



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
1.0 Students will demonstrate the thinking and acting inherent in the practice of science.	1.A.1 Design, analyze, or carry out simple investigations and formulate appropriate conclusions based on data obtained or provided.	1.A.1.a Explain that scientists differ greatly in what phenomena they study and how they go about their work.	
		1.A.1.b Develop the ability to clarify questions and direct them toward objects and phenomena that can be described, explained, or predicted by scientific investigations.	Lesson 4: Scientific Method Unit Project
		1.A.1.c Explain and provide examples that all hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.	Lesson 1: Introduction to the scientific method: Asking Questions and Writing a Hypothesis
		1.A.1.d Locate information in reference books, back issues of newspapers, magazines and compact disks, and computer databases.	
		1.A.1.e Explain that if more than one variable changes at the same time in an investigation, the outcome of the investigation may not be clearly attributable to any one of the variables.	Lesson 2: Design a Controlled Experiment
		1.A.1.f Give examples of when further studies of the question being investigated may be necessary.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		1.A.1.g Give reasons for the importance of waiting until an investigation has been repeated many times before accepting the results as correct.	Lesson 3: Analyze Results and Draw a Conclusion
		1.A.1.h Use mathematics to interpret and communicate data.	
		1.A.1.i Explain why accurate record-keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.	
	1.B.1 Review data from a simple experiment, summarize the data, and construct a logical argument about the cause-and-effect relationships in the experiment.	1.B.1.a Verify the idea that there is no fixed set of steps all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.	Lesson 1: Introduction to the Scientific Method: Asking Questions and Writing a Hypothesis
		1.B.1.b Explain that what people expect to observe often affects what they actually do observe and that scientists know about this danger to objectivity and take steps to try to avoid it when designing investigations and examining data.	
		1.B.1.c Explain that even though different explanations are given for the same evidence, it is not always possible to tell which one is correct.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		1.B.1.d Describe the reasoning that lead to the interpretation of data and conclusions drawn.	
		1.B.1.e Question claims based on vague statements or on statements made by people outside their area of expertise.	
	1.C.1 Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.	1.C.1.a Organize and present data in tables and graphs and identify relationships they reveal.	
		1.C.1.b Interpret tables and graphs produced by others and describe in words the relationships they show.	
		1.C.1.c Give examples of how scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.	
	1.C.1.d Criticize the reasoning in arguments in which	1.C.1.d.1 Fact and opinion are intermingled	
		1.C.1.d.2 Conclusions do not follow logically from the evidence given.	
		1.C.1.d.3 Existence of control groups and the relationship to experimental groups is not made obvious.	Lesson 2: Design a Controlled Experiment
		1.C.1.d.4 Samples are too small, biased, or not representative.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	1.C.1 Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.	1.C.1.e Explain how different models can be used to represent the same thing. What kind of a model to use and how complex it should be depend on its purpose. Choosing a useful model is one of the instances in which intuition and creativity come into play in science, mathematics, and engineering	
		1.C.1.f Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.	
		1.C.1.g Recognize that important contributions to the advancement of science, mathematics, and technology have been made by different kinds of people, in different cultures, at different times.	
	1.D1.A Explain that complex systems require control mechanisms.	1.D1.A.a Explain that the choice of materials for a job depends on their properties and on how they interact with other materials.	
		1.D1.A.b Demonstrate that all control systems have inputs, outputs, and feedback.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		1.D1.A.c Realize that design usually requires taking constraints into account. (Some constraints, such as gravity or the properties of the materials to be used, are unavoidable. Other constraints, including economic, political, social, ethical, and aesthetic ones also limit choices.)	
		1.D1.A.d Identify reasons that systems fail they have faulty or poorly matched parts, are used in ways that exceed what was intended by the design, or were poorly designed to begin with.	
	1.D1.B Analyze, design, assemble and troubleshoot complex systems.	1.D1.B.a Provide evidence that a system can include processes as well as things.	
		1.D1.B.b Explain that thinking about things as systems means looking for how every part relates to others. (The output from one part of a system (which can include material, energy, or information) can become the input to other parts. Such feedback can serve to control what goes on in the system as a whole.)	
		1.D1.B.c Analyze any system to determine its connection, both internally and externally to other systems and explain that a system may be thought of as containing subsystems and as being a subsystem of a larger system.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	1.D1.C Analyze the value and the limitations of different types of models in explaining real things and processes.	1.D1.C.a Explain that the kind of model to use and how complex it should be depends on its purpose and that it is possible to have different models used to represent the same thing.	
		1.D1.C.b Explain, using examples that models are often used to think about processes that happen too slowly, too quickly, or on too small a scale to observe directly, or that are too vast to be changed deliberately, or that are potentially dangerous.	
		1.D1.C.c Explain that models may sometimes mislead by suggesting characteristics that are not really shared with what is being modeled.	
2.0 Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.	2.A.2 Cite evidence to demonstrate and explain that physical weathering and chemical weathering cause changes to Earth materials.	2.A.2.a Identify examples of physical weathering, such as the effect of wind, ice, etc. and describe the changes caused in each.	Lesson 30: Intro to Earth Science



