Scope & Sequence

A Reason For Science®
Published by **Concerned Communications, LLC**

A NEW PARADIGM

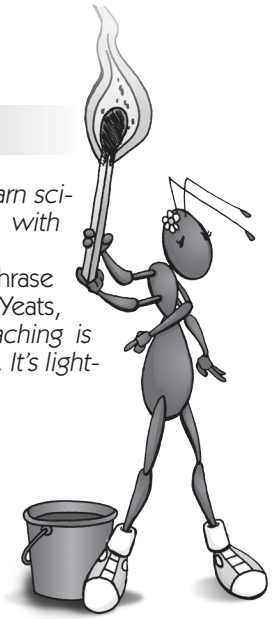
A Reason For Science® is designed for children — young minds created by an infinite God with an unlimited capacity to think, to learn, to explore, and to discover!

Because of its emphasis on how children really learn, ***A Reason For Science®*** uses a different paradigm from traditional textbooks. Why? In an effort to address standards and accountability, many of today's science textbooks get learning backwards. They focus primarily on building a knowledge base, assuming students will later attach meaning to memorized facts. The problem is that very few elementary students master information that is presented this way because they never become engaged with the material.

By contrast, ***A Reason For Science®*** is based on the premise that learning science is an ACTIVE process. It is *"something children do, not something done to them."*[1]

According to the **National Science Education Standards**, *". . . active science learning means shifting emphasis away from teachers presenting information and covering science topics. The perceived need to include all the topics and information . . . is in direct conflict with the central goal of having students learn scientific knowledge with understanding."*[2]

Or to paraphrase William Butler Yeats, *"Great science teaching is not filling up a pail. It's lighting a fire!"*



INQUIRY-BASED LEARNING

A Reason For Science® is designed to teach basic Life, Earth, and Physical Science concepts through fun, hands-on activities. Its focus is to make learning both fun and meaningful.

But hands-on activities by themselves are never enough. In order to truly master a concept, students must have "minds-on" experiences as well! This means actively engaging the material through a variety of methods such as group discussion, problem solving, and journaling. It also requires thought-provoking questions that help develop higher-level cognitive skills. The weekly format of ***A Reason For Science®*** is designed to reflect this inquiry-based model.

According to the **National Science Education Standards**, *"Inquiry is central to science learning. When engaging in inquiry, students describe objects and events, ask questions, construct explanations, test those explanations against current scientific knowledge, and communicate their ideas to others . . . In this way, students actively develop their understanding of science by combining scientific knowledge with reasoning and thinking skills."*[3]

Since different students achieve understanding in different ways and to different degrees, the flexible format of ***A Reason For Science®*** also encourages multiple learning styles and allows for individual differences. Each activity challenges students to develop their own unique skills, and encourages them to think of creative solutions.

NATIONAL STANDARDS

The "National Standards" referred to in this Scope & Sequence are from the **National Science Education Standards**[1]. More specifically, they reflect the "K-4 Science Content Standards" (p.121 - 142) and "5-8 Science Content Standards" (p. 143 - 172).

Teacher Guidebooks include a list of the content standards that relate to each individual lesson. References are based on the NSES alphabetic format, plus a numeric code to indicate the bulleted sub-topic.

For example, **C1** in a fourth grade lesson, would indicate Content Standard **C** and sub-topic **1**. (A detailed description of the **C1** content standard is found on pages 127 - 229 of the **Standards**.)

As noted above, lower grade and upper grade standards are found in different sections. A **C1** reference for a third grade lesson, for example, would be found on page 127 (characteristics of organisms). By contrast, a **C1** reference for a seventh grade lesson would be found on page 155 ("structure and function of living systems").

[1] *National Science Education Standards*, 1999. Washington, D.C.: National Academy Press. (p. 2); [2] *Ibid.* (p. 20); [3] *Ibid.* (p. 2)

