

NAD STANDARDS FOR SCIENCE

GRADE	TOPICS	STANDARDS (Next Generation Science Standard in parentheses)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
EARTH AND SPACE SCIENCES			Green Font = related content	TE=TEACHER EDITION SE=STUDENT EDITION SJ=STUDENT JOURNAL TT=TRY THIS LA=LESSON ACTIVITY EAL=EXPLORE-A-LAB MS=MATH IN SCIENCE ATBD=ACTIVITY TO BE DEVELOPED
Essential Question: How do the structure and physical phenomena of Earth and space provide evidence of God as Designer, Creator, and Sustainer of the universe?		Big Idea: The structure and processes of Earth and space are organized and governed by natural laws that give evidence of God as Designer, Creator, and Sustainer.		
Earth's Systems		S.6-8.ES.1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. (MS-ESS2-1)	Level 6 - Ch. 7.2, Ch. 8.1, 8.2, 8.3, Ch. 9.1, 9.2, 9.3 Level 8 - Ch. 8.1, 8.2, 8.3, Ch. 10.1	Level 6 -- Creating Sedimentary Rock SE 231/SJ 7; Identifying Igneous Rock SE 240/SJ 14, EAL 243, EAL 246; Core Sampling SE 264/SJ 36; Coring Earth TE 264/SJ 38; Model Sea Floor Spreading SE 272/SJ 40; Modeling Sea Floor Features TE 272/SJ 42, EAL 276, EAL 284; Studying Erosion SE 291/SJ 61; Morphing Landscapes SE 294/SJ 62, EAL 295; Water Erosion TE 296/SJ 66, EAL 297, Modeling Sand Dunes SE 309/SJ 74; Beach Dunes TE 309/SJ 76, EAL 311 Level 8 -- Currents and Temperature SE 273/SJ 7; Can Crusher SE 278/SJ 8; Pop Out TE 278/SJ 10, EAL 280, EAL 284; Moving Water SE 287/SJ 12; Factors Affecting Transpiration TE 287/SJ 14, EAL 291; Wind and Evaporation SE 295/SJ 16; How Humid Is It SE 300/SJ 24; Latitude and Temperature SE 310/SJ 28; A Faulty Candy Bar SE 369/SJ 74; Where Does It Go TE 369/SJ 76
		S.6-8.ES.2 Construct an explanation based on evidence for how geoscience processes (e.g., surface weathering and deposition by movements of water, ice, and wind) have changed Earth's surface at varying time and spatial scales (e.g., slow plate motions, uplift of large mountain ranges, rapid landslides, microscopic geochemical reactions). (MS-ESS2-2)	Level 6 - Ch. 7.2, Ch. 8.1, 8.2, 8.3, Ch. 9.1, 9.2, 9.3 Level 8 - Ch. 10.1	Level 6 -- Creating Sedimentary Rock SE 231/SJ 7, EAL 246; Studying Erosion SE 291/SJ 61; Morphing Landscapes SE 294/SJ 62, EAL 295; Water Erosion TE 296/SJ 66, EAL 297; Modeling Sand Dunes SE 309/SJ 74; Beach Dunes TE 309/SJ 76, EAL 311 Level 8 -- Glaciers on the Move SE 365/SJ 73; Faulty Candy Bar SE 369/SJ 74; Where Does It Go TE 369/SJ 76, EAL 370, EAL 373; Radiometric Decay SE 378/SJ 78; Water Clock TE 378/SJ 80; And Then What Happened TE 383/SJ 82

S.6-8.ES.3	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. (MS-ESS2-3)	Level 6 - Ch. 8.1, 8.2, 8.3, Ch. 10.1, 10.2 Level 8 - Ch. 10.1, 10.2	Level 6 -- EAL 267; Model Sea Floor Spreading SE 272/SJ 40; Modeling Sea Floor Features TE 272/SJ 42; Plate Boundary Types TE 275/SJ 44, EAL 276, EAL 284; Putting It Together SE 323/SJ 86; Geological Dig Experience TE 323/SJ 88; Stories in Stone TE 344/SJ 90; Who Goes There SE 334/SJ94; Footprint Depth TE 334/SJ 98; ID the Trilobites SE 343/SJ 100 Level 8 -- Where Does It Go TE 369/SJ 76
S.6-8.ES.4	Develop a model (conceptual or physical) to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. (MS-ESS2-4)	Level 8 - Ch. 8.2, 8.3	Level 8 -- EAL 284; Moving Water SE 287/SJ 12. EAL 291; Wind and Evaporation SE 295/SJ 16
S.6-8.ES.5	Collect data (e.g., weather maps, diagrams, visualizations, laboratory experiments) to provide evidence for how the motions and complex interactions of air masses result in changes in weather condition. (MS-ESS2-5)	Level 8 - Ch. 8.1, 8.2, 8.3, 8.4	Level 8 -- Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291, EAL 294; Wind and Evaporation SE 295/SJ 16
S.6-8.ES.6	Develop and use a model (e.g., diagrams, maps and globes, digital representations) to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. (MS-ESS2-6)	Level 7 - Ch. 8.1, Ch. 9.1, 9.2, 9.3 Level 8 - Ch. 8.3, 8.5	Level 7 -- Planetary Orbits TE 295/SJ 8; Making a Sun Clock SE 330/SJ 30; Movement of Shadows TE 330/SJ 32; Solar Energy SE 336/SJ 34; Sunlight on Spherical objects TE 336/SJ 36; The Tides SE 348/SJ 40 Level 8 -- Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291, EAL 294; Wind and Evaporation SE 295/SJ 16

