduces the concept of what sound is and how sound is transmitted. The students are introduced to scientific vocabulary and the phenomena of compression waves, frequency, waves, wavelength, and vibration in this standard. Students should make predictions about and experiment with the transmission of sound. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-FME 4 | Concepts related to light are introduced at the fifth-grade level. This standard focuses on the characteristics of |

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| | (SOL 5.3) | visible light and the tools that aid in the production and use of light. Instruction should center on the basic science concerning light energy and how we use light in our daily lives. A related science standard focuses on forms of energy and provides a foundation for understanding that light is energy. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-FME 5 (SOL 5.4) | This standard incorporates various characteristics of matter such as mass, volume, and the effect of temperature changes on the three basic phases of matter. Instruction should center on the basic structure of matter and how it behaves. This standard builds on standard 3.3, which provides a basis for understanding the structure of matter. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| Life Processes and Living Systems | 5S-LPS 1 (SOL 4.4) | This standard focuses on the basic life processes and anatomy of plants. It represents a more in-depth treatment of the plant structures and the processes associated with plant reproduction. Photosynthesis is introduced in this standard. Closely related standards from previous grades include K.6, 1.4, and 2.4. This standard also is closely connected with concepts presented in science standard 4.5. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-LPS 2 (SOL 4.5) | This standard focuses on the relationships among plants, animals, and the nonliving environment and brings together several elements of both Life Processes and Living Systems. This standard assumes students have a basic understanding that all living organisms are interrelated and dependent in some way on other living organisms and their environment. Plants and animals in ecological systems live in a web of interdependence in which each species contributes to the functioning of the overall system. Organisms live in a habitat to which they are structurally and behaviorally adapted. Certain conditions within environments determine which organisms and communities succeed there. This standard builds upon previous standards 1.5, 2.4, 2.5, 3.4, 3.5 and 3.6. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-LPS 3 (SOL 4.9) | Virginia has a rich variety of natural resources. These provide the raw materials for our daily lives and sustain our economy. Natural resources are finite and must be used wisely to ensure their continued availability. This concept of natural resources is introduced in first grade and extended into sixth grade. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-LPS 4 (SOL 5.5) | This standard emphasizes the major categories of living organisms and builds on science standards 2.4 and 4.4. The use of a microscope may be applied to the study of plants, animals, and cells. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-ESS 1 (SOL 4.6) | This standard focuses on weather conditions and a more technical understanding of the tools and methods used to forecast future atmospheric conditions. Weather is introduced in science standard 2.6. It is intended that |

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| | | students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-ESS 2 (SOL 4.7) | This standard focuses on providing an introduction to our solar system. This includes the introduction to the planets in the solar system, their order in the solar system in relation to the sun, and the sizes of the planets in relation to the size of Earth. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-ESS 3 (SOL 4.8) | This standard focuses on the Earth-moon-sun system and includes knowledge related to the motions of this system and the results of our unique position in it. This includes the presence of an atmosphere, liquid water, and life. The standard is built on concepts developed in science standards K.8, 1.6, and 3.8 and that will be further expanded in 6.8. A more in-depth study of Earth's makeup is in standard 5.7. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| Earth/Space Systems and Cycles | 5S-ESS 4 (SOL 4.9) | Virginia has a rich variety of natural resources. These provide the raw materials for our daily lives and sustain our economy. Natural resources are finite and must be used wisely to ensure their continued availability. This concept of natural resources is introduced in 1.8 and extended in 6.9. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-ESS 5 (SOL 5.6) | This standard extends the study of ecosystems to the ocean environment. It focuses on the major descriptive characteristics of oceans. Among the concepts are the geological characteristics of the ocean floor, the physical characteristics of ocean water, and the ecological characteristics of communities of marine organisms. Connections can be made to standards 5.2, 5.3, 5.4, 5.5, and 5.7. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |
| | 5S-ESS 6 (SOL 5.7) | This standard focuses on the constantly changing nature of Earth's surface and builds on concepts learned in standards 4.6 and 4.8. Among the important ideas presented in this standard are the rock cycle, fossil evidence of change over time, energy from within Earth that drives tectonic plate movement, shifting tectonic plates that cause earthquakes and volcanoes, weathering and erosion, and human interaction with Earth's surface. This standard can be related to several ideas found in science standard 5.6. It is intended that students will actively develop and utilize scientific investigation, reasoning, and logic skills in the context of the key concepts presented in this standard. |