Level A (Grade 1)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Basic Needs	To explore basic needs of plants and animals	C1 - Characteristics of Organisms
2	Life Science	Plant Structure/Function	To explore the structure and function of plant parts	C1 - Characteristics of Organisms
3	Life Science	Animal Structure/Function	To explore the structure and function of animal coverings	C1 - Characteristics of Organisms
4	Life Science	Life Cycles (larva)	To explore the larva stage of a moth's life cycle	C2 - Life Cycles of Organisms
5	Life Science	Life Cycles (pupa)	To explore the pupa stage of a moth's life cycle	C2 - Life Cycles of Organisms
6	Life Science	Life Cycles (adult)	To explore the adult stafe of a moth's life cycle	C2 - Life Cycles of Organisms
7	Life Science	Camouflage	To explore how colorization and shape help survival	C3 - Organisms & Environments
8	Life Science	Habitats	To explore how creatures interact with their environment	C3 - Organisms & Environments
9	Life Science	Pollutants	To explore how pollutants impact environments	C3 - Organisms & Environments
10	Earth Science	Earth Materials	To explore how "natural" and "manufactured" differ	D1 - Properties of Earth Materials
11	Earth Science	Rocks	To explore basic characteristics of rocks	D1 - Properties of Earth Materials
12	Earth Science	Fossils	To explore how "mold fossils" were created	D1 - Properties of Earth Materials
13	Earth Science	Solar System	To explore relationships between solar system objects	D2 - Objects in the Sky
14	Earth Science	Eclipses	To explore how solar and lunar eclipses occur	D2 - Objects in the Sky
15	Earth Science	Solar Energy	To explore how color reflects or absorbs sunlight	D2 - Objects in the Sky
16	Earth Science	Earth Rotation	To explore how Earth's rotation causes day and night	D3 - Changes in Earth and Sky
17	Earth Science	Moon Phases	To explore how the Moon's movement relates to months	D3 - Changes in Earth and Sky
18	Earth Science	Seasons	To explore how Earth's movement relates to seasons	D3 - Changes in Earth and Sky
19	Physical Science	States of Matter	To explore Earth's three most common states of matter	B1 - Properties of Objects & Materials
20	Physical Science	Changes in Matter	To explore how matter can change states	B1 - Properties of Objects & Materials
21	Physical Science	Bonds	To explore how bonds between atoms hold things together	B1 - Properties of Objects & Materials
22	Physical Science	Surface Tension	To explore how water molecules create surface tension	B1 - Properties of Objects & Materials
23	Physical Science	Properties of Matter	To explore mixing two colors to make a third color	B1 - Properties of Objects & Materials
24	Physical Science	Density	To explore how density affects matter	B1 - Properties of Objects & Materials
25	Physical Science	Sound	To explore how sound is created by vibration	B2 - Position & Motion of Objects
26	Physical Science	Pitch	To explore how changing vibration changes sound	B2 - Position & Motion of Objects
27	Physical Science	Sound & Density	To explore how density affects the speed of sound	B2 - Position & Motion of Objects
28	Physical Science	Newton's 3rd Law	To explore the concept of action/reaction	B2 - Position & Motion of Objects
29	Physical Science	Flight	To explore how forces relate to flight	B2 - Position & Motion of Objects
30	Physical Science	Simple Machines	To explore how the direction of a force can be changed	B2 - Position & Motion of Objects
31	Physical Science	Refraction	To explore how light can be bent by a lens	B3 - Light, Heat, Electricity, Magnetism
32	Physical Science	Refraction/Reflection	To compare and contrast refraction and reflection	B3 - Light, Heat, Electricity, Magnetism
33	Physical Science	Friction	To explore the relationship between friction and heat	B3 - Light, Heat, Electricity, Magnetism
34	Physical Science	Static Electricity	To explore how atoms relate to static electricity	B3 - Light, Heat, Electricity, Magnetism
35	Physical Science	Magnetism 1	To explore basic properties of magnets and magnetism	B3 - Light, Heat, Electricity, Magnetism
36	Physical Science	Magnetism 2	To explore practical applications of magnetism	B3 - Light, Heat, Electricity, Magnetism

