

NAD STANDARDS FOR SCIENCE

GRADE	TOPICS	STANDARDS (Next Generation Science Standard in parentheses)		INQUIRY ACTIVITIES
EARTH AND SPACE SCIENCES			BY DESIGN CHAPTER CORRELATION 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.3-5.ES.1 Represent data (e.g., average temperature, precipitation, wind direction) in tables and graphical displays to describe typical weather conditions expected during a particular season. (3-ESS2-1)	Level 3 - Ch. 8.1, 8.2, 8.3 Level 5 - Ch. 8.1, 8.3	Level 3 -- Measuring Pressure SE 241/SJ 24; Comparing Results TE 241/SJ 26, TT 248; Temperature Changes SE 249/SJ 28; Other Weather Factors TE 249/SJ 30, EAL 252; Measuring Wind Direction TE 253/SJ 32 Level 5 -- Observing Air Pressure SE 243/SJ 8; Pressure in Other Locations TE 243/SJ 10; Cloud Cover and Weather SE 262/SJ 16; Fronts and the Weather TE 262/SJ 18; Build Your Own Anemometer TE 263/SJ 20
		S.3-5.ES.2 Obtain and combine information to describe climates in different regions of the world. (3-ESS2-2)	Level 3 - Ch. 8.2, 8.3 Level 5 - Ch. 8.4	Level 3 -- TT 258; Heat It Up SE 259/SJ 34; Hot Colors TE 259/SJ 36, EAL 265, EAL 266 Level 5 -- EAL 273, EAL 275
		S.3-5.ES.3 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation (e.g., angle of slope in downhill movement of water, amount of vegetation, speed of wind, relative rate of deposition, cycles of freezing and thawing water, cycles of heating and cooling, volume of water flow). (4-ESS2-1)	Level 4 - Ch. 7.3, 7.4	Level 4 -- TT 238; Washing Away Soil SE 239/SJ 16; Mudflow in a Jar TE 245/SJ 20, EAL 247; Ice Age Maximum SE 251/SJ 24; Ice Dam Meltdown TE 251/SJ 26; EAL 254

		<p>S.3-5.ES.4 Analyze and interpret data from maps, including topographic maps, to describe patterns of Earth's features. (4-ESS2-2)</p>	<p>Level 3 - Ch. 7.1 Level 4 - Ch. 7.1</p>	<p>Level 3 -- TT 212, ATBD Level 4 -- TT 220, LA 225, ATBD</p>
		<p>S.3-5.ES.5 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact (e.g., influence of ocean on ecosystems, landform shape, climate; influence of the atmosphere on landforms and ecosystems; influence of mountain ranges on winds and clouds). (5-ESS2-1)</p>	<p>Level 3 - Ch. 7.1, Ch. 8.2 Level 4 - Ch. 7.1, 7.3</p>	<p>Level 3 -- Earth's Land and Water SE 213/SJ 8; Seafloor Mapping TE 213/SJ 10, EAL 217 Level 4 -- TT 220, An Egg-Like Earth SE 221/SJ 8; More Earth Models TE 221/SJ 10</p>
		<p>S.3-5.ES.6 Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. (5ESS2-2)</p>	<p>Level 3 - Ch. 7.1 Level 4 - Ch. 7.1 Level 5 - Ch. 8.2, Ch. 10.1, 10.3</p>	<p>Level 3 -- TT 212; Earth's Land and Water SE 213/SJ 8; Salty or Fresh TE 216/SJ 12 Level 4 -- ATBD Level 5 -- EAL 253; Drinkable Water SE 323/SJ 64; Freshwater Catch TE 323/SJ 66 EAL 327; Water Underground SE 337/SJ 76; EAL 341</p>

