

Science and Culture Benchmarks		
History & Culture	Physical Science	Biology
<p>Formation of Earth</p> <p>Understands how electricity changed life on earth</p> <p>Describes how electric energy can be converted to heat, light, and motion</p> <p>Understands the formation of the earth and can demonstrate it</p> <p>Understands the properties of rocks and minerals reflect the processes that formed them</p> <p>Identifies common rock-forming minerals</p> <p>Understands the force of water in shaping and reshaping the land</p> <p>Differentiate observation from interpretation</p> <p>Formulates cause and effect</p> <p>Follows a set of written instructions for a scientific investigation</p> <p>Knows that plants are the primary source of matter and energy entering most food chains</p>	<p>Scientific inquiry</p> <p>Understands the processes of life, motion, force, energy, heat, sound, and light.</p> <p>Demonstrates an understanding of Astronomy</p> <p>Demonstrates knowledge of rocks, and their properties,</p> <p>Understands chemistry (atomic, molecular structure, the periodic table of the elements)</p> <p>Can record observations in detail</p> <p>Can describe using clear quantitative and qualitative terms</p> <p>Can look for patterns and draw conclusions</p> <p>Can justify claims using evidence from observations</p> <p>Can create graphic organizers that identify key points and connections between topics</p> <p>Can design and conduct experiments controlling all but one variable</p>	<p>Consistently builds concrete atomic diagrams of chemical elements</p> <p>Identifies three states of matter</p> <p>Recognizes changes in physical states of matter are related to temperature</p> <p>Recognizes the sun is a star</p> <p>Compare the relative distances of the planets</p> <p>Describes characteristics of planets</p> <p>Understands cause of day and night on earth</p> <p>Identifies climate zones</p> <p>Identifies the layers of the earth</p> <p>Recognizes geologic time periods and their life forms on Timeline of Life</p> <p>Identifies characteristics of classes of vertebrates in the timeline of humans</p> <p>Awareness of Five Kingdoms</p>

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<p>Ancient Greece</p> <p>Reviews the human migration story of Homo erectus out of Africa across Eurasia</p> <p>Uses a timeline to review developed civilizations before Ancient Greece such as Mesopotamia, Ancient Egypt, and Ancient China</p> <p>Analyzes the geographic, political, economic, social, and religious structures of Ancient Greece</p> <p>Studies the influences of Ancient Greece on Western Civilization such as democracy, the alphabet, the library, Olympics, mathematics, architecture, mythology, lighthouses, medicine, trial by jury, and the theatre</p> <p>Timeline of Life</p> <p>Reviews the TimeLine of Life(Paleozoic, Mesozoic, Cenozoic, Neozoic eras)</p> <p>Demonstrates the ability to analyze and interpret facts versus opinions</p> <p>Demonstrate the ability to develop</p> <p>Early Humans</p>	<p>Can make and record observations and collect data</p> <p>Can analyze data and explain results</p> <p>Can interpret graphs and diagrams and draw conclusions</p> <p>Can use a graph to display trends</p> <p>Simple & Complex Machines</p> <p>Understands work(as defined by physical science) and the mechanical advantages of six simple machines to make work easier</p> <p>Understands the basic six simple machines (inclined plane, wedge, screw, lever, pulley, and wheel-and-axle)</p> <p>Evaluates the mechanical advantage of simple machines.</p> <p>List the general steps of the engineering design process.</p> <p>Designs simple and compound machines</p> <p>Thinks critically about the importance of the machines they encounter in life</p> <p>Uses knowledge of simple and compound machines to design and build a small Rube Goldberg machines</p> <p>Uses a compound microscope</p>	<p>Knows nomenclature for plant, leaf, root, stem, flower, fruit, seed</p> <p>Knows the scientific method: identify the question, propose hypotheses, identify variables, propose conclusions</p> <p>Recognizes the fundamental needs of people</p> <p>Recognizes basic land and water forms</p> <p>Consistently able to read maps and globes</p> <p>Demonstrates the location the equator and northern and southern hemispheres on a globe or map</p> <p>Identifies and locates all seven continents</p> <p>Botany</p> <p>Identifies the tree of life, plant phyla, internal functions and structural functions of plants</p> <p>Understands environmental ecology</p> <p>Reads informational text, answers questions based on the text, and makes inferences</p> <p>Conducts research in books and online and organize the information gathered</p>