Level B (Grade 2)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Plant Structure/Function	To explore how materials move through a plant's system	C1 - Characteristics
2	Life Science	Camouflage	To explore how colors and patterns relate to survival	C1 - Characteristics
3	Life Science	Classification	To explore how creatures are sorted by characteristics	C1 - Characteristics
4	Life Science	Pollination/Germination	To explore some stages in a plant's life cycle	C2 - Life Cycles
5	Life Science	Seed Dispersal	To explore ways seeds are spread to help plants survive	C2 - Life Cycles
6	Life Science	Life Cycles	To understand that all living things have life cycles	C2 - Life Cycles
7	Life Science	Environments	To explore how creatures interact with their environment	C3 - Environments
8	Life Science	Adaptation	To explore how creatures adapt to their environment	C3 - Environments
9	Life Science	Structure/Function	To explore how creatures' structure relates to environment	C3 - Environments
10	Earth Science	Earth Materials	To explore the properties of rocks, soil, water, and air	D1 - Properties of Earth Materials
11	Earth Science	Soil Properties 1	To explore the properties of color and texture in soil	D1 - Properties of Earth Materials
12	Earth Science	Soil Properties 2	To explore the properties of porosity and nutient values	D1 - Properties of Earth Materials
13	Earth Science	Planets	To explore the properties of the eight major planets	D2 - Objects in the Sky
14	Earth Science	Stars	To explore some of the basic properties of stars	D2 - Objects in the Sky
15	Earth Science	Earth's Surface	To explore major changes in the Earth's surface	D3 - Changes in Earth and Sky
16	Earth Science	Weather 1	To explore wind speed and direction	D3 - Changes in Earth and Sky
17	Earth Science	Weather 2	To explore how rainfall and temperature affect climate	D3 - Changes in Earth and Sky
18	Earth Science	Weather 3	To explore extreme changes in weather	D3 - Changes in Earth and Sky
19	Physical Science	Recycling 1	To explore how recycling helps conserve resources	B1 - Properties of Objects & Materials
20	Physical Science	Recycling 2	To further understand the importance of recycling	B1 - Properties of Objects & Materials
21	Physical Science	Density	To explore the concept of density	B1 - Properties of Objects & Materials
22	Physical Science	Physical Properties	To explore the idea that objects have physical properties	B1 - Properties of Objects & Materials
23	Physical Science	Surface Tension	To explore the concept of surface tension	B1 - Properties of Objects & Materials
24	Physical Science	Changes in Matter	To explore how matter changes from one state to another	B1 - Properties of Objects & Materials
25	Physical Science	Newton's 1st Law	To explore the concept and meaning of inertia	B2 - Position & Motion of Objects
26	Physical Science	Newton's 2nd Law	To explore the relationship of motion, mass, and force	B2 - Position & Motion of Objects
27	Physical Science	Newton's 3rd Law	To explore the concept of action/reaction	B2 - Position & Motion of Objects
28	Physical Science	Air Resistance	To explore how air resistance affects motion	B2 - Position & Motion of Objects
29	Physical Science	Spatial Relationships	To explore the concepts of position and motion	B2 - Position & Motion of Objects
30	Physical Science	Air Pressure	To explore the relationship of air pressure to motion	B2 - Position & Motion of Objects
31	Physical Science	Light Absorption	To explore what happens when light is absorbed	B3 - Light, Heat, Electricity, Magnetism
32	Physical Science	Heat Production	To explore two primary ways that heat is produced	B3 - Light, Heat, Electricity, Magnetism
33	Physical Science	Heat Movement	To explore the movement of heat	B3 - Light, Heat, Electricity, Magnetism
34	Physical Science	Static Electricity	To explore how atoms relate to static electricity	B3 - Light, Heat, Electricity, Magnetism
35	Physical Science	Electricity	To explore the difference between open & closed circuits	B3 - Light, Heat, Electricity, Magnetism
36	Physical Science	Magnetism	To explore the push and pull of magnetic forces	B3 - Light, Heat, Electricity, Magnetism

Level C (Grade 3)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Germination	To explore how seeds germinate/grow	A1, A2, B1, B2, B3, C1, C2, C3, E3, F2, F3, F4, G1
2	Life Science	Water Conservation	To explore how body coverings conserve water	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
3	Life Science	Eye Function	To explore a simple eye	A1, A2, B1, B3, C1, E1, E2, E3, F1, F5, G1
4	Life Science	Seed Dispersal	To explore ways plants spread seeds	A1, A2, B1, B2, C1, C2, C3, E3, F2, F3, G1
5	Life Science	Plant Structure	To explore how leaves direct rain	A1, A2, B1, B2, C1, C3, E3, F2, F3, F4, G1
6	Life Science	Dehydration	To explore one method of preserving food	A1, A2, B1, B3, C1, C3, D1, E2, E3, F1, F2, F3, F4, G1
7	Life Science	Nervous System	To explore human reaction time	A1, A2, B1, B2, C1, E3, F1, G1
8	Life Science	Circulatory System	To explore the movement of blood	A1, A2, B1, B2, C1, E3, F1, G1
9	Life Science	Skeletal System	To explore the human skeleton	A1, A2, B1, C1, E3, F1, G1
10	Physical Science (Forces)	States of Matter	To explore three basic states of matter	A1, A2, B1, B2, B3, D1, D3, E3, F4, G1
11	Physical Science (Forces)	Surface Tension	To discover how water molecules attract each other	A1, A2, B1, B2, D1, E1, E2, E3, F5, G1
12	Physical Science (Forces)	Absorption	To explore how water is held or absorbed by materials	A1, A2, B1, B2, E1, E2, E3, F5, G1
13	Physical Science (Forces)	Gravity	To discover how gravity affects everything	A1, A2, B1, B2, D1, E3, G1
14	Physical Science (Forces)	Newton's Laws	To explore inertia and action/reaction	A1, A2, B1, B2, E3, F1, G1
15	Physical Science (Forces)	Balance	To explore balance	A1, A2, B1, B2, E3, G1
16	Physical Science (Forces)	Pressure	To explore how force moves objects	A1, A2, B1, B2, D1, E1, E2, E3, F5, G1
17	Physical Science (Forces)	Air Pressure	To explore the force of air pressure	A1, A2, B1, B2, B3, D1, D3, E3, G1
18	Physical Science (Forces)	Torque	To explore how forces change direction	A1, A2, B1, B2, E1, E2, E3, F5, G1
19	Earth Science	Matter	To discover that air is a form of matter	A1, A2, B1, B2, D1, D3, E3, G1
20	Earth Science	Air Pressure	To explore air pressure	A1, A2, B1, B2, D1, D3, E1, E2, E3, F5, G1
21	Earth Science	States of Matter	To explore the three states of matter	A1, A2, B1, B2, D1, D3, E1, E2, E3, F5, G1
22	Earth Science	Waves	To explore the action of waves	A1, A2, B1, B2, D1, D3, E3, F3, G1
23	Earth Science	Erosion	To explore how erosion occurs	A1, A2, B1, B2, D1, D3, E1, E2, E3, F3, F5, G1
24	Earth Science	Sediments	To explore how water separates materials	A1, A2, B1, B2, D1, D3, E3, G1
25	Earth Science	Atmosphere	To explore how light scatters	A1, A2, B1, B2, D1, D2, D3, E3, G1
26	Earth Science	Fossils	To explore how fossils are made	A1, A2, B1, B2, D1, D3, E3, G1
27	Earth Science	Constellations	To explore the concept of star groups	A1, A2, B1, B2, D2, D3, E3, G1
28	Physical Science (Energy/Matter)	Transfer of Energy	To explore how energy moves in waves	A1, A2, B1, B2, B3, E1, E2, E3, F5, G1
29	Physical Science (Energy/Matter)	Sound Waves	To explore how sound waves are ampllified	A1, A2, B1, B3, D2, E1, E2, E3, F4, G1
30	Physical Science (Energy/Matter)	Energy Conservation	To explore how energy changes form	A1, A2, B1, B2, B3, E1, E2, E3, G1
31	Physical Science (Energy/Matter)	Images	To explore how a lens affects an image	A1, A2, B1, B2, B3, E1, E2, E3, F5, G1
32	Physical Science (Energy/Matter)	Magnetism	To explore some properties of matter	A1, A2, B1, B2, B3, D1, E2, E3, F3, F5, G1
33	Physical Science (Energy/Matter)	Electromagnetism	To build and use an electromagnet	A1, A2, B1, B2, B3, D1, E3, G1
34	Physical Science (Energy/Matter)	Properties of Matter	To explore the interaction of matter	A1, A2, B1, B2, B3, E1, E2, E3, F5, G1
35	Physical Science (Energy/Matter)	Combustion	To explore the "fire triangle"	A1, A2, B1, B2, E1, E2, E3, F5, G1
36	Physical Science (Energy/Matter)	Indicators	To explore the action of indicators	A1, A2, B1, E1, E2, E3, F1, F4, F5, G1

