Correlation of *Core Knowledge® Sequence* & Colorado Grade Level Expectations

Core Knowledge® Content (Science-Grade 4)	**Colorado Grade Level Expectations** (Grade 4-Science)
Teachers: Effective instruction in science requires hands-on experience and observation. In the words of the 1993 report from the American Association for the Advancement of Science, Benchmarks for Science Literacy, "From their very first day in school, students should be actively engaged in learning to view the world scientifically. That means encouraging them to ask question about nature and to seek answers, collect things, count and measure things, make qualitative observations, organize collections and observations, discuss findings, etc." While experience counts for much, book learning is also important, for it helps bring coherence and order to a child's scientific knowledge. Only when topics are presented systematically and clearly can children make steady and secure progress in their scientific learning. The child's development of scientific knowledge and understanding is in some ways a very disorderly and complex process, different for each child. But a systematic approach to the exploration of science, one that combines experience with book learning, can help provide essential building blocks for deeper understanding at a later time.	
I. The Human Body	
A. The Circulatory System	
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B. The Respiratory System	
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II. Chemistry: Basic Terms and Concepts	
A. Atoms	
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B. Properties of Matter	
▪	4.2.A understand that materials can exist in different forms, (solid, liquid, gas) and can be changed from one form to another, also covered in Grade 1: Science: Matter 4.4.M identify and describe the states (e.g. solid, liquid, gas) in which water can be found on Earth
C. Elements	
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D. Solutions	
▪	
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III. Electricity	
▪	4.2.F apply knowledge of simple circuits to create a new circuit that involves more components (using batteries, wires, light or a buzzer, demonstrate the requirements for a complete circuit)
IV. Geology	

Correlation of the *Core Knowledge Sequence* and the Colorado Grade Level Expectations

A. The Earth's Layers	
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B. How Mountains Are Formed	
▪	
C. Rocks	
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D. Weathering and Erosion	
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V. Meteorology	
▪	4.4.K identify the water cycle (e.g. evaporation, condensation, transpiration, etc.) 4.4.L recognize the importance of water and its uses
▪	4.4.I know that clouds have properties, locations, and movements that can be observed and described
▪	4.4.J know that weather can be described in measurable quantities, temperature, wind direction, and precipitation
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▪	4.4.H distinguish between weather and climate
VI. Science Biographies	
▪	
Grade level or other area Grade Level Expectations are covered in the *Core Knowledge Sequence*	**Grade Level Expectations not directly covered in the *Core Knowledge Sequence*, but can be covered in other areas**
This can be covered in many other areas, see note to teachers above	4.1.1.A plan, design, predict, and conduct an experiment, collect data, and communicate reasonable explanations
This can be covered in many other areas, see note to teachers above	4.1.1.B using the data from one investigation, generate a prediction for a new investigation
This can be covered in many other areas, see note to teachers above	4.1.1.C conduct a systematic observation over time
Grade 4: Mathematics: Numbers and Number Sense	4.1.1.D organize data into an appropriate format (e.g. bar graph, pie chart, charts, Venn diagram)
Grade 4: Mathematics: Numbers and Number Sense, Fractions and Decimals, Measurement, and Geometry	4.1.1.E select and use mathematical tools to measure, count, sort, identify, describe, label, and communicate information from observations (e.g. whole numbers, simple fractions, geometric figures, representative charts such as pie and bar charts)
Grade 4: Mathematics: Numbers and Number Sense	4.1.1.F analyze data found in graphs, charts, and articles in order to draw and evaluate conclusions
This can be covered in many other areas, see note to teachers above	4.1.1.G develop and evaluate explanations based upon experimental evidence and the experience of others
This can be covered in many other areas, see note to teachers above	4.1.1.H check explanations against scientific knowledge, experiences and observations of others
This can be covered in many other areas, see note to teachers above	4.1.1.I use facts to support and evaluate the fairness of conclusions
Grade 4: Language Arts: Writing and Research	4.1.1.J write instructions for a scientific or experimental procedure that others can follow
This can be covered in many other areas, see note to teachers above	4.1.1.K describe and illustrate the steps taken in solving a problem including the resources used
Grade 4: Mathematics: Measurement	4.1.1.L use appropriate units to add meaning to numbers and when presenting or using numerical data
Grade 4: Mathematics: Numbers and Number Sense, Fractions and Decimals, Measurement, and Geometry	4.1.1.M use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent objects, events, and processes
Grade 3 and 4: Mathematics: Measurement	4.1.1.N select and use simple devices to gather data related to an investigation (e.g. ruler, thermometers, watches, magnifying lens, microscopes, calculators, and computers)
This can be covered in many other areas, see note to teachers above	4.1.3.H use knowledge and evidence obtained in experiments, to support explanation

