



6. Science consists of recurring themes and making connections b



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- (xi) describe how [meteoroids] affect Earth's systems
  - (xii) describe how [planets] affect Earth's systems
- (C) explore the historical and current hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal.
- (i) explore the historical hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal
  - (ii) explore the current hypotheses for the origin of the Moon, including the collision of Earth with a Mars-sized planetesimal
- (6) Science concepts. The student knows the evidence for the formation and composition of Earth's atmosphere, hydrosphere, biosphere, and geosphere. The student is expected to:
- (A) describe how impact accretion, gravitational compression, radioactive decay, and cooling differentiated proto-Earth into layers;
- (i) describe how impact accretion differentiated proto-Earth into layers
  - (ii) describe how gravitational compression differentiated proto-Earth into layers
  - (iii) describe how radioactive decay differentiated proto-Earth into layers
  - (iv) describe how cooling differentiated proto-Earth into layers
- (B) evaluate the roles of volcanic outgassing and water-bearing comets in developing Earth's atmosphere and hydrosphere;
- (i) evaluate the roles of volcanic outgassing in developing Earth's atmosphere and hydrosphere

- (7) Science concepts. The student knows that rocks and fossils provide evidence for geologic chronology, biological evolution, and environmental changes. The student is expected to:
- (A) describe the development of multiple radiometric dating methods and analyze their precision, reliability, and limitations in calculating the ages of igneous rocks from Earth, the Moon, and meteorites;
    - (i) describe the development of multiple radiometric dating methods
    - (ii) analyze [multiple radiometric dating methods'] precision in calculating the ages of igneous rocks from Earth
    - (iii) analyze [multiple radiometric dating methods'] precision in calculating the ages of igneous rocks from the Moon
    - (iv) analyze [multiple radiometric dating methods'] precision in calculating the ages of meteorites
    - (v) analyze [multiple radiometric dating methods'] reliability in calculating the ages of igneous rocks from Earth



- (iii) describe how faunal succession in rock layers reveal[s] information about the environment at the time those rocks were deposited
  - (iv) describe how faunal succession in rock layers reveal[s] information about the dynamic nature of the Earth
- (F) analyze data from rock and fossil succession to evaluate the evidence for and significance of mass extinctions, major climatic changes, and tectonic events.
- (i) analyze data from rock succession to evaluate the evidence for mass extinctions
  - (ii) analyze data from rock succession to evaluate the evidence for major climatic changes
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(10) Science concepts. The student knows how the physical and chemical properties of the ocean affect its structure and flow of energy. The student is expected to:

(A) describe how the composition and structure of the oceans leads to thermohaline circulation and its periodicity;

- (i) describe how the composition of the oceans leads to thermohaline circulation
- (ii) describe how the structure of the oceans leads to thermohaline circulation
- (iii) describe how the composition of the oceans leads to thermohaline periodicity
- (iv) describe how the structure of the oceans leads to thermohaline periodicity

(B) model and explain how changes to the composition, structure, and circulation of deep oceans affect thermohaline circulation using data on energy flow, ocean basin structure, and changes in polar ice caps and glaciers; and

- (i) model how changes to the composition of deep oceans affect thermohaline circulation using data on energy flow
- (ii) model how changes to the composition of deep oceans affect thermohaline circulation using data on ocean basin structure
- (iii) model how changes to the composition of deep oceans affect thermohaline circulation using data on changes in polar ice caps and glaciers
- (iv) model how changes to the structure of deep oceans affect thermohaline circulation using data on changes in polar ice caps and glaciers





- (iv) analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on coral bleaching
  - (v) analyze recent global ocean temperature data to predict the consequences of changing ocean temperature on biodiversity
- (E) predict how human use of Texas's naturally occurring resources such as fossil fuels, minerals, soil, solar energy, and wind energy directly and indirectly changes the cycling of matter and energy through Earth's systems; and
- (i) predict how human use of Texas's naturally occurring resources directly changes the cycling of matter through Earth's systems
  - (ii) predict how human use of Texas's naturally occurring resources indirectly changes the cycling of matter through Earth's systems
  - (iii) predict how human use of Texas's naturally occurring resources directly changes the cycling of energy through Earth's systems
  - (iv) predict how human use of Texas's naturally occurring resources indirectly changes the cycling of energy through Earth's systems
- (F) explain the cycling of carbon through different forms among Earth's systems and how biological processes have caused major changes to the carbon cycle in those systems over Earth's history.
- (i) explain the cycling of carbon through different forms among Earth's systems
  - (ii) explain how biological processes have caused major changes to the carbon cycle in those systems over Earth's history

(13) Science concepts. The student explores global policies and careers related to the life cycles of Earth's resources. The student is expected to:

- (A) analyze the policies related to resources from discovery to disposal, including economics, health, technological advances, resource type, concentration and location, waste disposal and recycling, mitigation efforts, and environmental impacts; and
- (i) analyze the policies related to resources from discovery to disposal, including economics
  - (ii) analyze the policies related to resources from discovery to disposal, including health
  - (iii) analyze the policies related to resources from discovery to disposal, including technological advances
  - (iv) analyze the policies related to resources from discovery to disposal, including resource type
  - (v) analyze the policies related to resources from discovery to disposal, including concentration and location
  - (vi) analyze the policies related to resources from discovery to disposal, including waste disposal and recycling
  - (vii) analyze the policies related to resources from discovery to disposal, including mitigation efforts
  - (viii) analyze the policies related to resources from discovery to disposal, including environmental impacts
- (B) explore global and Texas-based careers that involve the exploration, extraction, production, use, disposal, regulation, and protection of Earth's resources.
- (i) explore global and Texas-based careers that involve the exploration of Earth's resources
  - (ii) explore global and Texas-based careers that involve the extraction of Earth's resources
  - (iii) explore global and Texas-based careers that involve the production of Earth's resources
  - (iv) explore global and Texas-based careers that involve the use of Earth's resources



- (v) explore global and Texas-based careers that involve the disposal of Earth's resources
- (vi) explore global and Texas-based careers that involve the regulation of Earth's resources
- (vii) explore global and Texas-based careers that involve the protection of Earth's resources