Level D (Grade 4)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Germination	To explore growth in plants	A1, A2, B1, B2, B3, C1, C2, C3, E3, F2, F3, F4, G1
2	Life Science	Classification	To explore how characteristics are used for indentification	A1, A2, C1, C3, E3, F1, F2, F3, G1
3	Life Science	Animal Characteristics	To explore how a bird's feathers repel water	A1, A2, A3, B1, C1, C3, E3, F2, F4, G1
4	Life Science	Ecosystems	To explore the predator/prey relationship	A1, A2, C1, C2, C3, E3, F2, F3, F4, G1,
5	Life Science	Plant Structure	To explore images as a scientific tool	A1, A2, C1, C2, C3, E3, F2, F3, F4, G1
6	Life Science	Food Preservation	To explore how water affects spoilage	A1, A2, B1, B3, C1, C2, C3, E3, F1, F2, F3, F4, G1
7	Life Science	Body Function	To explore the sense of touch	A1, A2, B2, C1, C3, E3, F1, G1
8	Life Science	Body Function	To explore the nervous system	A1, A2, B2, C1, C3, E3, F1, G1
9	Life Science	Body Structure	To explore the major bones of the body	A1, A2, B2, C1, C3, E3, F1, G1
10	Physical Science (Forces)	Crystals	To explore changes in matter and forces that cause them	A1, A2, B1, B2, B3, D1, E3, G1
11	Physical Science (Forces)	Surface Tension	To explore water molecule attraction	A1, A2, B1, B2, D1, E3, G1
12	Physical Science (Forces)	Air Pressure	To explore air as a form of matter	A1, A2, B3, B4, D1, E3, G1
13	Physical Science (Forces)	Gravity	To explore how gravity works	A1, A2, B1, B2, D1, E3, G1
14	Physical Science (Forces)	Inertia	To explore intertia and movement	A1, A2, B1, B2, E3, F1, G1
15	Physical Science (Forces)	Torque	To explore how torque can change the direction of force	A1, A2, B1, B2, E1, E2, E3, F5, G1
16	Physical Science (Forces)	Buoyancy	To explore how things float	A1, A2, B1, B2, B3, E3, G1
17	Physical Science (Forces)	Force Transfer	To explore how forces can be moved	A1, A2, B1, B2, B3, E1, E2, E3, F5, G1
18	Physical Science (Forces)	Flight	To explore how forces allow flight	A1, A2, B1, B2, E1, E2, E3, F5, G1
19	Earth Science	Air Pressure	To explore air pressure as a force	A1, A2, B1, B2, D1, D3, E1, E2, E3, G1
20	Earth Science	Air Pressure	To explore the effects of air pressure	A1, A2, B1, B2, B3, D1, D3, E3, G1
21	Earth Science	Barometers	To explore how air pressure is measured	A1, A2, B1, B2, B3, D1, D2, D3, E1, E2, E3, F4, F5, G1
22	Earth Science	Water Cycle	To explore physical changes in water	A1, A2, B1, B2, B3, D1, D3, E3, F4, G1
23	Earth Science	Geology	To explore sedimentary rock	A1, A2, B1, B2, D1, D3, E3, F4, G1
24	Earth Science	Earth's Structure	To explore core sampling	A1, A2, B1, B2, D1, D3, E1, E2, E3, F4, G1
25	Earth Science	Volcanoes	To explore the action of volcanoes	A1, A2, B1, B2, D1, D3, F4, G1
26	Earth Science	Fossils	To explore fossilization	A1, A2, B1, B2, D1, D3, E3, F4, G1
27	Earth Science	Crystallization	To explore how groundwater forms cave formations	A1, A2, B1, B2, D1, D3, E3, F4, G1
28	Physical Science (Energy/Matter)	Wave Structure	To explore the parts and functions of waves	A1, A2, B1, B2, B3, E2, E3, F5, G1
29	Physical Science (Energy/Matter)	Refraction	To explore properties of light	A1, A2, B1, B2, B3, E3, G1
30	Physical Science (Energy/Matter)	Lenses	To explore how lenses affect images	A1, A2, B1, B2, B3, E2, E3, F1, F5, G1
31	Physical Science (Energy/Matter)	Sound	To explore how sound is made	A1, A2, B1, B2, B3, E2, E3, F5, G1
32	Physical Science (Energy/Matter)	Static Electricity	To explore static electricity	A1, A2, B1, B2, B3, E2, E3, G1
33	Physical Science (Energy/Matter)	States of Matter	To explore changes in states of matter	A1, A2, B1, B3, D1, E3, G1
34	Physical Science (Energy/Matter)	Endothermic Change	To explore endothermic change	A1, A2, B1, B3, D1, E3, F3, G1
35	Physical Science (Energy/Matter)	Exothermic Change	To explore exothermic change	A1, A2, B1, B3, D1, E3, F3, G1
36	Physical Science (Energy/Matter)	Indicators	To explore how an acid or base affects an indicator	A1, A2, B1, B3, D1, E3, F4, F5, G1

