

Middle Level Science (Grades 5–8)

Subtest 1 Sample Items

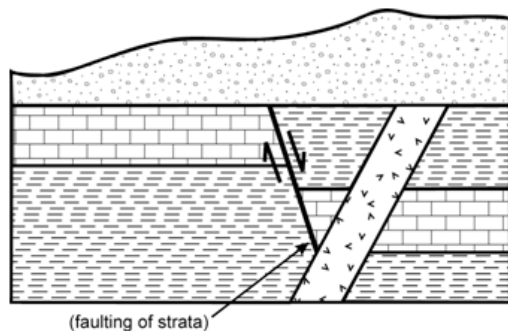
1. Radioactive isotope labeling using elements such as carbon and nitrogen has contributed most significantly to biology by facilitating the:

- A. creation of diffraction images for deducing the chemical structure of nucleotides.
- B. use of spectral analysis to determine the chemical composition of biomolecules.
- C. analysis of the movement of molecules during biochemical processes.
- D. ability to physically separate large macromolecules such as proteins from the cell cytoplasm.

2. Which of the following strategies would be most effective in promoting students' understanding and retention of new earth science vocabulary words associated with a unit of study that focuses on earth systems?

- A. using weekly quizzes to assess students' knowledge of the newly introduced vocabulary words
- B. having students look up definitions of the new vocabulary words in both a textbook glossary and a standard dictionary
- C. providing multiple opportunities for students to use the new vocabulary words in discussions and in their writing
- D. encouraging students to enter the new vocabulary words in a personal dictionary of words they find interesting or useful

3. The diagram below shows a geologic cross section.



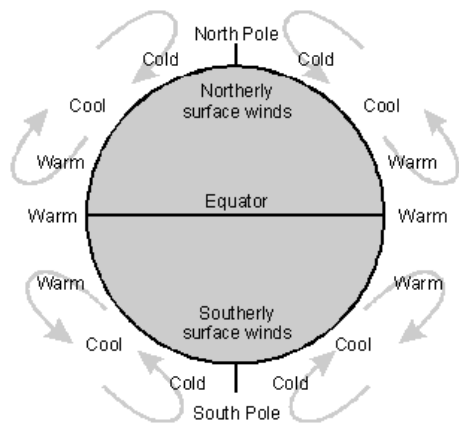
No overturned strata. Not to scale.

Key	
	Basalt Dike
	Limestone
	Sand
	Shale

According to the diagram, which of the following statements about the sequence of geologic events must be true?

- A. The top layer of shale eroded before the faulting.
- B. The limestone was intruded into the shale deposition.
- C. The faulting occurred before the limestone was deposited.
- D. The basalt dike formed after the faulting occurred.

4. The diagram below shows a model for the circulation of air in Earth's atmosphere.



In the model above, the rotation of Earth is ignored and Earth's surface is considered to be smooth with no land or sea interactions. Which of the following best describes the primary mechanism causing the circulation of air in this model?

- Warm air at the top of the atmosphere flows toward cooler air at Earth's surface.
- Warm air at the equator rises while cool air from the poles sinks and moves toward the equator.
- Warm air in the lower atmosphere prevents cold air at higher altitudes from sinking and vice versa.
- Warm air at the equator spreads along the surface of Earth and rises to displace cold air at the poles.

5. Which of the following is an example of a nonpoint source of water pollution?

- Chemicals from a train car leak into a stream after a derailment.
- Effluent from a treatment plant is discharged upstream from a town.
- Fertilizer from a farm washes into a lake after a heavy rain.
- Bacteria from a faulty septic tank leach into an aquifer.

Answer Key

Item Number	Correct Response	Subarea	Objective
1	C	I. Concepts and Applications in Middle Level General Science	0002
2	C	I. Concepts and Applications in Middle Level General Science	0003
3	D	II. Earth and Space Systems	0004
4	B	II. Earth and Space Systems	0005
5	C	II. Earth and Space Systems	0007

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