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	2.A.2.b Describe the changes in materials caused by each of the chemical weathering processes listed:	2.A.2.b.1 Rusting/tarnishing	
		2.A.2.b.2 Dissolving by acid rain	
	2.A.2 Cite evidence to demonstrate and explain that physical weathering and chemical weathering cause changes to Earth materials.	2.A.2.c Compare physical and chemical weathering and provide examples of changes caused in Earth materials or features by each of these processes.	Lesson 30: Intro to Earth Science
	2.A.4.a Identify and describe the processes that form sedimentary rock.	2.A.4.a.1 Deposition	Lesson 31: The Rock Cycle
		2.A.4.a.2 Compaction	Lesson 31: The Rock Cycle
		2.A.4.a.3 Cementation	Lesson 31: The Rock Cycle
	2.A.4.b Identify and describe the processes that form igneous rocks	2.A.4.b.1 Volcanic eruptions	Lesson 31: The Rock Cycle
		2.A.4.b.2 Igneous intrusions	Lesson 31: The Rock Cycle
	2.A.4.c Identify and describe the processes that form metamorphic rocks.	2.A.4.c.1 High temperature	Lesson 31: The Rock Cycle
		2.A.4.c.2 Pressure	Lesson 31: The Rock Cycle
	2.A.4 Differentiate among sedimentary, igneous, and metamorphic rocks based upon the processes by which they are formed.	2.A.4.d Cite features that can be used as evidence to distinguish among the three types of rocks and relate these features to the processes that form each rock type.	Lesson 31: The Rock Cycle
		2.A.4.e Describe the processes that change one form of rock into another (rock cycle).	Lesson 31: The Rock Cycle
	2.C.1.a Recognize and describe that the Earth's mantle	2.C.1.a.1 Lies between the core and the crust	
		2.C.1.a.2 Is very hot	
		2.C.1.a.3 Has properties of both solids and liquid	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	2.C.1.b Recognize and describe that the Earth's core	2.C.1.b.1 Is at the center of the Earth	
		2.C.1.b.2 Is very hot	
		2.C.1.b.3 Is dense and metallic	
	2.C.1.c Identify and describe the Earth's crust.	2.C.1.c.1 The solid crust consists of separate plates	
		2.C.1.c.2 The plates constantly move in different directions due to convection currents	
		2.C.1.c.3 The plates interact with one another as a result of plate motion.	
	2.C.2.a Recognize and describe the evidence for plate movement.	2.C.2.a.1 Shape of continents	
		2.C.2.a.2 Continuity of geologic features and fossils on the continents	
		2.C.2.a.3 Ocean rifts, seafloor spreading	
		2.C.2.a.4 Global patterns of earthquakes and volcanoes	
	2.C.2 Recognize and explain how major geologic events are a result of the movement of Earth's crustal plates.	2.C.2.b Recognize and explain that major geologic events (earthquakes, volcanic activity, sea floor spreading) occur along crustal plate boundaries.	
	2.D.1 Recognize that objects of our solar system are interrelated.	2.D.1.a Recognize that Earth and its closest star, the sun, are part of a disk-shape galaxy of stars and that our galaxy is one of billions of galaxies.	Lesson 34: The Solar System
		2.D.1.b Construct models with accurate scale that represent the position of the Earth relative to the sun and to other planets.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		2.D.1.c Identify and describe the general pattern of movement of all objects in our solar system.	Lesson 34: The Solar System
		2.D.1.d Recognize that the pull of gravity causes the pattern of motion of celestial objects.	
3.0 The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.	3.D.1 Explain that in any particular environment, the growth and survival of organisms and species depend on the physical conditions.	3.D.1.a Cite examples and describe that small differences between parents and offspring can accumulate (through selective breeding) in successive generations so that descendants are very different from their ancestors.	Lesson 26: Genetics
		3.D.1.b Explain that in all environments - freshwater, marine, forest, desert, grassland, mountain, and others - organisms with similar needs may compete with one another for resources, including food, space, water, air, and shelter.	Lesson 21: Interactions in the Environment
		3.D.1.c Explain that in any particular environment individual organisms with certain traits are more likely than others to survive and have offspring.	
		3.D.1.d Explain, with examples, ways that people control some characteristics of plants and animals they raise by selective breeding.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.D.1.e Describe ways in which changes in environmental conditions can affect the survival of individual organisms and entire species.	Lesson 21: Interactions in the Environment
		3.D.1.f Describe how sediments of sand and smaller particles (sometimes containing the remains of organisms) are gradually buried and are cemented together by dissolved minerals to form solid rock; and describe that such fossils provide evidence for the long history of changing life forms whose remains are found in the rocks.	
		3.D.1.g Explain that the more recently deposited rock layers are likely to contain fossils resembling existing species.	
	3.F.1 Give reasons supporting the fact that the number of organisms an environment can support depends on the physical conditions and resources available.	3.F.1.a Explain that populations increase or decrease relative to the availability of resources and the conditions of the environment.	Lesson 21: Interactions in the Environment
		3.F.1.b Identify and describe factors that could limit populations within any environment, such as disease, introduction of a nonnative species, depletion of resources, etc.	Lesson 21: Interactions in the Environment
		3.F.1.c Explain that within any environment organisms with similar needs may compete with one another for resources.	Lesson 21: Interactions in the Environment



