

Investigating Earth Systems Correlation to the Maryland Standards

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	Climate and Weather	Dynamic Planet	Energy Resources	Fossils	Materials and Minerals	Oceans	Rocks and Landforms	Soil	Water as a Resource
Scientific Inquiry									
1.8.1 access and process information from readings, investigations, and /or oral communications.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.2 formulate questions, which lead to the development of a testable hypothesis	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.3 use observations, research, and select appropriate scientific information to form predictions and hypotheses.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.4 recognize/develop well-designed procedures that identify the independent and dependent variables, the need for control when testing a factor, the importance of multiple trials, the selection of appropriate materials/equipment, and the development of clear, logical directions within an investigation.	XX	XX	XX	X	XX	XX	XX	X	XX
1.8.5 demonstrate safety when conducting an investigation.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.6 use appropriate instruments and metric units when making measurements and collecting data.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.7 collect, organize, and display data in ways others can verify (i.e. numbers, statistics, tables, graphs, drawings, charts, diagrams) using appropriate instruments (e.g., calculators, spreadsheets, databases, and graphing programs).	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.8 analyze and summarize data to identify trends and form a logical argument about a cause and effect relationship or a sequence of events.	XX	X	XX	X	X	XX	X	XX	XX
1.8.9 interpret and communicate findings (i.e., speaking, writing, and drawing) in a form suited to the purpose and audience, using developmentally appropriate methods including technology tools and telecommunications.	XX	XX	XX	XX	XX	XX	XX	XX	XX

Critical Thinking

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1.8.10 describe similarities and differences of objects, materials, concepts, and actions.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.11 construct and use classification systems for grouping objects, materials, concepts, and actions, organisms, etc.	XX	X	X	XX	XX	X	XX	XX	X
1.8.12 critique scientific information and identify possible sources of bias.	X	X	X	X	X	X	X	X	X
1.8.13 analyze the adequacy of the supporting evidence used to form conclusions, devise a plan, or solve a practical problem.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.14 provide supporting evidence when forming conclusions, devising a plan or solving a practical problem.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.15 analyze and extend patterns.	XX	XX	XX	X	X	XX	X	X	X
1.8.16 modify ideas based on new information from developmentally appropriate readings, data, and the ideas of others.	XX	XX	XX	XX	XX	XX	XX	XX	XX
1.8.17 describe to others how scientific information was used	XX	XX	XX	XX	XX	XX	XX	XX	XX
Applications of Science									
1.8.18 apply scientific principles and/or concepts to understand a new situation.	XX	XX	XX	X	X	XX	XX	XX	XX
1.8.20 apply concepts and processes of science to take and defend a position relative to an issue.	X	X	XX	X	XX	X	XX	X	XX
1.8.21 use the knowledge of science and available scientific equipment to devise a plan to solve a global problem.	X		X		X	X			X
Technology									
1.8.22 explain that a model has advantages and disadvantages and may need to be changed for different purposes.	X	XX	X		X	X	XX	X	X
1.8.23 demonstrate and explain that tools are essential to scientific investigation for such purposes as to observe, estimate, measure, compute, collect, and communicate scientific data and information (i.e., size, distance, motion).	XX	XX	XX	XX	XX	XX	XX	XX	XX

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1.8.24 design, plan, and construct things in response to a particular need or problem (e.g., instruments, machines, structures, and systems).	XX	X	X	X	XX	X	X	XX	X
1.8.25 evaluate and modify designs and products, when demonstrating that a solution to one problem can result in other problems and taking into account various constraints (e.g., gravity, property of materials, economic, political, social, ethical, and aesthetic issues).	X	X	X		XX	X		X	X
1.8.26 explain that science and technology have strongly influenced life under different technological circumstances in the past and continue to do so today.	X	X	X		X	X			X
History of Science									
1.8.27 explain how people from different cultures and times have made important contributions to the advancement of science, mathematics, and technology in different cultures at different times.	X	X		X		X	X		
1.8.28 explain that scientists are employed in various fields that are located in diverse places ranging from laboratories to natural field settings and their findings become available to everyone in the world.	X	X		X		X	X		
Earth Science									
Materials and Processes That Shape A Planet									
2.8.1 explain that some changes in a planet's surface are due to slow processes (i.e., erosion, weathering) and some changes are due to rapid processes (i.e., landslides, tornadoes, hurricanes, volcanic eruptions, earthquakes, flooding, and tsunamis).	XX	XX	X	X		X	XX	XX	X
Earth History									
2.8.2 analyze the arrangement and size of minerals contained within rocks in order to describe the environmental conditions present during formation.		X	X		X		XX		
2.8.3 describe how temperature, pressure, and dissolved minerals cause the formation of rocks.		X	X	X	X		XX		

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2.8.4 explain the physical processes that produce renewable and nonrenewable natural resources (e.g., fertile soils, fossils, fuels, and timber)			XX		XX		X	XX	
2.8.5 explain that fossils and layers of sedimentary rock provide evidence of Earth's biologic and geologic history including how life and environmental conditions have changed.		X	X	XX	X		X	X	
Plate Tectonics									
2.8.6 explain how Earth's crustal plates are influenced by activity in the mantle and core to produce major geologic events (i.e., mountain building, earthquakes, volcanic eruptions, ocean basin formation, sea-floor spreading, and sub-duction).		XX				X	X		
Astronomy									
2.8.7 explain that there are billions and billions of galaxies and each galaxy contains billions of stars that cannot be distinguished by the naked eye because of their great distance from earth.									
2.8.8 compare and classify celestial objects (i.e., stars, planets, moons, asteroids, comets, and meteors) according to sizes, compositions, and surface features.									
2.8.9 explain that the motion of most objects in the solar system is regular and predictable and explains phenomena (i.e., day, year, phases of the moon, tides eclipses).									
2.8.10 demonstrate and explain the causes of the seasons, relative lengths of days and nights, and flow of energy to and from the Earth (i.e., tilt, orbit, latitude, sun's energy).									
2.8.11 explain the phenomenon of tides as related to the concept of gravity.									
Interactions of Hydrosphere and Atmosphere									
2.8.12 explain how climate is affected by ocean currents, Earth's surface features, latitude, and the atmosphere (i.e., volcanic eruptions, El Niño, fluctuations in the jet stream).	XX					X			

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2.8.13 analyze Earth (i.e., land and water) data collected from space-based instruments and relate it to weather patterns.	XX								
2.8.14 describe and model large-scale and local weather systems	XX								
2.8.15 describe the distribution and circulation of the world's water through ocean currents, glaciers rivers, ground water, and atmosphere.	X					XX			X
2.8.16 describe the composition, properties, and structure of the atmosphere.	X								
Environmental Science									
Flow of Matter and Energy									
6.8.1 explain how matter is transformed between the physical environment and organisms (e.g. food webs, nitrogen cycle) and that the total amount of matter remains constant.	X	X	X			X	X	X	X
Interdependence of Organisms									
6.8.2 identify and explain the interdependency of organisms within the environment in a given ecosystem (i.e., producer/consumer, predator/prey, host/parasite).				X		X			
Natural Resources and Human Needs									
6.8.4 compare how different parts of the world have varying amounts and types of natural resources and how the use of those resources determines environmental quality (i.e. soil erosion ,water pollution, deforestation).	X		XX		XX			XX	XX
Environmental Issues									
6.8.5 analyze how human activities can accelerate or magnify many naturally occurring changes (i.e., erosion, air and water quality, populations).			X		X			X	X
6.8.6 compare different ways of obtaining, transforming, and distributing energy from various sources (e.g., fossil fuels, sun, water, radioisotopes) and their impact on the environment.			XX						