



EARTHCOMM CORRELATION TO CALIFORNIA INTEGRATED SCIENCE 3

Correlation Key:
"X" = Coverage
 Secondary concept of the activity or problem. Students gain a basic understanding or introduction of the concept. Coverage in student edition and/or Teacher Edition supports the development of the concept
"XX" = In-depth Coverage
 Primary concept that is the focus of the activity or problem. Students gain thorough understanding of the concept.

Earth's Dynamic Geosphere	Understanding Your Environment			Earth's Fluid Spheres			Earth's Natural Resources			Earth System Evolution				
Volcanoes	Pl. Tectonics	Earthquakes	Bedrock Geology	River Systems	Land Use Planning	Oceans	Weather	Cryosphere	Energy	Minerals	Water	Astronomy	Climate Change	Changing Life

Standards that all students are expected to achieve in the course of their studies are unmarked. Standards that all students should have the opportunity to learn are marked with an asterisk (*).

INTEGRATED SCIENCE 3

Investigation and Experimentation

1. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other four strands, students should develop their own questions and perform in

a. Select and use appropriate tools and technology (such as computer-linked probes, spreadsheets, and graphing calculators) to perform tests, collect data, analyze relationships, and display data.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
b. Identify and communicate sources of unavoidable experimental error.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
c. Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.	XX	X	X	X	X	XX	X	X	X	XX	X	X	X	X	X
d. Formulate explanations by using logic and evidence.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
e. Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.	X	X	X	X	X	X	X	X	X	XX	X	XX	XX	X	X
f. Distinguish between hypothesis and theory as scientific terms.	X	XX	X	X	X	X	X	X	X	X	X	X	X	X	X
g. Recognize the usefulness and limitations of models and theories as scientific representations of reality.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
h. Read and interpret topographic and geologic maps.	XX	XX	XX	XX	XX	XX	X	XX	X	XX	XX	XX		X	X
i. Analyze the locations, sequences, or time intervals that are characteristic of natural phenomena (e.g., relative ages of rocks, locations of planets over time, and succession of species in an ecosystem).	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
j. Recognize the issues of statistical variability and the need for controlled tests.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
k. Recognize the cumulative nature of scientific evidence.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
l. Analyze situations and solve problems that require combining and applying concepts from more than one area of science.	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX
m. Investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings. Examples of issues include irradiation of food, cloning of animals by somatic cell nuclear transfer, choice of energy sources, and	XX	XX	XX	X	XX	XX	XX	XX	XX	XX	XX	XX	X	XX	XX
n. Know that when an observation does not agree with an accepted scientific theory, the observation is sometimes mistaken or fraudulent (e. g., the Piltdown Man fossil or unidentified flying objects) and that the theory is sometimes wrong (e.g., the Ptole	X	XX	X	X	X	X	XX	X	X	X	X	XX	X	XX	XX

EARTH SCIENCES

Energy in the Earth System

4. Energy enters the Earth system primarily as solar radiation and eventually escapes as heat. As a basis for understanding this concept:

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c. Students know the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect.	X					X		X	X	XX			XX	XX	
d.* Students know the differing greenhouse conditions on Earth, Mars, and Venus; the origins of those conditions; and the climatic consequences of each.													X		
Structure and Composition of the Atmosphere															
8. Life has changed Earth's atmosphere, and changes in the atmosphere affect conditions for life. As a basis for understanding this concept:															
a. Students know the thermal structure and chemical composition of the atmosphere.								X					X		
b. Students know how the composition of Earth's atmosphere has evolved over geologic time and know the effect of outgassing, the variations of carbon dioxide concentration, and the origin of atmospheric oxygen.								X					X	X	X
c. Students know the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities.						X				X			X	X	
BIOLOGY/LIFE SCIENCES															
Evolution															
7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:															
a. Students know why natural selection acts on the phenotype rather than the genotype of an organism.															X
b. Students know why alleles that are lethal in a homozygous individual may be carried in a heterozygote and thus maintained in a gene pool.															
c. Students know new mutations are constantly being generated in a gene pool.															X
d. Students know variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.															X
e.* Students know the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature.															
f.* Students know how to solve the Hardy-Weinberg equation to predict the frequency of genotypes in a population, given the frequency of phenotypes.															
8. Evolution is the result of genetic changes that occur in constantly changing environments. As a basis for understanding this concept:															
c. Students know the effects of genetic drift on the diversity of organisms in a population.															X

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d. Students know reproductive or geographic isolation affects speciation.															X
f.* Students know how to use comparative embryology, DNA or protein sequence comparisons, and other independent sources of data to create a branching diagram (cladogram) that shows probable evolutionary relationships.															
g.* Students know how several independent molecular clocks, calibrated against each other and combined with evidence from the fossil record, can help to estimate how long ago various groups of organisms diverged evolutionarily from one another.															