Level E (Grade 5)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Life Cycles	To explore the life cycle of yeast	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
2	Life Science	Growth	To explore one aspect of a life cycle	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
3	Life Science	Stimulus/Response	To explore how plants respond to their environment	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
4	Life Science	Transpiration	To explore how water moves through plants	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
5	Life Science	Plant Reproduction	To explore reproduction by dissecting a flower	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
6	Life Science	Diffusion	To explore how materials cross membranes	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
7	Life Science	Eye Structure	To explore how an image is created in your eye	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
8	Life Science	Vision	To explore how the brain and eyes work together	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
9	Life Science	Joint Structure	To explore how our joints function	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
10	Physical Science (Forces)	Molecules	To explore the structure of molecules	A1, A2, B1, B2, E1, E2, G1, G2
11	Physical Science (Forces)	Surface Tension	To explore how water molecules behave	A1, A2, B1, B2, B3, E1, E2, G1, G2
12	Physical Science (Forces)	Composition of Matter	To explore the space inside matter	A1, A2, B1, E1, E2, G1, G2
13	Physical Science (Forces)	Velocity	To explore how gravity can be defeated	A1, A2, B2, B3, E1, E2, F5, G1, G2
14	Physical Science (Forces)	Inertia	To explore how inertia relates to moving objects	A1, A2, B2, B3, E1, E2, F5, G1, G2
15	Physical Science (Forces)	Torque	To explore how “center of gravity” affects motion	A1, A2, B2, B3, E1, E2, F5, G1, G2
16	Physical Science (Forces)	The Bernoulli Principle	To explore air pressure and lift	A1, A2, B1, B2, B3, E1, E2, G1, G2
17	Physical Science (Forces)	Lamination	To explore how stuctural changes increase strength	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
18	Physical Science (Forces)	Simple Machines	To explore the operation of a pulley	A1, A2, B2, B3, E1, E2, F5, G1, G2
19	Earth Science	Air Pressure	To explore what causes air pressure	A1, A2, B1, B2, B3, D1, G1, G2
20	Earth Science	Water Cycle	To explore different states of water	A1, A2, B1, B2, B3, D1, G1, G2
21	Earth Science	Glaciers	To explore one way glaciers affect Earth’s surface	A1, A2, B1, B2, B3, D1, D2, G1, G2
22	Earth Science	Weather Patterns	To explore why deserts mostly occur on one side of mountains	A1, A2, B1, B2, B3, C1, C4, D1, G1, G2
23	Earth Science	Geology	To explore the properties of an Earth material	A1, A2, B1, B2, D1, D2, E1, G1, G2
24	Earth Science	Geology	To explore how Earth forces change materials	A1, A2, B1, B2, D1, D2, G1, G2
25	Earth Science	Geology	To explore another Earth material	A1, A2, B1, B2, D1, D2, G1, G2
26	Earth Science	Convection	To explore how convection currents create circulation	A1, A2, B1, B2, B3, D1, G1, G2
27	Earth Science	Planetary Movement	To explore Earth’s spin	A1, A2, B1, B2, B3, D1, D2, G1, G2
28	Physical Science (Energy/Matter)	Waves	To explore the characteristics of waves	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
29	Physical Science (Energy/Matter)	Reflection	To explore one characteristic of light	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
30	Physical Science (Energy/Matter)	Sound	To explore how sound travels	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
31	Physical Science (Energy/Matter)	Magnetism	To explore how a compass works	A1, A2, B1, B2, D1, E1, E2, F5, G1, G2, G3
32	Physical Science (Energy/Matter)	Electricity	To explore the movement of electrons	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
33	Physical Science (Energy/Matter)	Crystals	To explore the formation of crystals	A1, A2, B1, B2, G1, G2
34	Physical Science (Energy/Matter)	Chemical Reactions	To explore a chemical reaction	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
35	Physical Science (Energy/Matter)	Lenses	To explore how a lens affects light	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2, G3
36	Physical Science (Energy/Matter)	Indicators	To explore how indicators show changes	A1, A2, B1, B2, E1, E2, F5, G1, G2, G3