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Earth and Human Activity

S.6-8.ES.7	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the results of past and current geoscience processes (e.g., plate tectonics, the Flood). (MS-ESS3-1)	Level 6 - Ch. 7.3, Ch. 8.1, 8.2, 8.3, Ch. 9.3 Level 8 - Ch. 9.3, Ch. 10.1, 10.2, 10.3	Level 6 -- ATBD; Mining Desert TE 253/SJ 22; Core Sampling SE 264/SJ 36; Coring the Earth TE 264/SJ 38, EAL 265; Model Sea Floor Spreading SE 272/SJ 40; Plate Boundary Types TE 275/SJ 44, EAL 284 Level 8 -- EAL 370; ATBD
S.6-8.ES.8	Analyze and interpret data (e.g., locations, magnitudes, frequencies) on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. (MS-ESS3-2)	Level 6 - Ch. 8.3 Level 7 - Ch. 8.2, 8.3 Level 8 - Ch. 10.1	Level 6 -- Finding the Epicenter SE 280/SJ 48; Recent Epicenters TE 280/SJ 50, EAL 284 Level 7 -- ATBD Level 8 -- ATBD
S.6-8.ES.9	Apply scientific principles to design a method for monitoring and minimizing a human impact (e.g., water usage, soil usage, pollution) on the environment. (MS-ESS3-3)	Level 8 - Ch. 9.1, 9.2, 9.3, 9.4	Level 8 -- Resource Tally SE 323/SJ 43, EAL 327; Evaluating Biofuels SE 328/SJ 44; Alternative Biofuels TE 323/SJ 46, EAL 334; Fertilizer Contest TE 336/SJ 48; Preventing Hillside Erosion SE 338/SJ 51; Testing Erosion Control TE 338/SJ 54, EAL 348, EAL 352; It's Raining SE 351/SJ 56; Currents and Temperature SE 273/SJ 7, EAL 280, EAL 291. EAL 294; Wind and Evaporation SE 295/SJ 16; It Feels Like A Sauna SE 357/SJ 60
S.6-8.ES.10	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. (MS-ESS3-4)	Level 6 - Ch. 7.3 Level 8 - Ch. 8.5, Ch. 9.1, 9.2, 9.3, 9.4	Level 6 -- MS 252; Mining Desert TE 253/SJ 22, LA 255 Level 8 -- Resource Tally SE 323/SJ 43; It's Raining SE 351/SJ 56; It Feels Like a Sauna SE357/SJ 60, EAL 334, LA 35
S.6-8.ES.11	Ask questions to clarify evidence (e.g., tables, graphs, maps of global and regional temperatures, atmospheric levels of gases, rates of human activities) of the factors that have caused the rise in global temperatures over the past century (e.g., fossil fuel combustion, cement production, agricultural activity, change in incoming solar radiation, volcanic activity). (MS-ESS3-5)	Level 6 - Ch.8.3 Level 8 - Ch. 9.1, 9.2, 9.3, 9.4	Level 6 -- EAL 284 Level 8 -- EAL 356; It Feels Like a Sauna SE 357/SJ 60; Ash Shade TE 357/SJ 64; ATBD