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Earth and Human Activity

<p>S.3-5.ES.7</p>	<p>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard (e.g., barriers to prevent flooding, wind resistant roofs, lightning rods). (3-ESS3-1)</p>	<p>Level 3 - Ch. 8.2 Level 5 - Ch. 8.3</p>	<p>Level 3 -- ATBD Level 5 -- ATBD</p>
<p>S.3-5.ES.8</p>	<p>Obtain and combine information to describe that energy and fuels are derived from natural resources (e.g., wind energy, water behind dams, sunlight, fossil fuels, fissile materials) and their uses affect the environment (e.g., loss of habitat due to dams, surface mining, air pollution). (4-ESS3-1)</p>	<p>Level 3 - Ch. 3.4, 3.5 Level 4 - Ch. 3.4, Ch. 8.1, 8.3 Level 5 - Ch. 10.3, 10.4</p>	<p>Level 3 -- Water Monitor TE 107/SJ 54; Connecting to Resources SE 113/SJ 56; What's Inside TE 113/SJ 58; Pollution in the Air TE 117/SJ 60, EAL 119, EAL 120 Level 4 -- The Game of Life SE 109/SJ 56; Locally Threatened Species TE 109/SJ 58, EAL 112 Level 5 -- Modeling Global Warming with a Terrarium SJ 91; ATBD</p>
<p>S.3-5.ES.9</p>	<p>Generate and compare multiple solutions (e.g., Earthquake resistant building, monitoring volcanic activity) to reduce the impacts of natural Earth processes on humans. (4-ESS3-2)</p>	<p>Level 4 - Ch. 7.2, 7.3</p>	<p>Level 4 -- Stand Up to Earthquakes SE 228/SJ 4; A Strong Up to Earthquakes TE 228/SJ 14, Mudflow in a Jar TE 245/SJ 20</p>
<p>S.3-5.ES.10</p>	<p>Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. (5-ESS3-1)</p>	<p>Level 3 - Ch. 3.5 Level 4 - Ch. 8.3 Level 5 - Ch. 10.2, 10.3, 10.4</p>	<p>Level 3 -- TT 112; Connecting to Resources SE 113; Pollution in the Air TE 117/SJ 60, EAL 119, EAL 120 Level 4 -- TT 280; Cookie Mining SE 280/SJ 42; Restoring the Land TE 280/SJ 44, EAL 283 Level 5 -- From Land to Ocean SE 332/SJ 68; Pollutants in Water TE 332/SJ 70; Runoff Pollution TE 334/SJ 72; Water Underground SE 337/SJ 76; Polluting Aquifers TE 337/SJ 78, EAL 341; Native vs Non-native SE 344/SJ 80; Green Gardening TE 344/SJ 82, LA 346</p>

	Earth's Place in the Universe	S.3-5.ES.11 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. (4-ESS1-1)	Level 4 - Ch.7.1, 7.2, 7.4, Ch. 8.2	Level 4 - TT 262; Changing a Rock SE 263/SJ 30; TT 272; Fossil Layers SE 273/SJ 38; Indoor Fossil Dig TE 273/SJ 40, EAL 275
		S.3-5.ES.12 Make observations at different times of year to relate the amount of daylight to the time of year. (1-ESS1-2)	Level 4 - Ch. 9.4	Level 4 -- ATBD
		S.3-5.ES.13 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. (5-ESS1-2)	Level 3 - Ch. 8.3, Ch. 9.2, 9.3 Level 4 - Ch. 9.2 Level 5 - Ch. 8.4	Level 3 -- EAL 265; TT 280; The Growing and Shrinking Shadow SE 281/SJ 44; Shifting Shadows TE 281/SJ 46, EAL 283; Seasons on Earth TE 284/SJ 48; Now I See It, Now I Don't SE 289/SJ 50, A Lunar Eclipse TE 289/SJ 52 Level 4 -- Make a Sundial TE 295/SJ 52; Star Map SJ 64 Level 5 -- ATBD

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.		
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3-5	Engineering Design	S.3-5.ET.1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)	These performance standards are found in multiple places throughout the By Design program.	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
		S.3-5.ET.2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem (3-5-ETS1-2)		
		S.3-5.ET.3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved. (3-5-ETS1-3)		

