



Alignment Document
State of Maryland and Aventa Learning

Science 7

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.	
		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.	
		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: Variables in Scientific Investigations
		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 7

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.	
		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.	Lesson 4: Science 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.	
		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.	Lesson 4: Science and Society
		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 7

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.	Lesson 3: Organizing Data Into Tables and Graphs
		1.C.1.b Interpret tables and graphs produced by others and describe in words the relationships they show.	Lesson 3: Organizing Data Into Tables and Graphs
		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.	
		1.C.1.d.4 Samples are too small, biased, or not representative.	



Alignment Document
State of Maryland and Aventa Learning

Science 7

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 7

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.)	Lesson 6: Technological Design
		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 7

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.	
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.A.1.a Provide examples and explain that organisms sorted into groups share similarities in external structures as well as similarities in internal anatomical structures and processes which can be used to infer the degree of relatedness among organisms	3.A.1.a.1 Vascular non-vascular plants	
		3.A.1.a.2 Closed open circulatory systems	Lesson 12: Respiratory and Circulatory systems
		3.A.1.a.3 Asexual sexual reproduction	Lesson 16: Reproductive System
		3.A.1.a.4 Respiration (lungs-gills-skin)	Lesson 12: Respiratory and Circulatory systems

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.A.1.a.5 Digestion	Lesson 14: Digestive and Excretory Systems
	3.A.1.b Identify general distinctions among organisms that support classifying some things as plants, some as animals, and some that do not fit neatly into either group.	3.A.1.b.1 Animals consume food	
		3.A.1.b.2 Plants make food	
	3.A.1 Compile evidence to verify the claim of biologists that the features of organisms connect or differentiate them these include external and internal structures (features) and processes.	3.A.1.c Use analogies, models, or drawings to represent that animals and plants have a great variety of body plans and internal structures that define the way they live, grow, survive, and reproduce.	
	3.B.1 Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.	3.B.1.a Use microscopes or other magnifying instruments to observe, describe, and compare the cellular composition of different body tissues and organs in a variety of organisms (animals and plants).	
	3.B.1.b Based on data from readings and designed investigations, cite evidence to illustrate that the life functions of multicellular organisms (plant and animal) are carried out within complex systems of different tissues, organs and cells.	3.B.1.b.1 Extracting energy from food	
		3.B.1.b.2 Getting rid of wastes	Lesson 14: Digestive and Excretory Systems
		3.B.1.b.3 Making new materials	
	3.B.1 Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.	3.B.1.c Based on research and examples from video technology explain that the repeated division of cells enables organisms to grow and make repairs.	

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
	3.B.1.d Collect data from investigations using single celled organisms, such as yeast or algae to explain that a single cell carries out all the basic life functions of a multicellular organism.	3.B.1.d.1 Reproducing	
		3.B.1.d.2 Extracting energy from food	
		3.B.1.d.3 Getting rid of wastes	
	3.B.1 Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.	3.B.1.e Based on data compiled from a number of lessons completed, take and defend a position on the statement The way in which cells function is the same in all organisms.	
	3.B.2 Recognize and provide examples that human beings, like other organisms have complex body systems of cells, tissues and organs that interact to support an organism's growth and survival.	3.B.2.a Describe and explain that the complex set of systems found in multicellular organisms are made up of different kinds of tissues and organs which are themselves composed of differentiated cells.	
	3.B.2.b Select several body systems and explain the role of cells, tissues and organs that effectively carry out a vital function for the organism, such as	3.B.2.b.1 Obtaining food and providing energy (digestive, circulatory, respiratory)	Lesson 12: Respiratory and Circulatory systems Lesson 14: Digestive and Excretory Systems
		3.B.2.b.2 Defense (nervous, endocrine, circulatory, muscular, skeletal, immune)	Lesson 12: Respiratory and Circulatory systems Lesson 14: Digestive and Excretory Systems Lesson 13: Nervous and Endocrine systems Lesson 15: Skeletal and Muscular Systems



Alignment Document
State of Maryland and Aventa Learning

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.B.2.b.3 Reproduction (reproductive, endocrine, circulatory)	Lesson 12: Respiratory and circulatory systems Lesson 13: Nervous and Endocrine systems
		3.B.2.b.4 Waste removal (excretory, respiratory, circulatory).	Lesson 12: Respiratory and Circulatory systems Lesson 14: Digestive and Excretory Systems
		3.B.2.b.5 Breathing (respiratory, circulatory)	Lesson 12: Respiratory and Circulatory systems
	3.B.2 Recognize and provide examples that human beings, like other organisms have complex body systems of cells, tissues and organs that interact to support an organism's growth and survival.	3.B.2.c Develop a response that explains the meaning of the statement, The specialization of cells serves the operation of the organs, and the organs serve the needs of the cells.	
		3.B.2.d Investigate ways in which the various organs and tissues function to serve the needs of cells for food, air, and waste removal.	
	3.C.1 Explain the ways that genetic information is passed from parent to offspring in different organisms.	3.C.1.a Investigate and explain that in some kinds of organisms, all the genes come from a single parent, whereas in organisms that have sexes, typically half of the genes come from each parent.	