Earth's Place in the Universe	S.6-8.ES.12	Develop and use a model (physical, graphical or conceptual) of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. (MS-ESS1-1)	Level 7 - Ch.9.1, 9.2, 9.3 Level 8 - Ch. 8.5	Level 7 -- Make Your Own Solar Eclipse SE 327/SJ29; Make a Sun Clock SE 330/SJ 30; Movement of Shadows TE 330/SJ 32; Solar Energy SE 336/SJ 34. EAL 338, EAL 345; Moon Phases and Eclipses TE 345/SJ 38; The Tides SE 349/SJ 40; Extreme Tides TE 345/SJ 42 Level 8 -- EAL 311
	S.6-8.ES.13	Develop and use a model (physical or conceptual) to describe the role of gravity in the motions within galaxies and the solar system. (MS-ESS1-2)	Level 7 - Ch. 8.1, 8.2, Ch. 9.1, 9.2, 9.3, Ch. 10.2	Level 7 -- Planetary Orbits TE 295/SJ 8; Solar System Distances SE 296/SJ 10; Moon Orbit TE 296/SJ 12, EAL 307
	S.6-8.ES.14	Analyze and interpret data (e.g., statistical information, drawings and photographs, models) to determine scale properties (e.g., size, surface features, orbital radius) of objects in the solar system. (MS-ESS1-3)	Level 7 - Ch. 8.1, 8.2, Ch. 9.3	Level 7 -- How Much Do You Weigh SE 291/SJ 7; Planetary Orbits TE 295/SJ 8; Solar System Distances SE 296/SJ 10; Moon Orbit TE 296/SJ 12; Making Dents SE 208/SJ 14
	S.6-8.ES.15	Apply scientific principles to construct an explanation, based on evidence from rock strata, for how the geologic column is used to organize Earth's relative age and geologic history, comparing and contrasting creationist and naturalistic perspectives. (MS-ESS1-4)	Level 6 - Ch. 10.1, 10.2, 10.3 Level 8 - Ch. 1.1, 1.2, Ch. 10.2, 10.3	Level 6 -- Putting It Together SE 323/SJ 86; Geological Dig Experience TE 323/SJ 88; Stories in Stone TE 329/SJ 90, LA 329, EAL 330, EAL 331; Who Goes There SE 334/SJ 94; Footprint Depth TE 334/SJ 98, ID the Trilobites SE 343/SJ 100; Recent Extinctions TE 343/SJ 104, EAL 345 Level 8 -- EAL 21, EAL 37, EAL 42, EAL 373; And then What Happened SE 383/SJ 82; Please Stay in Order TE 394/SJ 85

ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE

Essential Question: How has God equipped humans to apply knowledge of science to solve problems for the benefit of His Creation?

Big Idea: God designed humans to wonder, question, and develop an attitude of inquiry as scientific principles are applied to the materials and forces of nature for the benefit of His Creation.

6-8	Engineering Design	S.6-8.ET.1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. (MS-ETS1-1)	These performance standards are found in multiple places throughout the By Design program.	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD
		S.6-8.ET.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. (MS-ETS1-2)		
		S.6-8.ET.3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. (MS-ETS1-3)		
		S.6-8.ET.4 Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. (MS-ETS1-4)		

HEALTH SCIENCES

Essential Question: Why does God want human beings to choose to have a healthy mind and body?

Big Idea: God designed a plan for healthful living that leads to optimum spiritual, physical, mental, and emotional health.