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	S.3-5.HS.1	Make observations to construct an evidence-based link between healthy behaviors and personal health.	Level 3 - Ch. 4.1, 4.2, Ch. 5.3, Ch. 6.2, 6.3 Level 4 - Ch. 4.2, 4.3, Ch. 5.3 Level 5 - Ch. 7.1, 7.2, 7.3	Level 3 -- How Can Food Help Me Stay Healthy TE 127/SJ 2; Staying Healthy TE 127/SJ 6, TT 130; Testing Sunscreens SE 131/SJ 8; UV Filtering TE 131/SJ 10; Hand Washing and Drying TE 133/SJ 12, LA 135, TT 140; Bacteria Gardens SE 141/SJ 116; Cleaning the Gardens TE 141/SJ 18, LA 144; Make It Stronger TE 162/SJ 30, TT 172; Keep Your Heart Healthy SE 173/SJ 36, EAL 175; Measuring Breath SE 192/SJ 46; Cool Down TE 192/SJ 48; Aerobic Heart TE 193/SJ 50, LA 202; ATBD Level 4 -- Balanced Diet SE 137/SJ 4; Greasy Chips TE 137/SJ 14, LA 139; Exercise Journal SE 141/SJ 16, LA 142, L 143; ATBD Level 5 -- How Can I Make Healthy Food Choices TE 159/SJ 1; Spreading Disease SE 205/SJ 51, SE 209/SJ 52; Deaths from Diseases Add Up SE 218/SJ 56, EAL 222; Sleep for a Week SE 228/SJ 60; Fruits and Veggies TE 228/SJ 62; Personal Fitness TE 229/SJ 64, EAL 230, ATBD
	S.3-5.HS.2	Construct an argument that spiritual, emotional, intellectual, physical, and social health are interrelated and dependent on one another.	Level 4 - Ch. 4.2, 4.3, Ch. 5.2 , Ch. 6.2, 6.3	Level 4 -- Balanced Diet SE 137/SJ 4, LA 139; Exercise Journal SE 141/SJ 16, LA 142; Health Rankings SE 147/SJ 20; Tracking Responses TE 147/SJ 22, LA 149; That Need for One More SE 169/SJ 30; Making Decisions SE 179/SJ 38; Decisions, Decisions SE 197/SJ 48, TT 200; Exploring Emotions SE 201/SJ 52, LA 203
	S.3-5.HS.3	Analyze patterns of accidental injuries in different locations; develop a specific action plan designed to reduce accidents; evaluate the success of the plan.	Level 4 - Ch. 4.2	Level 4 -- ATBD
	S.3-5.HS.4	Develop a model that demonstrates effective verbal and nonverbal communication skills to enhance health and reduce health risks.	Level 3 - Ch. 6.3 Level 4 - Ch. 5.3, Ch. 6.1, 6.3	Level 3 -- LA 201, LA 202 Level 4 -- TT 178, LA 181; ArtLink TE 183, LA 183, LA 185, TT 206, LA 204; Say What SE 207/SJ 56, LA 210
	S.3-5.HS.5	Use scientific evidence to develop a family health plan designed to strengthen and enhance personal health.	Level 3 - Ch. 4.1, Ch. 5.3, Ch. 6.3 Level 4 - Ch. 4.2, Ch. 5.3 Level 5 - Ch. 7.1	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD

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<p>Health Resources</p>	<p>S.3-5.HS.6 Analyze and communicate the reliability of health information, products and local services.</p>	<p>Level 3 - Ch. 5.3, Ch. 6.3 Level 5 - Ch. 7.3</p>	<p>Level 3 -- ATBD Level 5 -- ATBD</p>
<p>Healthy Lifestyle Choices</p>	<p>S.3-5.HS.7 Construct a model that illustrates the various influences that impact personal health.</p>	<p>Level 3 - Ch. 4.1, Ch. 5.3, Ch. 6.3 Level 4 - Ch. 4.2, 4.3, Ch. 5.3 Level 5 - Ch. 7.3</p>	<p>Level 3 -- ATBD Level 4 -- ATBD Level 5 -- LA 227; Sleep for a Week SE 228/SJ 60; Fruits and Veggies TE 228/SJ 62; Personal Fitness TE 229/SJ 64, EAL 230; ATBD</p>
	<p>S.3-5.HS.8 Conduct an investigation to evaluate the accuracy/influence of the media on health.</p>	<p>Level 5 - Ch. 7.2</p>	<p>Level 5 -- ATBD</p>
	<p>S.3-5.HS.9 Construct a model that demonstrates the ability to use decision-making skills to enhance health.</p>	<p>Level 4 - Ch. 5.3, Ch. 6.1, 6.2, 6.3</p>	<p>Level 4 -- ATBD</p>
	<p>S.3-5.HS.10 Select a personal health goal, evaluate health resources to develop and implement a plan aimed at achieving the goal, and monitor progress toward the goal.</p>	<p>Level 3 - Ch. 4.1, Ch. 5.1, 5.3, Ch. 6.2, 6.3 Level 4 - Ch. 4.2, Ch. 5.1, 5.3, Ch. 6.2</p>	<p>Level 3 -- How Can Food Make Me Healthy TE 127/SJ 2; Staying Healthy TE 127/SJ 6, TT 130; Testing Sunscreens SE 131/SJ 8; UV Filtering TE 131/SJ 10; Hand Washing and Drying TE 133/SJ 12, LA 135; Make It Stronger TE 162/SJ 30, TT 172; Keep Your Heart Healthy SE 173/SJ 36, EAL 175; Measuring Breath SE 191/SJ 46; Cool Down TE 191/J 48; The Aerobic Heart TE 193/SJ 50, LA 202 Level 4 -- How Can I take Care of My Body to Stay Healthy TE 121/SJ 4, Balanced Diet SE 137/SJ 12; Exercise Journal TE 141/SJ 16, LA 142, LA 143; Choices We Make SE 159/SJ 26; Making Decisions SE 179/SJ 38; Peer Pressure TE 179/SJ 40, LA 183, LA 185, LA 203</p>
	<p>S.3-5.HS.11 Gather, synthesize, and present information from the Bible about God's plan for healthy living.</p>	<p>Level 3 - Ch. 5.3, Ch. 6.3 Level 4 - Ch. 4.2, Ch. 5.3, Ch. 6.2</p>	<p>Level 3 -- How Can Food Make Me Healthy TE 127/SJ 2 Staying Healthy TE 127/SJ 6; Make It Stronger TE 162/SJ 30, TT 172; Keep Your Heart Healthy SE 173/SJ 36, EAL 175; The Aerobic Heart TE 193/SJ 50 Level 4 -- How Can I Take Care of My Body to Stay Healthy TE 121/SJ 4, Balanced Diet SE 137/SJ 12; Exercise Journal TE 141/SJ 16, LA 142, LA 143</p>

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.		
3-5	Molecules to Organisms: Structures and Processes	S.3-5.LS.1 Develop models (e.g., drawings, diagrams) to describe that organisms have unique and diverse life cycles but all have birth, growth, reproduction, and death in common. (3-LS1-1)	Level 3 - Ch. 1.3, Ch. 2.1, 2.2 Level 4 - Ch. 1.4 Level 5 - Ch. 1.3, Ch. 5.1, 5.2, 5.3, Ch. 6.1, 6.2	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
		S.3-5.LS.2 Construct an argument that plants and animals have internal and external structures (e.g., thorns, stems, roots, colored petals, heart, stomach, lung brain, skin) that function to support survival, growth, behavior, and reproduction. (4-LS1-1)	Level 3 - Ch. 2.1, Ch. 5.1, Ch. 6.1 Level 4 - Ch. 1.1, 1.3, 1.4, Ch. 2.1, 2.2 Level 5 - Ch. 3.1, 3.2, 3.3, 3.4, Ch. 4.3, Ch. 5.2, 5.3, Ch. 6.1, 6.2	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
		S.3-5.LS.3 Use a model to describe systems of information transfer (e.g., nerves, hormones) that animals use to receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. (4-LS1-2)	Level 4 - Ch. 4.1, Ch. 5.2	Level 4 -- ATBD
		S.3-5.LS.4 Support an argument that plants get the materials they need for growth chiefly from air and water. (5-LS1-1)	Level 3 - Ch., 2.1, Ch. 2.3 Level 4 - Ch. 1.1	Level 3 -- ATBD Level 4 -- ATBD
	Ecosystems: Interactions, Energy and Dynamics	S.3-5.LS.5 Construct an argument that some animals form groups that help members survive. (3-LS2-1)	Level 4 - Ch. 2.2, Ch. 3.2 Level 5 - Ch. 3.3, Ch. 4.1, 4.3	Level 4 -- ATBD Level 5 -- ATBD
		S.3-5.LS.6 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. (5-LS2-1)	Level 3 - Ch. 3.1 Level 4 - Ch. 3.1, 3.2, 3.3, 3.4 Level 5 - Ch. 4.1, 4.2, 4.3	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
	Heredity: Inheritance and Variation of Traits	S.3-5.LS.7 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (3-LS3-1)	Level 3 - Ch. 1.1 , 1.3, Ch. 2.2 Level 4 - Ch. 1.1, 1.4 Level 5 - Ch. 1.3, Ch. 6.1	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
		S.3-5.LS.8 Use evidence to support the explanation that traits can be influenced by the environment (e.g., Galapagos finches, peppered moth). (3-LS3-2)	Level 3 - Ch. 3.1, 3.2, 3.3, 3.4 Level 4 - Ch. 2.1, 2.2, Ch. 3.3 Level 5 - Ch. 3.1, 3.2, 3.3, 3.4	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD

Life: Origins, Unity, and Diversity	S.3-5.LS.9	Analyze and interpret data (e.g., type, size, distributions) from fossils to provide evidence of the organisms and the environments (e.g., marine fossils on dry land, tropical plant fossils in Arctic areas, fossils of extinct organisms) in which they lived long ago. (3-OS4-1)	Level 4 - Ch. 8.2	Level 4 -- ATBD
	S.3-5.LS.10	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants with larger thorns are less likely to be eaten by predators, animals with better camouflage coloration are more likely to survive and to reproduce). (3-LS4-2)	Level 4 - Ch. 2.1, 2.2 Level 5 - Ch. 3.1, 3.2, 3.3	Level 4 -- ATBD Level 5 -- ATBD
	S.3-5.LS.11	Construct an argument with evidence (e.g., needs, characteristics) that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	Level 3 - Ch. 3.1, 3.2, .3.3, 3.4 Level 4 - Ch. 2.1, 2.2, Ch. 3.3	Level 3 -- ATBD Level 4 -- ATBD
	S.3-5.LS.12	Make a claim about the merit of a plant or animal adaptation in response to an environmental change (e.g., land characteristics, water distribution, temperature, food, other organisms). (3-LS4-4)	Level 3 - Ch. 3.2, 3.3, 3.4 Level 4 - Ch. 2.1, 2.2, Ch. 3.2, 3.3 Level 5 - Ch. 3.1, 3.2, 3.3, 3.4, Ch. 4.3	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD
	S.3-5.LS.13	Construct an argument with evidence to support that God has created within living things a pool of variations that allows organisms to adapt to changes in the environment.	Level 4 - Ch. 2.1, 2.2 Level 5 - Ch. 3.1, 3.2, 3.3, 3.4	Level 4 -- ATBD Level 5 -- ATBD
	S.3-5.LS.14	Apply scientific principles to begin to construct a personal model that explains origins of life on earth and acknowledges God as the Creator .	Level 3 - Ch. 1.1 Level 4 - Ch . 1.1, 1.2, Ch. 4.1 Level 5 - Ch. 1.1, 1.2, 1.3	Level 3 -- ATBD Level 4 -- ATBD Level 5 -- ATBD

PHYSICAL SCIENCES

<p>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?</p>		<p>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.</p>			
<p>Matter and Its Interactions</p>	<p>S.3-5.PS.1</p>	<p>Develop a model to describe that matter is made of particles too small to be seen (e.g., add air to expand a basketball, compress air in a syringe, dissolve sugar in water, evaporate salt water). (5-PS1-1)</p>	<p>Level 4 - Ch. 10.1, 10.2, 10.3</p>	<p>Level 4 -- TT 338, TT 346; Look Closer and Closer SE 347/SJ 18; Making Mosaics TE 347/SJ 20, EAL 350; To Dissolve or Not SE 351/SJ 22; Temperature and Dissolving TE 351/SJ 24</p>	
	<p>S.3-5.PS.2</p>	<p>Measure and graph quantities to provide evidence that the total weight of matter is conserved regardless of the type of change (e.g., phase changes, dissolving, mixing) that occurs when heating, cooling, or mixing substances. (5-PS1-2)</p>	<p>Level 4 - Ch. 10.1, 10.4, 10.5</p>	<p>Level 4 -- TT 358; Making Rust TE 359/SJ 28, EAL 362</p>	
	<p>S.3-5.PS.3</p>	<p>Make observations and measurements to identify materials (e.g., powders, metals, minerals, liquids) based on their properties (e.g., color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, solubility). (5-PS1-3)</p>	<p>Level 4 - Ch. 8.1, Ch. 10.1, 10.2, Ch. 11.1, 11.2</p>	<p>Level 4 -- TT 262; Mystery Rocks TE 266/SJ 34, EAL 367; To Dissolve or Not SE 353/SJ 22; Changing Matter SE 359/SJ 26; Making Rust TE 359/SJ 28; Magnetic Fields and Iron Filings SE 369/SJ 32, EAL 372, EAL 373, EAL 381</p>	
	<p>S.3-5.PS.4</p>	<p>Conduct an investigation to determine whether the mixing of two or more substances results in new substances. (5-PS1-4)</p>	<p>Level 4 - Ch. 10.4, 10.5</p>	<p>Level 4 -- EAL 356, TT 358; Changing Matter SE 359/SJ 26; Making Rust TE 359/SJ 32, EAL 362</p>	