Level F (Grade 6)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Seed Structure	To explore the structure and purpose of seeds	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
2	Life Science	Seed Dispersal	To explore how seeds are scattered around	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
3	Life Science	Chlorophyll	To explore the chemical responsible for photosynthesis	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
4	Life Science	Decomposition	To explore how organisms decompose after death	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
5	Life Science	Preservatives	To explore how preservatives affect decomposition	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
6	Life Science	Classification	To explore grouping objects by characteristics	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
7	Life Science	Camouflage	To explore how color affects survival of prey animals	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
8	Life Science	Eye Dominance	To explore brain function through eye dominance	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
9	Life Science	Eye Structure	To explore similarities between the eye and a camera	A1, A2, B1, B2, B3, C1, C3, D1, E3, F1, F4, G1
10	Physical Science (Forces)	Half Life	To explore how radioactive elements break down	A1, A2, B1, B2, B3, E1, E2, F3, F4, F5, G1, G2
11	Physical Science (Forces)	Cohesion	To explore how elements are held together	A1, A2, B1, B2, B3, G1, G2
12	Physical Science (Forces)	Stress	To explore how stress affects materials	A1, A2, B1, B2, B3, G1, G2
13	Physical Science (Forces)	Gravity	To explore how gravity affects objects	A1, A2, B1, B2, B3, G1, G2
14	Physical Science (Forces)	Momentum	To explore how forces are transferred	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
15	Physical Science (Forces)	Torque	To explore center of gravity and torque	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
16	Physical Science (Forces)	Buoyancy	To explore why some objects float	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
17	Physical Science (Forces)	Compression	To explore compression and how force is transferred	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
18	Physical Science (Forces)	Machines	To explore how machines multiply force and change its direction	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
19	Earth Science	Air Pressure	To explore air pressure	A1, A2, B1, B2, B3, D1, G1, G2
20	Earth Science	Air Pressure	To explore changes in air pressure	A1, A2, B1, B2, B3, D1, G1, G2
21	Earth Science	Weather	To explore an important weather instrument	A1, A2, B1, B2, B3, D1, E1, E2, F5, G1, G2
22	Earth Science	Geology	To explore properties of igneous rock	A1, A2, B1, B2, D1, G1, G2
23	Earth Science	Chemical Weathering	To explore a unique form of erosion	A1, A2, B1, D1, G1, G2
24	Earth Science	Groundwater	To explore how water is filtered underground	A1, A2, B1, B2, B3, D1, F1, F2, F3, F4, G1, G2
25	Earth Science	Glaciers	To explore how glaciers are formed	A1, A2, B1, B3, D1, D2, G1, G2
26	Earth Science	Planets	To make a model of a planet	A1, A2, B1, B2, D1, G1, G2
27	Earth Science	Earth Structure	To explore Earth's layers	A1, A2, B1, D1, D3, G1, G2
28	Physical Science (Energy/Matter)	Light	To explore light waves and color	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
29	Physical Science (Energy/Matter)	Lenses	To explore how a lens bends light	A1, A2, B1, B3, E1, E2, F5, G1, G2
30	Physical Science (Energy/Matter)	Sound	To explore how sound is made	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
31	Physical Science (Energy/Matter)	Magnetism	To explore magnets and magnetic fields	A1, A2, B1, B2, D1, E1, E2, F5, G1, G2
32	Physical Science (Energy/Matter)	Static Electricity	To explore some properties of electricity	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
33	Physical Science (Energy/Matter)	Thermodynamics	To explore a physical change	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
34	Physical Science (Energy/Matter)	Chemical Change	To explore a chemical change using a hand warmer	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
35	Physical Science (Energy/Matter)	Corrosion	To explore the speed of chemical reactions	A1, A2, B1, B3, G1, G2
36	Physical Science (Energy/Matter)	Indicators	To explore how indicators show changes	A1, A2, B1, G1, G2