Health Promotion and Disease Prevention	<p>S.6-8.HS.1 Collect data from family members to compile evidence that supports the claim that personal health is influenced by the environment and genetics.</p>	<p>Level 7 - Ch. 4.2 Level 8 - Ch. 5.2, 5.3, Ch. 6.3, 6.4</p>	<p>Level 7 -- What Are Your Traits TE 151/SJ 100, EAL 153, EAL 161; Sex-Linked Traits SE 162/SJ 106 Level 8 -- Who--Or What--Controls Your Health TE 161/SJ 5; Sickle-Cell Anemia SE 167/SJ 8; The Next Generation TE 167/SJ 8, LA 168, LA 171, LA 176; Survival Game SE 177/SJ 12; Making Real Life Changes TE 177/SJ 14; Heart Disease TE 178/SJ 16, EAL 180</p>
	<p>S.6-8.HS.2 Construct a model that demonstrates the link between appropriate health care and personal health.</p>	<p>Level 6 - Ch. 6.1, 6.2 Level 8 - Ch. 6.3, 6.4, Ch. 7.1, 7.2, 7.3</p>	<p>Level 6 -- How Can I Alter My Routine to Create a Healthier Lifestyle TE 113/SJ 1, Hazards in Your Home SE 199/SJ 71; Seeking a Health Professional SE 202/SJ 72; When It Gets Worse TE 202/SJ 74 Level 8 -- ATBD; Reading Medication Labels SE 253/SJ 68, LA 256; Investigating Health Risks TE 259/SJ 74</p>
	<p>S.6-8.HS.3 Gather and synthesize information to identify barriers to obtaining appropriate health care and to practicing healthy behaviors, and suggest ways to overcome these barriers.</p>	<p>Level 8 - Ch. 5.1, Ch. 6.3, Ch. 7.3</p>	<p>Level 8 -- ATBD</p>
	<p>S.6-8.HS.4 Construct an evidence-based argument that demonstrates the importance of assuming responsibility for personal health behaviors.</p>	<p>Level 6 - Ch. 6.2, 6.3 Level 7 - Ch. 5.3, Ch. 6.1, 6.2, 6.3 Level 8 - Ch. 5.5, Ch. 6.2, 6.3, 6.4, Ch. 7.1, 7.2, 7.3</p>	<p>Level 6 -- How Can I Alter My Routine to Create a Healthier Lifestyle TE 113/SJ 1; Hazards in Your Home SE 199/SJ 71; Accidents Happen SE 207/SJ 76, LA 210, LA 212; Emergency Decisions TE 222/SJ 84 Level 7 -- Sexually Transmitted Diseases SE 201/SJ 20; Saying NO! TE 201/SJ 22, LA 206, LA 224; How Pathogens Spread TE 228/SJ 40, LA 231, EAL 234, LA 235; Hey, Wanna Trade SE 241/SJ 44; Preventing Infection TE 241/SJ 46, LA 249; Disease Defense SE 252/SJ 48 Level 8 -- Who--or What--Controls Your Health TE 161/SJ 5; What Factors Influence My Health SE 163/SJ 7, LA 176; Survival Game SE 177/SJ 12; Making Real Life Changes TE 177/SJ 14; Heart Disease TE 78/SJ 16, EAL 180, LA 203; Selecting the Best Aspirin SE 204/SJ 36, EAL 211; Reducing Fat TE 224/SJ 48, EAL 227; Evaluate and Rank Behaviors SE 231/SJ 50; Create a Risk Survey TE 231/SJ 52; Reading Medication Labels SE 253/SJ 68, LA 254, LA 255, LA 256; Investigating Health Risks TE 259/SJ 74, LA 263, LA 264</p>

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	<p>S.6-8.HS.5 Evaluate behaviors in relation to the degree to which they benefit or harm personal health and the health of others.</p>	<p>Level 6 - Ch. 6.2, 6.3 Level 7 - Ch. 5.2, 5.3, Ch. 6.3 Level 8 - Ch. 5.3, Ch. 6.1, 6.2, 6.3</p>	<p>Level 6 -- Hazards in Your Home SE 199/SJ 71; Accidents Happen SE 207/TE 76; Emergency Decisions TE 222/SJ 84; ATBD Level 7 -- Investigating Bullying SE 191/SJ 16; Interactions at School TE 191/SJ 18, LA 192; Sexually Transmitted Diseases SE 201/SJ 20; Saying NO! TE 201/SJ 22, LA 206; Infectious Disease SE 215/SJ 31; How Pathogens Spread TE 228/SJ 40, LA 231, EAL 234, LA 235 Level 8 -- What Factors Influence My Health SE 163/SJ 7, LA 187; Reducing Fat TE 224/SJ 48, EAL 227; Evaluate and Rank Behaviors SE 231/SJ 50; Create a Risk Survey TE 231/SJ 52</p>
	<p>S.6-8.HS.6 Choose a health-enhancing practice and develop a presentation designed to persuade others to adopt a similar practice.</p>	<p>Level 6 - Ch. 5.1, 5.2, 5.3, 5.4, Ch. 6.2, 6.3 Level 7 - Ch. 5.2, 5.3, Ch. 6.2, 6.3, 6.4 Level 8 - Ch. 5.2, 5.3, Ch. 6.2, 6.3, 6.4, Ch. 7.1, 7.2, 7.3</p>	<p>Level 6 -- ATBD Level 7 -- ATBD; LA 205, LA 231, LA 249; Hand Washing Techniques TE 252/SJ 50, LA 255; ATBBD Level 8 -- LA 176, EAL 180, LA 187, LA 212, EAL 227, LA 249; ATBD</p>
<p>Health Resources</p>	<p>S.6-8.HS.7 Develop guidelines for evaluating health information, products, and services, and conduct an investigation designed to assess the validity of health-related resources.</p>	<p>Level 8 - Ch. 6.4, Ch. 7.2, 7.3</p>	<p>Level 8 -- ATBD: Pressure in Advertising SE 247/SJ 64; Reading Medication Labels SE 253/SJ 68; Price Comparison TE 253/SJ 72, LA 254, LA 255, LA 256, LA 262, LA 263, LA 264; ATBD</p>

