

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.K-2.ES.1	Use and share observations of local weather conditions to describe patterns over time. (K-ESS2-1)	Level 1 - Ch. 7.1, 7.2 Level 2 - Ch. 7.1, 7.2	Level 1 -- Charting Weather SE 193/SJ 8; Weather Differences TE 93/SJ 10, EAL 196; Seasons and Plant Growth SE 209/SJ 16, EAL 216 Level 2 -- Weather Watch SE 259/SJ 34; Observing Weather Maps TE 263/SJ 38, EAL 265; Length of Days SE 277/SJ 44; Daylight Variations TE 277/SJ 46, EAL 280
	S.K-2.ES.2	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. (K-ESS2-2)	Level 1 - Ch. 3.1 Level 2 - Ch. 2.1	Level 1 -- Staying Warm in the Cold SE 219/SJ 20; Keeping Warm TE 219/SJ 22; Clothing and Climate TE 222/SJ 24, EAL 224 Level 2 -- ATBD
	S.K-2.ES.3	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (2-ESS2-1)	Level 2 - Ch. 6.3, Ch. 7.2	Level 2 -- Water Changes Land SE 235/SJ 16; Rocks and Water Changing the Land TE 235/SJ 18
	S.K-2.ES.4	Develop a model to represent the shapes and kinds of land and bodies of water in an area. (2-ESS2-2)	Level 1 - Ch. 8.2 Level 2 - Ch. 6.1, 6.3	Level 1 -- ATBD Level 2 -- Land on a Map SE 213/SJ 8; Salt Dough Maps TE 213/SJ 10
	S.K-2.ES.5	Obtain information to identify where water is found on Earth and that it can be solid or liquid. (2-ESS2-3)	Level 1 - Ch. 7.2 Level 2 - Ch. 6.3, 7.2	Level 1 -- Watch Water disappear SE 201/SJ 12, EAL 206 Level 2 -- Land on a Map SE 213/SJ 18; Salt Dough Maps TE 213/SJ 10; How Clouds Form SE 269/SJ 40; Rain in a Plastic Bag TE 268/SJ 42, EAL 279

K-2

Earth and Human Activity

S.K-2.ES.6

Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live. (K-ESS3-2)

Level 1 - Ch. 3.1, 3.2, 3.3
Level 2 - Ch. 1.1, 1.4, Ch. 2.2, 2.3

Level 1 -- Animals in Trees SE 67/SJ 42; Homes for Animals TE 67/SJ 44; Feeding Crickets SE 75/SJ 46; Cricket Menus TE 75/SJ 48; Plant Starters SE 83/SJ 52
Level 2 -- Feeding Birds TE 13/SJ 8; Water Me SE 17/SJ 10; Too Much Water TE 17/SJ 12; EAL 24, EAL 38; Build a Nest SE 47/SJ 26; Best Nests TE 47/SJ 28, EAL 51; Animal Homes SE 73/SJ 26; Animals Dining Out TE 73/SJ 38, EAL 75; Links in a Chain SE 82/SJ 40; Many Food Chains TE 82/SJ 42; Effects of Pollution SE 91/SJ 44; Water Pollution TE 91/SJ 46, EAL 100

S.K-2.ES.7

Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (K-ESS3-2)

Level 1 - Ch. 7.1
Level 2 - Ch. 7.1

Level 1 -- Charting the Weather SE 193/SJ 8; Weather Differences TE 193/SJ 10, EAL 196
Level 2 -- Weather Watch SE 259/SJ 34; Make a Weather Instrument TE 259/SJ 36; Observing Weather Maps TE 263/SJ 38

S.K-2.ES.8

Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. (K-ESS3-3)

Level 1 - Ch. 3.3
Level 2 - Ch. 2.3

Level 1 -- Reuse Me TE 83/SJ 54
Level 2 -- Effects of Pollution SE 91/SJ 144; Water Pollution TE 91/SJ 146; Oil Spill Clean Up TE 97/SJ 48, EAL 100