Level G (Grade 7)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Respiration	To explore how seeds use energy and oxygen	A1, A2, C1, C3, C4, C5, F1, F2, G1, G2
2	Life Science	Plant Reproduction	To explore how plants reproduce	A1, A2, C1, C2, C5, F1, F2, G1, G2
3	Life Science	Food Energy	To discover that energy is stored in food	A1, A2, C1, C3, C5, F1, F2, G1, G2
4	Life Science	Nutrients	To explore testing food for a nutrient	A1, A2, C1, C3, C5, F1, F2, G1, G2
5	Life Science	Diffusion	To explore how materials pass through a cell's membrane	A1, A2, C1, C3, C5, F1, F2, G1, G2
6	Life Science	Blood	To explore blood composition	A1, A2, C1, C3, C5, F1, G1, G2
7	Life Science	Classification	To classify animals by eye location	A1, A2, C1, C4, C5, F2, G1, G2
8	Life Science	Human Anatomy	To explore the structure of the spine	A1, A2, C1, C5, F1, G1, G2
9	Life Science	Disease Transmission	To explore how disease can spread so fast and so far	A1, A2, C1, C3, C4, C5, F1, F2, G1, G2
10	Physical Science (Forces)	Magnetism	To explore magnetic fields	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
11	Physical Science (Forces)	Scientific Experiments	To explore how experiments enhance understanding	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
12	Physical Science (Forces)	Center of Gravity	To explore how objects balance	A1, A2, B1, B2, B3, G1, G2
13	Physical Science (Forces)	Torque & Equilibrium	To explore how forces can balance	A1, A2, B1, B2, E1, E2, F5, G1, G2
14	Physical Science (Forces)	Kinetic Energy	To explore how forces affect objects	A1, A2, B1, B2, B3, E1, E2, F1, F4, F5, G1, G2
15	Physical Science (Forces)	Buoyancy	To explore why some objects float	A1, A2, B1, B2, E1, E2, F5, G1, G2
16	Physical Science (Forces)	Transfer of Forces I	To explore how strength is related to structure	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
17	Physical Science (Forces)	Transfer of Forces II	To explore how strength is related to shape	A1, A2, B1, B2, E1, E2, F5, G1, G2
18	Physical Science (Forces)	Flight	To explore factors that affect flight	A1, A2, B1, B2, E1, E2, F5, G1, G2
19	Earth Science	Atmospheric Pressure	To explore the force of air pressure	A1, A2, B1, B2, B3, D1, G1, G2
20	Earth Science	Weather	To explore clouds' relationship to weather	A1, A2, B1, D1, G1, G2
21	Earth Science	Remote Sensing	To explore how inaccessible locations are mapped	A1, A2, B1, B3, D1, G1, G2
22	Earth Science	Earth Materials	To explore the properties of coal	A1, A2, D2, E1, E2, F1, F2, F5, G1, G2
23	Earth Science	Solar System I	To explore relative distances between planets	A1, A2, D3, G1, G2
24	Earth Science	Solar System II	To explore relative sizes of planets	A1, A2, D3, G1, G2
25	Earth Science	Constellations	To explore the star patterns seen from Earth	A1, A2, D3, G1, G2
26	Earth Science	Gravitational Fields	To explore how gravity affects objects	A1, A2, D3, G1, G2
27	Earth Science	Earth Structure	To explore the layers of the Earth	A1, A2, D1, D2, G1, G2
28	Physical Science (Energy/Matter)	Light Spectrum	To explore different types of light	A1, A2, B1, B2, B3, E1, E2, F1, F3, F5, G1, G2
29	Physical Science (Energy/Matter)	Sound	To explore how sound is made	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
30	Physical Science (Energy/Matter)	Properties of Light	To explore how materials affect light	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
31	Physical Science (Energy/Matter)	Periodic Table	To explore the periodic table	A1, A2, G1, G2
32	Physical Science (Energy/Matter)	Electricity	To explore circuits, conductors, and insulators	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
33	Physical Science (Energy/Matter)	States of Matter	To compare physical and chemical change	A1, A2, B1, B2, B3, G1, G2
34	Physical Science (Energy/Matter)	Combustion	Explore the basic principles of combustion and fire	A1, A2, B1, B2, B3, G1, G2
35	Physical Science (Energy/Matter)	Chemical Change	To explore how surface area affects oxidation	A1, A2, B1, B2, B3, G1, G2
36	Physical Science (Energy/Matter)	Indicators	To explore how indicators work	A1, A2, B1, B2, B3, G1, G2

Level H (Grade 8)