Healthy Lifestyle Choices	S.6-8.HS.8 Construct an argument that supports the claim that modifying unhealthy behaviors can enhance personal health.	Level 6 - Ch. 4.4, 4.5, Ch. 5.3, 5.4, Ch. 6.2 Level 7 - Ch. 5.3, Ch. 6.3, 6.4 Level 8 - Ch. 5.3, Ch. 6.2, 6.3, 6.4, Ch. 7.1	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.HS.9 Plan and conduct an investigation that provides evidence that peers and perceptions of norms influence the health of adolescents.	Level 6 - Ch. 6.2 Level 7 - Ch. 5.3, Ch. 6.3 Level 8 - Ch. 6.2, 6.3, 6.4, Ch. 7.1, 7.2	Level 6 -- ATBD Level 7 -- LA 205; ATBD; Hey, Wanna Tarde SE 241/SJ 44; ATBD Level 8 -- Evaluate and Rank Behaviors SE 231/SJ 50, EAL 233, LA 249, LA 262, LA 263
	S.6-8.HS.10 Construct a model that demonstrates how public health policies can influence health promotion and disease prevention.	Level 6 - Ch. 6.2, 6.3 Level 7 - Ch. 6.2, 6.3 Level 8 - Ch. 6.1, 6.2, 6.3, Ch. 7.2, 7.3	Level 6 -- ATBD Level 7 -- LA 240, LA 235, ATBD Level 8 -- ATBD
	S.6-8.HS.11 Analyze and interpret data that provides evidence to support the claim that traditional Adventist health practices promote optimal health.	Level 6 - Ch. 5.3, 5.4 Level 7 - Ch. 5.2, 5.3, Ch. 6.2, 6.4, Ch. 7.1 Level 8 - Ch. 5.2, 5.3, Ch. 6.2, 6.3	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD

LIFE SCIENCES

Essential Question: How do living organisms give evidence of God as the Designer, Creator and Sustainer of life?		Big Idea: The complexity, order, and design of living organisms provide strong evidence of God as the Designer, Creator and Sustainer of life.		
Molecules to Organisms: Structures and Processes	S.6-8.LS.1	Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells. (MS-LS1-1)	Level 6 - Ch. 1.1, Ch. 2.1, 2.2, 2.3 Level 7 - Ch. 1.1	Level 6 -- ATBD Level 7 -- ATBD
	S.6-8.LS.2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. (MS-LS1-2)	Level 6 - Ch. 2.1, 2.2, 2.3, 2.4, Ch. 3.1, 3.2, 3.3 Level 7 - Ch. 4.1, Ch. 6.1	Level 6 -- ATBD Level 7 -- ATBD
	S.6-8.LS.3	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. (MS-LS1-3)	Level 6 - Ch. 2.3, Ch. 4.1, 4.2, 4.3, 4.4, 4.5	Level 6 -- ATBD
	S.6-8.LS.4	Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors (e.g., nest building, herding, vocalization, colorful plumage) and specialized plant structures (e.g., bright flowers, flower nectar, odors that attract insects that transfer pollen, hard shells on nuts that squirrels bury) affect the probability of successful reproduction of animals and plants respectively. (MS-LS1-4)	Level 6 - Ch. 1.1 Level 7 - Ch. 3.3, 3.4 Level 8 - Ch. 1.1, Ch. 2.4, Ch. 3.3, Ch. 4.2, 4.4	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.LS.5	Construct a scientific explanation based on evidence (e.g., drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, fish growing larger in larger ponds) for how environmental (e.g., availability of food, light, space, water) and genetic (e.g., large breed cattle and species of grass affecting growth) factors influence the growth of organisms. (MS-LS1-5)	Level 7 - Ch. 1.1, 1.2, 1.3, 1.4, Ch. 4.2, 4.3 Level 8 - Ch. 3.2, 3.3, Ch. 4.1, 4.3, 4.4	Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.LS.6	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. (MS-LS1-6)	Level 6 - Ch. 2.3, 2.4 Level 8 - Ch. 3.1	Level 6 -- ATBD Level 8 -- ATBD
	S.6-8.LS.7	Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. (MS-LS1-7)	Level 6 - Ch. 1.3, Ch. 2.4, Ch. 3.2 Level 7 - Ch. 1.2, 1.3, 1.4 Level 8 - Ch. 2.1	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.LS.8	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. (MS-LS1-8)	Level 6 - Ch. 4.2, 4.4, 4.5	Level 6 -- ATBD