Motion and Stability: Forces and Interactions	S.3-5.PS.5	Plan and conduct an investigation to provide evidence of the effects of balanced (e.g., pushing two opposite sides of a box) and unbalanced (e.g., pushing one side of a box) forces on the motion of an object. (3-PS2-1)	Level 3 - Ch. 11.2, 11.3 Level 5 - Ch. 13.1, 13.2, 13.3	Level 3 -- TT 350, EAL 342, EAL 348; Measuring Force SE 351/SJ 32; Pulling Force TE 352/SJ 34, EAL 358 Level 5 -- EAL 423; comparing Motion SE 435/SJ 58; Force, Mass, and Acceleration SE 441/SJ 62, EAL 442, EAL 445, EAL 446, EAL 448
	S.3-5.PS.6	Observe and/or measure an object's motion to provide evidence that a pattern can be used to predict future motion (e.g., child swinging, ball rolling in a bowl, pendulum). (3-PS2-2)	Level 3 - Ch. 11.1, 11.2 Level 5 - Ch. 13.1, 13.2, 13.3	Level 3 -- TT 340, EAL 348, EAL 358 Level 5 -- Observing Sliding Friction SE 424/SJ 54; Surface Area of Sliding Surface TE 424/SJ 56, EAL 427, EAL 431; Comparing Ramp Height SE 435/SJ 58; Motion and Mass SE 435/SJ 60; Forces, Mass, and Acceleration SE 441/SJ 62; Increasing Mass TE 441/SJ 64, EAL 442, EAL 446, EAL 448; Seltzer Rockets TE 449/SJ 66
	S.3-5.PS.7	Ask questions to determine cause and effect relationships (e.g., distance between objects affects strength of the force, orientation of magnets affect direction of magnetic force) of electric or magnetic interactions between two objects not in contact with each other. (3-PS2-3)	Level 4 - Ch. 11.1, 11.2, 11.3	Level 4 -- TT 368; Magnetic Fields and Iron Filings SE 369/SJ 32; Find the Magnet TE 369/SJ 34, EAL 372, ELA 373; Balloon Static SE 377/SJ 40; Attractive Charges TE 377/SJ 42; Make an Electromagnet SE 385/SJ 44; Stronger Electromagnets TE 385/SJ 46, EAL 386
	S.3-5.PS.8	Define a simple design problem (e.g., constructing a door latch, creating a device to keep two moving objects from touching) that can be solved by applying scientific ideas about magnets. (3-PS2-4)	Level 4 - Ch. 11.1, 11.2, 11.3	Level 4 -- ATBD
	S.3-5.PS.9	Support an argument that the gravitational force exerted by Earth on objects is directed down toward the center of the Earth. (5-PS2-1)	Level 3 - Ch. 9.2, Ch. 11.2 Level 5 - Ch. 13.3	Level 3 -- LA 352; ATBD Level 5 -- EAL 442; Seltzer Rocket TE 449/SJ 66

