



Scope & Sequence

A Reason For[®] Science

Published by **The Concerned Group**

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.

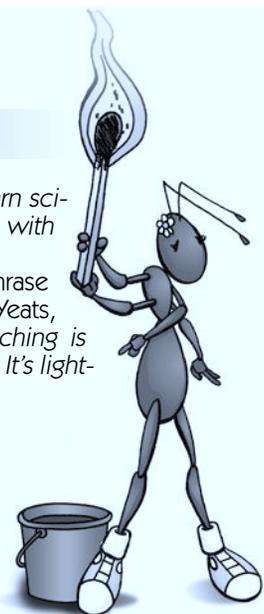
By contrast, **A Reason For® Science** is based on the premise that

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 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 structural 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