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Ecosystems: Interactions, Energy and Dynamics	S.6-8.LS.9	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. (MS-LS2-1)	Level 8 – Ch. 4.1, 4.3, 4.4	Level 8 -- ATBD
	S.6-8.LS.10	Construct an explanation that predicts patterns of interactions (e.g., competitive, predatory, mutually beneficial) among organisms across multiple ecosystems. (MS-LS2-2)	Level 8 - Ch. 4.1, 4.3, 4.4, 4.5	Level 8 -- ATBD
	S.6-8.LS.11	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. (MS-LS2-3)	Level 6 - Ch. 1.1, 1.2, 1.3 Level 8 - Ch. 3.1, Ch. 4.1, 4.3	Level 6 -- ATBD Level 8 -- ATBD
	S.6-8.LS.12	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-4)	Level 8 - Ch. 4.1, 4.3, 4.4	Level 8 -- ATBD
	S.6-8.LS.13	Evaluate competing design solutions (e.g., scientific, economic, social considerations) for maintaining biodiversity and ecosystem services (e.g., water purification, nutrient recycling, soil erosion prevention, habitat, enhancement). (MS-LS2-5)	Level 8 - Ch. 3.3, Ch. 4.1, Ch. 9.1, 9.2, 9.3, 9.4	Level 8 -- ATBD
Heredity: Inheritance and Variation of Traits	S.6-8.LS.14	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. (MS-LS3-1)	Level 6 - Ch. 3.1, 3.2 Level 7 - Ch. 4.1	Level 6 -- ATBD Level 7 -- ATBD
	S.6-8.LS.15	Develop and use a model (e.g., Punnett squares, diagrams, simulations) to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. (MS-LS3-2)	Level 6 - Ch. 3.1 Level 7 - Ch. 4.1, 4.2, 4.3 Level 8 - Ch. 2.2, 2.3, 2.4	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD

Life: Origins, Unity, and Diversity	S.6-8.LS.16	Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth, comparing and contrasting creationist and naturalist perspectives. (MS-LS4-1)	Level 6 - Ch. 10., 10.2, 10.3 Level 8 - Ch. 1.2, 1.3, Ch. 10.3	Level 6 -- ATBD Level 8 -- ATBD
	S.6-8.LS.17	Apply scientific principles to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, comparing and contrasting creationist and naturalist perspectives. (MS-LS4-2)	Level 6 - Ch. 10.1, 10.2, 10.3 Level 8 - Ch. 1.3, Ch. 10.3	Level 6 -- ATBD Level 8 -- ATBD
	S.6-8.LS.18	Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (MS-LS4-4)	Level 6 - Ch. 1.1 Level 7 - Ch. 4.2, 4.3 Level 8 - Ch. 1.1, Ch. 3.2, Ch. 4.2, 4.4	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.LS.19	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (MS-LS4-5)	Level 7 - Ch. 4.4	Level 7 -- ATBD
	S.6-8.LS.20	Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (MS-LS4-6)	Level 7 - Ch. 4.1, 4.2 Level 8 - Ch. 1.1, Ch. 4.2, 4.3, 4.4	Level 7 -- ATBD Level 8 -- ATBD
	S.6-8.LS.21	Apply scientific principles to begin to construct and share a personal model that explains origins of life on earth and acknowledges God as the Creator.	Level 6 - Ch. 1.1, 1.2, 1.3 Level 7 - Ch. 1.1, Ch. 4.1 Level 8 - Ch. 1.1, 1.2, Ch. 10.2, 10.3	Level 6 -- ATBD Level 7 -- ATBD Level 8 -- ATBD

PHYSICAL SCIENCES

Essential Question: How does the order and consistency of natural laws provide evidence of God as the Designer, Creator, and Sustainer of the physical world?

Big Idea: Matter and energy are organized and behave according to natural laws that cannot be explained by chance but are consistent and give evidence of God as the Designer, Creator, and Sustainer.