Earth's Place in the Universe	S.K-2.ES.9	Use observations of the sun, moon, and stars to describe patterns (e.g., sun and moon appear to track across the sky, stars visible at night) that can be predicted. (1-ESS1-1)	Level 1 - Ch. 8.1 Level 2 - Ch. 8.1, 8.2, 8.3	Level 1 -- Making a Star Pattern SE 231/SJ 28; Viewing a Star Pattern TE 231/SJ 30 Level 2 -- Orbit Me SE 289/SJ 52; Orbit Models TE 289/SJ 52; Make a Constellation SE 299/SJ 54; More Constellations TE 299/SJ 56, EAL 300; Star Gazing TE 301/SJ 58; Far, Far Away SE 304/SJ 60; Help from Binoculars TE 305/SJ 62
	S.K-2.ES.10	Make observations at different times of year to relate the amount of daylight to the time of year. (1-ESS1-2)	Level 1 - Ch. 7.3 Level 2 - Ch. 7.3	Level 1 -- Seasons and Plant Growth SE 209/SJ 16, EAL 216 Level 2 -- Length of Days SE 277/SJ 44; Daylight Variations TE 277/SJ 46, EAL 280
	S.K-2.ES.11	Use information from several sources to provide evidence that Earth events (e.g., volcanic explosions, earthquakes, rock erosion) can occur quickly or slowly. (2-ESS1-1)	Level 2 - Ch. 6.3	Level 2 -- Water Changes Land SE 237/SJ 16; Rocks and Water Changing the Land TE 237/SJ 18; Model of the Genesis Flood TE 239/SJ 20, EAL 243

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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K-2 Engineering Design	S.K-2.ET.1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. (K-2-ETS1-1)	These performance standards are found in multiple places throughout the By Design program.	Level 1 -- ATBD Level 2 -- ATBD
	S.K-2.ET.2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object functions to solve a given problem. (K-2-ETS1-2)		
	S.K-2.ET.3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. (K-2-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	<p>S.K-2.HS.1 Read Texts and use media to determine the dimensions of health (e.g., nutrition, exercise) and patterns of behavior (e.g., eating healthy foods, daily exercise) that impact personal health.</p>	<p>Level 1 - Ch. 4.3, Ch. 5.2, 5.3, Ch. 6.2, 6.3 Level 2 - Ch. 3.2, 3.4, Ch. 4.3, Ch. 5.1, 5.2</p>	<p>Level 1 -- Brush Off SE 119/SJ 22; Let's Try This Again TE 119/SJ 24, EAL 123, EAL 144; Be a Better Jumper SE 147/SJ 36; Practice Makes Perfect TE 147/SJ 38, EAL 149; Screen Time TE 151/SJ 40, EAL 152; Stand Up Straight SE 168/SJ 52; Calcium in Bones TE 168/SJ 54, EAL 174; Bicycle Helmet Survey SE 177/SJ 56 Level 2 -- Which Foods Help Me Stay Healthy TE 107/SJ 2, TT 120; The Food Groups SE 121/SJ 16; Your Personal Food Guide TE 121/SJ 18, TT 174; Stopping Germs SE 175/SJ 42; Shake Hands SE 175/SJ 44, TT 184; Hole in Your Mouth SE 185/SJ 46, EAL 189; Be Seen to Be Safe SE 195/SJ 50; Seat Belt Crash Test TE 196/SJ 54</p>
	<p>S.K-2.HS.2 Demonstrate ways to prevent communicable diseases and reduce accidental injuries.</p>	<p>Level 1 - Ch. 6.3 Level 2, Ch. 5.2, 5.3</p>	<p>Level 1 -- EAL 123; Bicycle Helmet Survey SE 177/SJ56 Level 2 -- Stopping Germs SE 175/SJ 42; Shake Hands SE 175/SJ 44, TT 184, TT 194; Be Seen to Be Safe SE 195/SJ 50; Seat Belt Crash Test TE 196/SJ 54</p>
	<p>S.K-2.HS.3 Role play how to tell a trusted adult if threatened or harmed.</p>	<p><i>Not specifically addressed</i></p>	<p>Level 1 -- ATBD Level 2 -- ATBD</p>
	<p>S.K-2.HS.4 Conduct an investigation to identify health professionals and other adults who can help to promote health.</p>	<p>Level 2 - Ch. 4.3, Ch. 5.3</p>	<p>Level 2 -- ATBD</p>
Health Resources			