Alignment Document
State of Maryland and Aventa Learning

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.C.1.b Investigate and explain that in sexual reproduction, a single specialized cell from a female (egg) merges with a specialized cell from a male (sperm) and the fertilized egg now has genetic information from each parent, that multiplies to form the complete organism composed of about a trillion cells, each of which contains the same genetic information..	
		3.C.1.c Investigate organisms that reproduce asexually to identify what traits they receive from the parent.	
		3.C.1.d Use information about how the transfer of traits from parent or parents to offspring occurs, to explain how selective breeding for particular traits has resulted in new varieties of cultivated plants and domestic animals.	
		3.C.1.e Identify evidence to support the idea that there is greater variation among offspring of organisms that reproduce sexually than among those that reproduce asexually.	
	3.E.1 Explain that the transfer and transformation of matter and energy links organisms to one another and to their physical setting.	3.E.1.a Cite evidence from research and observations that food provides molecules that serve as fuel and building materials for all organisms.	



Alignment Document
State of Maryland and Aventa Learning

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
		3.E.1.b Cite evidence from research and observations that organisms that eat plants or animals break down what they have consumed (food) to produce the materials and energy they need to survive or store for later use.	
		3.E.1.c Investigate and describe the processes that enable plants to use the energy from light to make sugars (food) from carbon dioxide and water.	
		3.E.1.d Provide evidence from research to explain how plants can use the food they make immediately for fuel or stored for later use.	
		3.E.1.e Ask and seek answers to questions about the fact that transfer of matter between organisms continues indefinitely because organisms are decomposed after death to return food materials to the environment.	
	3.E.1.f Provide evidence that supports the premise In the flow of matter system the total amount of matter remains constant even though its form and location change.	3.E.1.f.1 Carbon cycle	
		3.E.1.f.2 Nitrogen cycle	
		3.E.1.f.3 Food chains and food webs	



Alignment Document
State of Maryland and Aventa Learning

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
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.A.1 Cite evidence to support the fact that all matter is made up of atoms, which are far too small to see directly through a microscope.	4.A.1.a Recognize and describe that the atoms of each element are alike but different from atoms of other elements.	
		4.A.1.b Recognize and describe that different arrangements of atoms into groups compose all substances.	Lesson 11: Chemistry and the Periodic Table
	4.A.1.c Provide evidence from the periodic table, investigations and research to demonstrate that elements in the following groups have similar properties.	4.A.1.c.1 Highly reactive metals, such as magnesium and sodium	
		4.A.1.c.2 Less-reactive metals, such as gold and silver	
		4.A.1.c.3 Highly reactive non-metals, such as chlorine, fluorine, and oxygen	
		4.A.1.c.4 Almost non-reactive gases, such as helium and neon	



Alignment Document
State of Maryland and Aventa Learning

Science 7

Strand	Common Curriculum Goal	Standard	Lesson Name
	4.A.1 Cite evidence to support the fact that all matter is made up of atoms, which are far too small to see directly through a microscope.	4.A.1.d Provide examples to illustrate that elements are substances that do not breakdown into smaller parts during normal investigations involving heating, exposure to electric current or reactions with acids.	
		4.A.1.e Cite evidence to explain that all living and non-living things can be broken down into elements.	
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 Recognize and explain the impact of a changing human population on the use of natural resources and on environmental quality.	6.A.1.a Based on data identify and describe the positive and negative impacts of an increasing human population on the use of natural resources	Lesson 31: Human Population and the Environment
		6.A.1.b Recognize and describe the decreasing dependence on local resources due to the impact of available transportation.	
	6.B.1 Recognize and describe that environmental changes can have local, regional, and global consequences.	6.B.1.a Identify and describe a local, regional, or global environmental issue.	Lesson 34: Environmental Health
		6.B.1.b Identify and describe that different individual people or groups of people are affected by an issue in different ways.	