Matter and Its Interactions	S.6-8.PS.1 Develop models (e.g., drawings, 3D ball and stick structures, computer representations) to describe the atomic composition of simple molecules (e.g., ammonia, methanol) and extended structures (e.g., sodium chloride, diamonds). (MS-PS1-1)	Level 6 - Ch. 12.1, 12.3 Level 8 - Ch. 13.1, 13.2, 13.3	Level 6 -- Atomic Models SE 402/SJ 38; Molecular Models SE 420/SJ 50; Chemical Formula of a Molecule TE 420/SJ 54, EAL 422 Level 8 -- Let's Join Up SE 477/SJ 65; Investigate Ionic Bonds SE 481/SJ 66; Model of Calcium Chloride TE 481/SJ 68, EAL 482; Build Models of Molecules SE 488/SJ 70; Build Large Molecules TE 488/SJ 72; Build and Name Ionic Compounds SE 495/SJ 78; Build Diatomic Models TE 495/SJ 80, EAL 499
	S.6-8.PS.2 Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction (e.g., burning sugar or steel wool, fat reacting with sodium hydroxide, mixing zinc with hydrogen chloride) has occurred. (MS-PS1-2)	Level 6 - Ch. 11.3, 11.4, Ch. 12.2 Level 8 - Ch. 11.3 , Ch. 14.1, 14.2	Level 6 -- Reactions in a Bag SE 381/SJ 16, EAL 382, EAL 386; Pondering Plaster SE 388/SJ 20, EAL 389, EAL 391; Degrees of Change TE 391/SJ 24, EAL 393; Copper Coat a Nail Level 8 -- Cabbage Chemistry SE 423/ SJ 18; Let's Join Up SE 477/SJ 65; How Do You Know SE 505/SJ 91, EAL 507; Making Changes SE 509/SJ 92; Testing Powders TE 509/SJ 94; Investigating Chemical Reactions SE 510/SJ 96, EAL 512, EAL 513; Where Did It Go SE 519/SJ 100, EAL 522, EAL 524
	S.6-8.PS.3 Gather and make sense of information to describe that synthetic materials come from natural resources and impact society (e.g., new medicines, foods, alternative fuels). (MS-PS1-3)	Level 6 - Ch. 7.3 Level 8 - Ch. 9.1	Level 6 -- Nail File or Emory Board SE 249/SJ 18; Building Rocks TE 249/SJ 20; ATBD Level 8 -- Resource Tally SE 323/SJ 43; Evaluating Biofuels SE 328/SJ 44 Alternative Biofuels TE 328/SJ 46; Fertilizer Contest TE 336/SJ 48
	S.6-8.PS.4 Develop a model (e.g., drawings, diagrams) that predicts and describes changes in particle (e.g., molecules, inert atoms) motion, temperature, and state of a pure substance (e.g., water, carbon dioxide, helium) when thermal energy is added or removed. (MS-PS1-4)	Level 6 - Ch. 11.2 Level 7 - Ch. 14.1, 14.3 Level 8 - Ch. 11.1, Ch. 14.3	Level 6 -- Dissolvign Sugar SE 372/SJ 12, EAL 374 Level 7 -- Heat Experiment SE 513/SJ 93; Heat and Temperature SE 540/SJ 107; Comparing Conduction TE 540/SJ 108, EAL 543, EAL 546, EAL 548, EAL 555 Level 8 -- EAL 410, EAL 527

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Motion and
Stability:
Forces and
Interactions

S.6-8.PS.5	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. (MS-PS1-5)	Level 6 - Ch. 11.3 Level 8 - Ch. 14.2, 14.3, 14.4	Level 6 -- Reaction in a Bag SE 381/SJ 16, EAL 382, EAL 386 Level 8 -- Where Did It Go SE 519/ SJ 100; Conserving Mass TE 519/ SJ 102
S.6-8.PS.6	Design, construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. (MS-PS1-6)	Level 8 - Ch. 12.1, Ch. 14.1, 14.2	Level 8 -- Let's Join Up SE 477/SJ 65, EAL 513; ATBD
S.6-8.PS.7	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects (e.g., two cars, car and stationary objects, meteor and space vehicle). (MS-PS2-1)	Level 7 - Ch. 12.2, 12.3	Level 7 -- Collisions TE 453/SJ 48; ATBD
S.6-8.PS.8	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. (MS-PS2-2)	Level 7 - Ch. 12.1, 12.2, 12.3	Level 7 -- Accelerated Motion SE 449/SJ 42; Comparing Accelerated Motion TE 449; Collisions TE 453/SJ 48, EAL 454, EAL 458
S.6-8.PS.9	Ask questions about data (e.g., effect of the number of turns of wire on the strength of an electromagnet, effect of increasing the number or strength of magnets on speed of an electric motor) to determine the factors that affect the strength of electric and magnetic forces (e.g., electromagnets, electric motors, generators). (MS-PS2-3)	Level 6 - Ch. 14.1, 14.2, 14.3	Level 6 -- Creating Magnets SE 482/SJ 108; Generating Electric Current SE 490/SJ 114; Different Magnets TE 490/SJ 116, EAL 492; Making a Generator SE 497/SJ 118; Using Electric Current TE 497/SJ 120, EAL 500
S.6-8.PS.10	Construct and present arguments using evidence (e.g., data generated from simulations or digital tools; charts displaying mass, strength of interaction, distance from the Sun, orbital periods of objects within the solar system) to support the claim that gravitational interactions exert attraction and depend on the masses of interacting objects. (MS-PS2-4)	Level 7 - Ch. 8.1, 8.2, Ch. 9.1, 9.3	Level 7 -- How Much Do You Weigh SE 291/SJ 7; Planetary Orbits TE 295/SJ 8, EAL 332; The Tides SE 348/SJ 40; Extreme Tides TE 348/SJ 42
S.6-8.PS.11	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact (e.g., interactions of magnets, electrically-charged strips of tape, electrically-charged pith balls). (MS-PS2-5)	Level 6 - Ch. 13.1, Ch. 14.1, 14.2, 14.3 Level 7 - Ch. 12.3, 12.4	Level 6 -- Electrostatic Discharge SE 437/SJ 73, LA 438; Taking Charge SE 440/SJ 74; Distance and Strength TE 440/SJ 76; Creating Magnets SE 482/SJ 108, EAL 483, EAL 489; Generating Electric Current SE 490/SJ 114; Different Magnets TE 490/SJ 116, EAL 492; Making a Generator SE 497/SJ 114; Using Electric Current TE 497/SJ 120, EAL 500 Level 7 -- EAL 461, EAL 462, EAL 472