K-2

Healthy Lifestyle Choices

S.K-2.HS.5	Construct an argument that media influences personal decisions relating to healthy choices.	Level 1 - Ch. 5.2, 5.3, Ch. 6.2,6.3 Level 2 - Ch. 3.3, Ch. 5.2	Level 1 -- ATBD Level 2 -- LA 134, EAL 189; ATBD
S.K-2.HS.6	Use a model to differentiate between situations when a health-related decision can be made individually or when assistance is needed.	Level 1 - Ch. 4.3, Ch. 5.3, Ch. 6.3 Level 2 - Ch. 3.1, 3.3, Ch. 5.2, 5.3	Level 1 -- Brush Off SE 119/SJ 22 Let's Try This Again TE 119/SJ 24, EAL 123, LA 144; Be a Better Jumper SE 147/SJ 36; Practice Makes Perfect TE 147/SJ 38, EAL 149; Screen Time TE 151/SJ 40, EAL 152, EAL 174; Bicycle Helmet Survey SE 177/SJ 56 Level 2 -- The Food Groups SE 121/SJ 116; Your Personal Food Guide TE 121 /SJ 18; Fatty Foods SE 129/SJ 20; Comparing Similar Foods TE 129/SJ 22, LA 134; Stopping Germs SE 175/SJ 42; Shake Hands TE 175/SJ 44; Hole in Your Mouth SE 185/SJ 46; Fill the Cavity TE 185/SJ 48, EAL 189; Be Seen to Be Safe SE 195/SJ 50; Seat Belt Crash Test TE 196/SJ 54
S.K-2.HS.7	Identify a short-term personal health goal and implement a plan to attain that goal.	Level 1 - Ch. 5.2, 5.3, Ch. 6.2, 6.3	Level 1 -- How Can You Make Healthy Choices TE 95/SJ 2; I Can Be More Fit TE 95/SJ 6, LA 144; Practice Makes Perfect TE 147/SJ 38, EAL 149, EAL 174; ATBD
S.K-2.HS.8	Ask questions and obtain information about God's plan for healthy living.	Level 2 - Ch. 3.3, Ch. 4.3, Ch. 5.2	Level 2 -- Fatty Foods SE 129/SJ 20; Comparing Similar foods TE 129/SJ 22, LA 134, LA 165; 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.		
K-2	Molecules to Organisms: Structures and Processes	S.K-2.LS.1 Use observations to describe patterns (e.g., animals need to take in food but plants do not, different kinds of food needed by different types of animals, requirement of plants to have light, all living things need water) of what plants and animals (including humans) need to survive. (K-LS1-1)	Level 1 - Ch. 1.1,1.2, Ch. 2.3, Ch. 3.2 Level 2 - Ch. 1.1, 1.4, Ch. 2.1	Level 1 -- ATBD Level 2 -- ATBD
		S.K-2.LS.2 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animals scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills). (1-LS1-1)	Level 1 - Ch. 1.1, 1.2, Ch. 2.1, 2.2, 2.3 Level 2 - Ch. 1.2, 1.5	Level 1 -- ATBD Level 2 -- ATBD
		S.K-2.LS.3 Make observations to determine patterns in behavior of parents and offspring that help offspring survive (e.g., signals that offspring make such as crying, cheeping and the responses of parents such as feeding, comforting, protecting). (1-LS1-2)	Level 1 - Ch. 2.3 Level 2 - Ch. 1.4	Level 1 -- ATBD Level 2 -- ATBD
	Ecosystems: Interactions, Energy and Dynamics	S.K-2.LS.4 Plan and conduct an investigation to determine if plants need sunlight and water to grow, ensuring that only one variable is tested at a time. (2-LS2-1)	Level 1 – Ch. 1.2 Level 2 – Ch. 1.1, 1.2	Level 1 -- ATBD Level 2 -- ATBD
		S.K-2.LS.5 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. (2-LS2-2)	Level 1 - Ch. 1.2 Level 2 - Ch. 1.2	Level 1 -- ATBD Level 2 -- ATBD
	Heredity: Inheritance and Variation of Traits	S.K-2.LS.6 Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents (e.g., leaves from same kind of plant are the same shape, but can differ in size, young animals look similar to their parents but are not exactly the same). (1-LS3-1)	Level 1 - Ch. 1.2, Ch. 2.3	Level 1 -- ATBD
	Life: Origins, Unity, and Diversity	S.K-2.LS.7 Make observations of plants and animals to compare the diversity of life in different habitats. (2-LS4-1)	Level 1 - Ch. 3.1 Level 2 - Ch. 2.1	Level 1 -- ATBD Level 2 -- ATBD
		S.K-2.LS.8 Apply scientific principles to begin to construct a personal model that explains how life began on earth and acknowledges God as the Creator.	Level 1 - Ch. 1.1, Ch. 2.2, Ch. 8.1 Level 2 - Ch. 8.1, 8.2	Level 1 -- ATBD Level 2 -- 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.		
K-2	Matter and Its Interactions	S.K-2.PS.1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties (e.g., color, texture, hardness, flexibility). (2-PS-1)	Level 2 - Ch. 9.1, 9.2	Level 2 -- Sorting It Out SE 319/SJ 8; Mixed Up Animals TE 319/SJ 10; EAL 326
		S.K-2.PS.2 Analyze data obtained from testing different materials to determine which materials have the properties (e.g., strength, flexibility, hardness, texture, absorbency) that are best suited for an intended purpose. (2-ps1-2)	Level 2 - Ch. 9.1	Level 2 -- ATBD
		S.K-2.PS.3 Make observations to construct an evidence-based account of how an object made of a small set of pieces (e.g., blocks, building bricks, other assorted small objects) can be disassembled and made into a new object. (2-PS1-4)	Level 2 - Ch. 9.2, 9.3	Level 2 -- ATBD
		S.K-2.PS.4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed (e.g., water, butter) and some cannot (e.g., cooking an egg, freezing a plant leaf, heating paper). (2-PS1-4)	Level 1 - Ch. 10.1 Level 2 - Ch. 9.2, 9.3, Ch. 10.2	Level 1 -- Heating Things Up SE 301/SJ 28; EAL 302 Level 2 -- TT 338, EAL 355
	Motion and Stability: Forces and Interactions	S.K-2.PS.5 Plan and conduct an investigation to describe and classify different strengths or different directions of pushes and pulls (e.g., string attached to an object being pulled, pushing an object, stopping a rolling ball, two objects colliding and pushing on each other) on the motion of an object. (K-PS2-1)	Level 1 - Ch. 9.2, 9.3	Level 1 -- Observing Motion SE 271/SJ 12; Changing Motion TE 271/SJ 14, EAL 272; Slow It down TE 273/SJ 16, LA 275, TT 278; Make It Move SE 279/SJ 18; Move That Block TE 279/SJ 20, LA 281
		S.K-2.PS.6 Analyze data to determine if a design solution (e.g., ramp to increase speed of an object, structure that causes an object to turn) works as intended to change the speed or direction of an object with a push or a pull. (K-PS2-2)	Level 1 - Ch. 9.2, 9.3	Level 1 -- EAL 272, LA 275, TT 278; Make It Move SE 279/SJ 16; Move That Block TE 279/SJ 20
	Energy	S.K-2.PS.7 Make observations to determine the effect of sunlight on Earth's surface (e.g., sand, soil, rocks, water). (K-PS3-1)	Level 1 - Ch. 10.1 Level 2 - Ch. 10.2	Level 1 -- EAL 302, LA 304 Level 2 -- EAL 368
		S.K-2.PS.8 Use tools and materials to design and build a structure (e.g., umbrellas, canopies, tents) that will reduce the warming effect of sunlight on an area. (K-PS3-2)	Level 2 - Ch. 7.3, Ch. 10.2	Level 2 -- EAL 368; ATBD