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.F.1.d Cite examples to illustrate that competition is reduced when organisms use different sets of resources, such as birds in a forest eat different kinds and sizes of seeds.	Lesson 21: Interactions in the Environment
4.0 Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations	4.C.1 Provide evidence and examples illustrating that many substances can exist as a solid, liquid, or gas depending on temperature.	4.C.1.a Use evidence from investigations to describe the effect that adding heat energy to different types of matter has on changing matter from one state to another.	Lesson 7: States of Matter
		4.C.1.b Based on data from investigations describe the effect that removing heat energy from different types of matter has on changing matter from one state to another.	
		4.C.1.c Analyze data gathered and formulate a conclusion on the effects of temperature change on most substances.	
	4.D.1.a Investigate and identify ways to describe and classify mixtures using the observable and measurable properties of their components.	4.D.1.a.1 Magnetism	
		4.D.1.a.2 Boiling point	



Alignment Document  
State of Maryland and Aventa Learning

Science 6

Strand	Common Curriculum Goal	Standard	Lesson Name
		4.D.1.a.3 Solubility in water.	
	4.D.1.b Based on data gathered, identify and describe various processes used to separate mixtures.	4.D.1.b.1 Filtration	
		4.D.1.b.2 Evaporation	
		4.D.1.b.3 Paper chromatography	
	4.D.1 Cite evidence to support the fact that some substances can be separated into the original substances from which they were made.	4.D.1.c Use data gathered to provide a reasonable explanation for the idea that the mass of a mixture is equal to the sum of the masses of its components.	
5.0 Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur.	5.C.2.a Research and identify various energy sources and the energy transforming devices used to produce electrical energy	5.C.2.a.1 Wind (generators, wind mills)	Lesson 15: Energy Sources and Conversions
		5.C.2.a.2 Sun (solar cells)	Lesson 15: Energy Sources and Conversions
		5.C.2.a.3 Water(turbines)	Lesson 15: Energy Sources and Conversions
		5.C.2.a.4 Fossil fuels (engines)	Lesson 15: Energy Sources and Conversions
	5.C.2 Cite evidence supporting that electrical energy can be produced from a variety of energy sources and can itself be transformed into almost any other form of energy.	5.C.2.b Cite examples that demonstrate the transformation of electrical energy into other forms of energy.	Lesson 15: Energy Sources and Conversions



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		5.C.2.c Investigate and describe that some materials allow the quick, convenient, and safe transfer of electricity (conductors), while others prevent the transfer of electricity (insulators).	
		5.C.2.d Identify and describe the energy transformations in simple electric circuits.	
	5.C.3.a Investigate and describe the magnetic fields surrounding various types of magnets using materials, such as iron filings and small compasses.	5.C.3.a.1 A single bar magnet	
		5.C.3.a.2 Two bar magnets with like poles facing	
		5.C.3.a.3 Two bar magnets with opposite poles facing	
		5.C.3.a.4 A horseshoe magnet	
	5.C.3 Identify and describe magnetic fields and their relationship to electric current.	5.C.3.b Investigate and explain ways to change the strength of a simple electromagnet by varying the number of coils wrapped, the amount of electricity in the wire, the number of batteries used, and whether or not an iron core is used.	
	5.C.3.c Describe how the electromagnet demonstrates the relationship of magnetism and electricity and identify common devices that demonstrate application of this relationship.	5.C.3.c.1 Electric motors (fans, hair dryers, can openers)	
		5.C.3.c.2 Electrical generators (turbine)	