Lesson	Category	Topic/Focus	Objective	National Standards
1	Life Science	Life Cycles	To conduct a controlled experiment	A1, A2, C2, C3, C5, G1, G2
2	Life Science	Plant Preservation	To explore how plants are preserved for future study	A1, A2, C1, C5, G1, G2
3	Life Science	Classification	To explore grouping by characteristics	A1, A2, C1, C2, C4, C5, F2, G1, G2
4	Life Science	Genetics	To examine a sample of DNA	A1, A2, C1, C2, C3, C5, F1, G1, G2
5	Life Science	Mitosis	To explore how chromosomes stay constant when cells divide	A1, A2, C1, C2, C3, C5, F1, G1, G2
6	Life Science	Meiosis	To explore how cell division creates gametes, determining gender	A1, A2, C1, C2, C3, C5, F1, G1, G2
7	Life Science	Fertilization	To explore how fertilization restores the right # of chromosomes	A1, A2, C1, C2, C3, C5, F1, G1, G2
8	Life Science	Biological Uniqueness	To explore human differences by observing fingerprints	A1, A2, C1, C2, C5, F1, F5, G1, G2
9	Life Science	Genetics	To explore how gene combinations create unique individuals	A1, A2, B1, C1, C2, C5, F1, F4, G1, G2
10	Physical Science (Forces)	Scientific Models	To explore changes in our understanding of the atom	A1, A2, B1, B2, E1, E2, F5, G1, G2
11	Physical Science (Forces)	Surface Tension	To explore how water molecules attract each other	A1, A2, B1, B2, G1, G2
12	Physical Science (Forces)	Energy Conversion	To explore converting kinetic energy to potential energy	A1, A2, B1, B2, B3, G1, G2
13	Physical Science (Forces)	Forces and Energy	To explore the energy efficiency of a force	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
14	Physical Science (Forces)	Energy Conversion	To explore converting kinetic energy to potential energy	A1, A2, B1, B2, B3, F5, G1, G2
15	Physical Science (Forces)	Gravity	To explore an object's center of gravity	A1, A2, B1, B2, B3, G1, G2
16	Physical Science (Forces)	Buoyancy	To explore how density affects buoyancy	A1, A2, B1, B2, G1, G2
17	Physical Science (Forces)	Transfer of Forces	To explore how structure can transfer forces	A1, A2, B1, B2, B3, E1, E2, F4, F5, G1, G2
18	Physical Science (Forces)	Inertia	To explore how design affects force	A1, A2, B1, B2, B3, E1, E2, F4, F5, G1, G2
19	Earth Science	Air Pressure I	To explore the balance of forces	A1, A2, B1, B2, D1, G1, G2
20	Earth Science	Air Pressure II	To explore how heat affects air pressure	A1, A2, B1, B2, D1, G1, G2
21	Earth Science	Global Magnetism	To explore magnetic fields	A1, A2, B1, B2, D1, D2, G1, G2
22	Earth Science	Geosynchronous Orbit	To explore ways objects move in space	A1, A2, B1, B2, D3, G1, G2
23	Earth Science	Topography	To explore topographic maps	A1, A2, B1, D1, F2, G1, G2
24	Earth Science	Identifying rocks & minerals I	To explore testing methods for rocks and minerals	A1, A2, B1, D1, D2, G1, G2
25	Earth Science	Identifying rocks & minerals II	To explore more testing methods for rocks and minerals	A1, A2, B1, D1, D2, G1, G2
26	Earth Science	Natural Resources	To explore the challenges of recovering natural resources	A1, A2, D1, D2, E1, E2, F2, F4, F5, G1, G2
27	Earth Science	Fossils	To explore how scientists map a "dig"	A1, A2, C4, C5, D1, D2, G1, G2
28	Physical Science (Energy/Matter)	Ultraviolet Light	To explore properties of ultraviolet light	A1, A2, B1, B3, E1, E2, F1, F3, F4, F5, G1, G2
29	Physical Science (Energy/Matter)	Refraction	To explore how refraction affects light	A1, A2, B1, B3, E1, E2, F5, G1, G2
30	Physical Science (Energy/Matter)	Sound	To explore sound using homemade instruments	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
31	Physical Science (Energy/Matter)	Density	To explore how displacing matter creates buoyancy	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
32	Physical Science (Energy/Matter)	Electricity	To explore circuits and conductivity	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
33	Physical Science (Energy/Matter)	Laws of Matter	To explore two primary laws of matter	A1, A2, B1, B2, E1, E2, F5, G1, G2
34	Physical Science (Energy/Matter)	Types of Energy	To explore how energy converts to motion	A1, A2, B1, B2, B3, E1, E2, F5, G1, G2
35	Physical Science (Energy/Matter)	Changes in Matter	To explore chemical and physical change	A1, A2, B1, E1, E2, F5, G1, G2
36	Physical Science (Energy/Matter)	Indicators	To explore how indicators work	A1, A2, B1, E1, E2, F1, F5, G1, G2