Energy	S.6-8.PS.12	Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and the speed of an object (e.g., riding a bicycle at different speeds, rolling different sizes of rock downhill, getting hit by a Wiffle ball versus a tennis ball). (MS-PS3-1)	Level 7 - Ch. 12.2, Ch. 14.1, 14.2	Level 7 -- Accelerated Motion SE 449/SJ 42; Comparing Accelerated Motion TE 449/SJ 46; Collisions TE 453/SJ 48, EAL 516; Swinging Pendulum TE 518/SJ 94, EAL 519; Investigating Potential Energy SE 520/SJ 98, EAL 526
	S.6-8.PS.13	Develop a model (e.g., representations, diagrams, pictures, written descriptions) to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system (e.g., the Earth and either a roller coaster cart at varying positions on a hill or objects at varying heights on shelves, changing direction/orientation of a magnet, balloon with static electrical charge brought close to a classmate's hair). (MS-PS3-2)	Level 6 - Ch. 13.1, Ch. 14.1 Level 7 - Ch. 12.3, Ch. 14.1, 14.2	Level 6 -- Electrostatic Discharge SE 437/SJ 73; Taking Charge SE 440/SJ 174; Distance and Strength TE 440/SJ 176; Creating Magnets SE 482/SJ 108, EAL 483, EAL 489 Level 7 -- EAL 461, EAL 462; Swinging Pendulum TE 518/SJ 94; Investigating Potential Energy SE 520/SJ 98, EAL 526
	S.6-8.PS.14	Apply scientific principles to design, construct, and test a device (e.g., insulated box, solar cooker, Styrofoam cup) that either minimizes or maximizes thermal energy transfer. (MS-PS3-3)	Level 7 - Ch. 14.3, 14.4	Level 7 -- Heat Experiment SE 523/SJ 93; Comparing Conduction TE 540/SJ 108, EAL 541, EAL 543; Cold Stuff SE 554/SJ 110, EAL 555
	S.6-8.PS.15	Plan an investigation (e.g., comparing final water temperatures after different masses of ice are melted in the same volume of water with the same initial temperature) to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. (MS-PS3-4)	Level 7 - Ch. 14.3, 14.4	Level 7 -- Heat Experiment SE 513/SJ 93, EAL 538, EAL 543, EAL 546; Cold Stuff SE 554/SJ 110; Cool Down, or Warm Up TE 554/SJ 112
	S.6-8.PS.16	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object. (MS-PS3-5)	Level 7 - Ch. 12.2, 12.3, Ch. 14.1, 14.2	Level 7 -- Collisions SE 453/SJ 48, EAL 465, EAL 516, EAL 519, Investigating Potential Energy SE 520/SJ 98, EAL 526, EAL 532
Waves and Their Applications in Technologies for Information Transfer	S.6-8.PS.17	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. (MS-PS4-1)	Level 7 - 11.1, 11.2	Level 7 -- Make Waves SE 398/SJ 9, EAL 399, EAL 406; Gluba SE 407/SJ 12, EAL 411
	S.6-8.PS.18	Develop and use a model (e.g., drawings, simulations, written descriptions) to describe that waves are reflected, absorbed, or transmitted through the various materials. (MS-PS4-2)	Level 7 - Ch. 11.1, 11.2, 11.4	Level 7 -- EAL 410, EAL 411, EAL 420, EAL 421, EAL 424, EAL 425, Creating Interference SE 427/SJ 20; Creating More Interference TE 427/SJ 22; Blending Colors TE 429/SJ 24
	S.6-8.PS.19	Integrate qualitative scientific and technical information to support the claim that digitized signals (e.g., fiber optic cable transmits light pulses, radio wave pulses in Wi-Fi devices, conversion of stored binary patterns to make sound or text on a computer screen) are a more reliable way to encode and transmit information than analog signals. (MS-PS4-3)	Level 7 - Ch. 11.3	Level 7 - ATBD