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<p>Defines prehistory</p> <p>Demonstrates the importance of archeology and anthropology to understand early human history.</p> <p>Understand the significance and characteristics of Early Humans, beginning with Australopithecus</p> <p>Understands timeline of Lower Paleolithic Age</p> <p>Understands timeline of Upper Paleolithic Age</p> <p>Understands the B.C./A.D. timeline</p> <p>Understands the gifts of civilizations</p> <p>Studies the concept of Archeology/Anthropology</p> <p>Studies growth of cultures, migrations, explorations</p> <p>Demonstrates the development and significance of the relationship between hominids and their changing environment</p> <p>Identify three distinctive traits of human beings.</p> <p>Indigenous People of the Americas</p> <p>Demonstrates familiarity with research trends and new directions in Native American Studies</p>	<p>Prepares a dry mount slide and a drawing from microscopic observation</p> <p>Weigh objects with a triple beam balance</p> <p>Classify objects according to their origins</p> <p>Understands scientific inquiry of prediction, observation, problem-solving, discovering, and solutions</p> <p>Designs and carries out a simple science experiment</p> <p>Understands how the levers, wedges, inclined plane, wheel and axle, gears, pulleys, friction, and screw</p> <p>Researches simple machines and other mechanisms as they make Rube Goldberg devices with 10 steps, including at least 6 simple machines</p> <p>Waves, Sound, and Light</p> <p>Defines relevant terms in the areas of waves, light, and sound</p> <p>Qualitatively describes wave behavior and phenomena of light and sound such as interference, the doppler effect, etc.</p>	<p>Reads and follows lab procedures</p> <p>Human Body</p> <p>Reads an informational text, answer questions based on the text, and make inferences</p> <p>Conducts research in books and online and organize the information gathered</p> <p>Reads and follow a lab procedure or directions for an activity</p> <p>Understands how the human body system function in order to maintain life.</p> <p>Understands how matter and energy are processed by the body to build, maintain, and repair the body.</p> <p>Develops their skills and abilities to do scientific investigation.</p> <p>Understand the importance of collaboration and sharing of ideas in the pursuit of scientific understanding and developing skills to do this.</p> <p>Know six human body systems, vocabulary, and functions: skeletal, muscular, digestive, circulatory, and lymphatic systems.</p> <p>Zoology- Animals</p>

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<p>Demonstrates knowledge of qualitative research methods</p> <p>Understands and appreciates the roles of art, culture, history, literature, and politics in the development of the tribal world, that relate to contemporary Native American issues</p> <p>Recognizes stereotypes about Native Americans and explain how and why these images became popular over the years</p> <p>Understand historical experiences and contemporary issues in the U.S. as well as the larger Western Hemisphere</p> <p>Early European Immigrants in North America</p> <p>Compares and contrasts the development of English settlement and colonization during the 17th century</p> <p>Investigate how mercantilism and transAtlantic trade led to the development of colonies</p> <p>Explains the development of the Southern Colonies, including but not limited to reasons established, the impact of location and place, relations with Indigenous people, and economic development</p>	<p>Demonstrates an understanding of basic formulae associated with waves, sound, and light and solves simple problems utilizing those formulae</p> <p>Designs and carries out a simple experiment that will investigate an aspect of wave phenomena</p> <p>Has a good understanding of wave phenomena and how it affects the real world</p> <p>Understands that the wave nature of sound and light is fundamental to much of today's technology</p> <p>Has a basic understanding of how television, radio, and many other things function</p>	<p>Explains vital functions of animal physiology including respiration, circulation, nutrition, reproduction, sensitivity, and adaptations</p> <p>Understands animal routines and local animals calls of vertebrate animals</p> <p>Understands the external anatomy and classification of animals</p> <p>Reviews the external anatomy of four invertebrate groups</p> <p>Reviews vertebrate classes</p> <p>Investigates the organ system of animals</p> <p>Studies the survival strategies of animals inhabiting hot and cold deserts</p> <p>Understands the relationship of humans and animals</p> <p>Explores the adaptations of African Grassland mammals and Coral Reef animals</p>

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<p>Explains the development of New England Colonies, including but not limited to reasons established, the impact of location and place, relations with American Indians, and economic development</p> <p>Understands the development of the Mid-Atlantic Colonies, including but not limited to reasons established, the impact of location and place, relations with Indigenous people, and economic development</p> <p>Describes the early English colonial society and investigates the development of its governance</p> <p>Describes European cultural diversity including the contributions of ethnic/religious groups</p> <p>Describes the Middle Passage, the growth of the POW Africans population, and the development of European colonies from their labor, especially in agriculture, architecture, cultural and political development</p> <p>Can describe the different methods of colonial self-governance in the period of Salutary Neglect</p> <p>Explains the role of the Great Awakening in creating unity in the colonies and challenging traditional authority</p>		

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<p>Human Geography</p> <p>Understands the interdependence of Man</p> <p>Understands the study of natural resources and industries</p> <p>Understands the United States (as a country), States (individual)</p> <p>Understands the production of goods</p> <p>Understands the difference between imports and exports</p> <p>Understands the concept of taxation</p> <p>World Religions</p> <p>Encounters, reflects upon, discusses, researches, writes about, understands, and begins to discover a personal independent voice on eastern religions and western religion concept of religion</p> <p>Distinguishes the fundamental features of six of the world's major religions</p> <p>Understands the differences between religions, as well as their underlying commonalities</p> <p>Understands that life is a process learning how to become human, and sees how religion</p>		

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<p>can assist that process</p> <p>Through discussions and questioning of the program, understands that life requires of each individual a constant series of choices, that at every moment each individual possesses the ability/responsibility to choose, and that religion in its “wisdom tradition” form offers them guides to compassionate, ethical choice making</p> <p>Students “embrace the world” by understanding the values, philosophy, and cosmology of the wisdom traditions that shape the different regions of the world</p> <p>Develops skills in research, analysis, expository and personal narrative writing, listening, questioning, note-taking, and speaking and presentation skills</p> <p>Uses a variety of resources, including non-fiction commentary and analysis, readings from sacred texts, biography, and historical fiction texts.</p> <p>Engages in their learning in various ways throughout the project: brainstorming, class discussions and debates, questioning, reading non-fiction and fiction texts, developing and implementing both research and evaluation tools, as well as making presentations</p>		

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