



# Scope & Sequence

**A Reason For<sup>®</sup> 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.

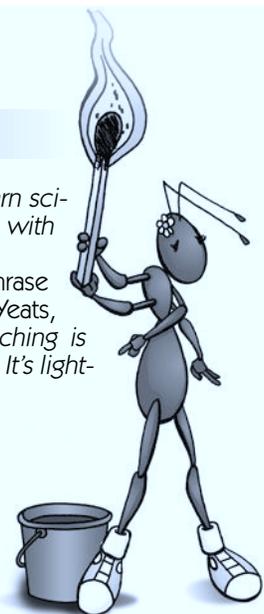
By contrast, **A Reason For® Science** is based on the premise that

learning science is an ACTIVE process. It is “something children do, not something done to them.”<sup>1</sup>

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.”<sup>2</sup>

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.”<sup>3</sup>

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**<sup>1</sup>. 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”).

<sup>1</sup> National Science Education Standards, 1999. Washington, D.C.: National Academy Press. (p. 2); <sup>2</sup> Ibid. (p. 20); <sup>3</sup> Ibid. (p. 2)

## 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