Alignment Document  
State of Maryland and Aventa Learning

Science 6

Strand	Common Curriculum Goal	Standard	Lesson Name
	5.C.3.d Based on investigations describe that electricity moving through a wire produces a magnetic force on materials placed near the wire.	5.C.3.d.1 Iron filings	
		5.C.3.d.2 Compasses	
	5.D.1.a Cite examples to show that waves transfer energy from one place to another.	5.D.1.a.1 Light	
		5.D.1.a.2 Sound	
		5.D.1.a.3 Earthquake waves	
	5.D.1.b Measure and describe the wavelength, frequency, and amplitude of waves using:	5.D.1.b.1 Water	
		5.D.1.b.2 Ropes	
		5.D.1.b.3 Springs.	
	5.D.1 Identify and describe the relationships among the various properties of waves.	5.D.1.c Measure and describe the relationship between the frequency and the wavelength of a wave.	
	5.D.2 Provide evidence to demonstrate the relationship among the properties of waves using sound.	5.D.2.a Investigate and describe that the pitch of sounds can be varied by changing the rate of vibration.	
		5.D.2.b Identify and describe the relationship among frequency, wavelength, and pitch.	
		5.D.2.c Observe and describe the relationship between amplitude and loudness.	
		5.D.2.d Cite evidence that sound waves transfer energy using observation of sympathetic tuning forks, tuned guitar strings, etc.	
	5.D.3 Investigate and cite the rules that govern behaviors of light.	5.D.3.a Based on data generalize the law of reflection.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
		5.D.3.b Cite evidence from observations and research to support the fact that something can be seen when light waves emitted or reflected by it enter the eye.	
		5.D.3.c Based on observations predict the change in the direction (refraction) of light as it travels from one material to another.	
		5.D.3.d Cite evidence that the amount of light energy absorbed or reflected depends on the color of the object illuminated.	
6.0 Students will use scientific skills and processes to explain the interactions of environmental factors (living and nonliving) and analyze their impact from a local to a global perspective.	6.A.1.a Identify and describe natural resources as	6.A.1.a.1 Land	
		6.A.1.a.2 Fossil fuels	Lesson 16: Renewable and Nonrenewable Resources
		6.A.1.a.3 Forests	
		6.A.1.a.4 Water	Lesson 22: Water Cycle
		6.A.1.a.5 Wind	Lesson 15: Energy Sources and Conversions
		6.A.1.a.6 Minerals	
		6.A.1.a.7 Wildlife	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	6.A.1 Recognize and compare how different parts of the world have varying amounts and types of natural resources and how the use of those resources impacts environmental quality.	6.A.1.b Identify and describe the distribution of natural resources around the Earth	
	6.A.1.c Identify and describe how the natural change processes may be affected by human activities.	6.A.1.c.1 Agriculture	
		6.A.1.c.2 Beach preservation	
		6.A.1.c.3 Mining	
		6.A.1.c.4 Development/construction	
		6.A.1.c.5 Stream/river alteration.	
	6.A.1 Recognize and compare how different parts of the world have varying amounts and types of natural resources and how the use of those resources impacts environmental quality.	6.A.1.d Identify and describe problems associated with obtaining, using, and distributing natural resources.	
		6.A.1.e Identify possible solutions to problems associated with obtaining, using, and distributing natural resources.	
	6.B.1 Recognize and explain that humancaused changes have consequences for Maryland s environment as well as for other places and future times.	6.B.1.a Identify and describe a range of local issues that have an impact on people in other places.	
		6.B.1.b Recognize and describe how environmental change in one part of the world can have consequences for other parts of the world.	



Alignment Document  
State of Maryland and Aventa Learning

**Science 6**

Strand	Common Curriculum Goal	Standard	Lesson Name
	6.B.1.c Identify and describe that ecosystems can be impacted by human activities.	6.B.1.c.1 Protection of the Chesapeake Bay watershed	
		6.B.1.c.2 Resource acquisition and use	
		6.B.1.c.3 Land use decisions (agriculture, mining, and development)	
		6.B.1.c.4 Recycling	
		6.B.1.c.5 Use and disposal of toxic substances	