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Energy

S.3-5.PS.10	Use evidence to construct an explanation relating the speed of an object to the energy of that object. (4-PS3-1)	<p>Level 3 - Ch. 10.1, 10.3, Ch. 11.1, 11.2</p> <p>Level 4 - Ch. 10.2</p> <p>Level 5 - Ch. 13.2, 13.3</p>	<p>Level 3 -- Models of Particles in a Liquid, a Solid and a Gas SE 305/SJ 8; Vibrating Confetti SE 321/SJ 16; Vibrating Strings TE 321/SJ 18, EAL 331, EAL 333; Racing Speed SE 341/SJ 28, EAL 342, EAL 348, EAL 358</p> <p>Level 4 -- ATBD</p> <p>Level 5 -- Comparing Motion SE 435/SJ 58; Motion and Mass TE 435/SJ 60; Force, Mass, and Acceleration SE 441/SJ 62; Increasing Mass TE 441/SJ 64, EAL 448</p>
S.3-5.PS.11	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. (4-PS3-2)	<p>Level 3 - Ch. 10.2, 10.3, 10.4</p> <p>Level 4 - Ch. 11.2</p> <p>Level 5 - Ch. 11.2, 11.3, Ch. 12.1, 12.3</p>	<p>Level 3 -- Transfer of Thermal Energy SE 313/SJ 12; Bring on the Heat TE 313/SJ 14, EAL 316, EAL 318; Vibrating Confetti SE 321/SJ 16; Vibrating Strings TE 321/SJ 18, EAL 322; How Waves Move SE 329/SJ 20</p> <p>Level 4 -- Melting and Boiling SE 339/SJ 14, TT 376; ATBD</p> <p>Level 5 -- Sand Shaker SE 366/SJ 12, EAL 369; Light Bulb Energy SE 370/SJ 16; Lizard Lighting TE 370/SJ 18, EAL 372, EAL 374; Changes in Pitch and Loudness SE 376/SJ 20; Rubber Band Thickness and Pitch TE 376/SJ 22; Build a Wave Machine SE 390/SJ 32; New Waves TE 390/SJ 34, EAL 397</p>
S.3-5.PS.12	Ask questions and predict outcomes about the changes in energy that occur when objects collide. (4-PS3-3)	<p>Level 3 - Ch. 11.2</p> <p>Level 5 - Ch. 13.2, 13.3</p>	<p>Level 3 -- EAL 358</p> <p>Level 5 -- EAL 434, EAL 446; ATBD</p>
S.3-5.PS.13	Apply scientific principles to design, test, and refine a device (e.g., electric motor, solar heater) that converts energy from one form to another. (4-PS3-4)	<p>Level 3 - Ch. 10.2, 10.3</p> <p>Level 4 - Ch. 11.2, 11.3</p> <p>Level 5 - Ch. 14.2, 14.3</p>	<p>Level 3 -- Solar Cooker SJ 44</p> <p>Level 4 -- Make an Electromagnet SE 385/SJ 44; Building an Electric Motor SJ 50</p> <p>Level 5 -- Simple to Complex SE 473/SJ 88; Design a Machine TE 473/SJ 90, EAL 478, SJ 100</p>

		<p>S.3-5.PS.14 Use models (e.g., diagrams, flow charts) to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. (5-PS3-1)</p>	<p>Level 3 - Ch. 2.3 Level 4 - Ch. 3.1 Level 5 - Ch. 4.2, 4.3</p>	<p>Level 3 -- Colored Light Effects SE 69/SJ 34; Different Kinds of Light TE 69/SJ 36, EAL 72; Web of Life Mobile SJ 66 Level 4 -- ATBD Level 5 -- an Owl's Meal SE 138/SJ 104, LA 140, EAL 145</p>
<p>Waves and Their Applications in Technologies for Information Transfer</p>		<p>S.3-5.PS.15 Develop a model (e.g., diagrams, analogies, physical models) of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. (4-PS4-1)</p>	<p>Level 3 - Ch. 10.2, 10.3 Level 5 - Ch. 11.3</p>	<p>Level 3 -- TT 320; Vibrating Confetti SE 321/SJ 16; Vibrating Strings TE 321/SJ 18 Level 5 -- EAL 374, EAL 381</p>
		<p>S.3-5.PS.16 Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen. (4-PS4-2)</p>	<p>Level 3 - Ch. 10.4 Level 5 - Ch. 12.3 See Level 6 - Ch. 4.5</p>	<p>Level 3 -- ATBD Level 5 -- ATBD</p>
		<p>S.3-5.PS.17 Generate and compare multiple solutions (e.g., drum sending codes through sound waves, grid of I's and O's representing black and white to send information about a picture, Morse code) that use patterns to transfer information. (4-PS4-3)</p>	<p>Level 3 - Ch. 10.3 Level 5 - Ch. 11.3</p>	<p>Level 3 -- ATBD Level 5 -- ATBD</p>