Waves and Their Applications in Technologies for Information Transfer	S.K-2.PS.9	Plan and conduct investigations to provide evidence that vibrating materials (e.g., tuning forks, plucking a stretched string) can make sound and that sound can make materials vibrate (e.g., holding a piece of paper near a speaker, holding an object near a vibrating tuning fork). (1-PS4-1)	Level 1 - Ch. 10.2 Level 2 - Ch. 10.3	Level 1 -- TT 308; Making Different Sounds SE 309/SJ 34, EAL 310, EAL 311 Level 2 -- EAL 375; ATBD
	S.K-2.PS.10	Make observations (e.g., those made in a completely dark room, pinhole box, video of a cave explorer) to construct an evidence-based account that objects can be seen only when illuminated (e.g., external light source, object giving off its own light). (1-PS4-2)	Level 2 - Ch. 10.3	Level 2 -- Shine a Light SE 371/SJ 34; ATBD
	S.K-2.PS.11	Plan and conduct an investigation to determine the effect of placing objects made with different materials (e.g., transparent, translucent, opaque, reflective) in the path of a beam of light. (1-PS4-3)	Level 2 - Ch. 10.3	Level 2 -- Shine a Light SE 371/SJ 34; ATBD
	S.K-2.PS.12	Use tools and materials to design and build a device (e.g., light source, paper cup and string "telephones", drum beats pattern) that uses light or sound to solve the problem of communicating over a distance. (1-PS4-4)	Level 1 - Ch. 10.2 Level 2 - Ch. 10.3	Level 1 -- ATBD Level 2 -- ATBD