	Grade 2: Science: Simple Machines and Grade 8: Science: Physics: Forces	4.2.B describe the position and motion of an object by pushing and pulling and understanding the size of the change is related to the strength of the push or pull
	Grade 3: Science: Sound	4.2.C produce sound with vibrating objects and understand that the pitch of the sound can be varied by changing the rate of the vibration
	Grade 3: Science: Light and Grade 8: Science: Electromagnetic Radiation and Light	4.2.D investigate the properties of light as it travels in a straight line until it strikes an object; reflected by a mirror, refracted by a lens, or absorbed by an object
	Grade 6: Science: Energy, Heat, and Energy Transfer	4.2.E investigate how heat can move from one object to another by conduction
	Grade 8: Science: Physics	4.2.G predict whether objects will sink or float based on a qualitative understanding of the concepts of density and buoyancy
	Grade 2: Science: Simple Machines and Grade 8: Science: Physics	4.2.H describe how forces work in common simple machines (e.g. seesaws, crowbar slides)
	Grade 5: Science: Chemistry: Matter and Change	4.2.I understand that matter changes in both physical and chemical ways
	Grade 7: Science: Cell Division and Genetics	4.3.A recognize that some characteristics of organisms are inherited while others are environmentally influenced
	Grade 1: Science: Living Things and Their Environments, Grade 3: Science: Ecology, and Colorado History studies	4.3.B give examples of food chains/webs in Colorado ecosystems (e.g. mountains, plains, plateaus)
	Grade 1: Science: Living Things and Their Environments, Grade 3: Science: Ecology, and Colorado History studies	4.3.C describe animal and plant characteristics that allow them to survive and adapt in different life zones in the Rocky Mountains
	Grade 3: Science: Ecology	4.3.D give examples of how organisms interact with each other and with other nonliving parts of environment
	Grade 1: Science: Living Things and Their Environments, Grade 3: Science: Ecology, and Grade 5: Science: Plant Structure and Processes, Grade 8: Science: Chemistry of Food and Respiration	4.3.E conduct investigations to gather data, information, and ideas related to the energy and nutrients organisms need from their environment in order to survive
	Grade 1: Science: Living Things and Their Environments, Grade 3: Science: Ecology, and Grade 5: Science: Plant Structure & Processes	4.3.F explore a simple natural system (e.g. classroom aquarium or outdoor habitat and generate questions about the transfer of energy and use of nutrients)
	Grade 1: Science: Living Things and Their Environments, Grade 3: Science: Ecology, and Grade 5: Science: Plant Structure and Processes, Grade 8: Science: Chemistry of Food and Respiration	4.3.G know that all organisms need energy and matter to live and grow
	Grade 1: Science: Living Things and Their Environments, Grade 2: Science: Insects, Grade 3: Science: Ecology, and Grade 5: Science: Plant Structure and Processes	4.3.H know that many plants depend on animals for pollination and seed dispersal while animals depend on plants for food and shelter
	Grade 1: Science: Astronomy, Grade 3: Science: Astronomy and Grade 6: Science: Astronomy	4.4.A identify the basic components of the solar system
	Grade 1: Science: Astronomy, Grade 3: Science: Astronomy and Grade 6: Science: Astronomy	4.4.B describe the motion of the Earth in relation to the sun
	Grade 3: Science: Astronomy and Grade 6: Science: Astronomy	4.4.C compare Earth to other planets (e.g. size, distance from the sun and from each other, temperature, length of day)
	Grade 3: Science: Astronomy and Grade 6: Science: Astronomy	4.4.D know that the Earth is one of nine planets that orbit the sun and that as the Earth orbits the sun, different patterns of stars can be seen in different seasons
	Grade 3: Science: Astronomy and Grade 6: Science: Astronomy	4.4.E explore objects associated with the universe (comets, galaxies, asteroids)
	Kindergarten, Grade 1, Grade 2, Grade 3, Grade 4, Grade 5, and Grade 6: History and Geography: World Geography	4.4.F compare and contrast the physical features of Earth (e.g. landforms)
	This can be covered during the study of Colorado history	4.4.G identify the main landforms in Colorado (e.g. mountains, plains, plateaus)
	This can be covered in many other areas, see note to teachers above	4.5.A identify some causes for recent increases in technological advances
	This can be covered in many other areas, see note to teachers above	4.5.B make a plan for building a device considering the limitations of the material and including multiple views
	This can be covered in many other areas, see note to teachers above	4.5.C describe and define the invention process (e.g. brainstorm, analyze, combine and create)
	This can be covered in many other areas, see note to teachers above	4.6.A recognize that when a science experiment is repeated with the same conditions, the experiment generally works the same way

	This can be covered in many other areas, see note to teachers above	4.6.B compare knowledge gained from direct experience to knowledge gained indirectly
	This can be covered in many other areas, see note to teachers above	4.6.C identify observable patterns and changes in their lives and predict future events based on those patterns
	This can be covered in many other areas, see note to teachers above	4.6.D describe and compare the components and interrelationships of a simple system
	This can be covered in many other areas, see note to teachers above	4.6.E compare a model with what it represents