Grade 8

Practice Test

Scoring Rubric

Missouri Science Scoring Rubric

Item ID: 904194

Session: 1 Item: 4

Grade: 8

Scoring Guide: 6-8.PS4.A.2

Score	Description
3	This response demonstrates a thorough understanding of developing and using a model to describe that waves are reflected, absorbed, or transmitted through various materials by • describing the path of light as it travels from the flashlight to the air; • describing the path of light as it travels from the air to the pane of clear glass; and • explaining why the student would not see the light travel through the black iron backing. **The response is clear, complete, and correct.*
2	This response demonstrates a thorough understanding of two of the three key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the three key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- The light will travel in a straight line through the air.

Part B (1 point)

- The light will bend (or be refracted) when traveling into the glass.

Part C (1 point)

- The light will stop at the black iron backing.
- The light will be absorbed by the black iron backing.
    - (Note: Some reflection may occur due to luster of iron metal)

Missouri Science Scoring Rubric

Session: 1 Item: 5

Grade: 8

MLS Expectation: 6-8.ESS1.C.1

Item ID: 903810

Score	Description
3	This response demonstrates a thorough understanding of constructing a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history by • identifying the oldest layer of rock and explaining the reasoning for the identified oldest rock layer; • explaining how the environment has changed over time and including evidence for the explanation; and • identifying whether the scientist's claim is accurate or inaccurate. **The response is clear, complete, and correct.*
2	This response demonstrates a thorough understanding of two of the three key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the three key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Layer 7 is the oldest rock layer because it is at the bottom of the cliff (or it is the layer farthest from the surface).

Part B (1 point)

- Any response indicating that the area was once covered by water as evidence by the presence of fish, ammonite, and/or trilobite fossils (and is now covered by land).
- Any response indicating that the area changed to a land habitat as evidence by presence of dinosaur, bird, plant, and/or mammal fossils (from originally being covered by water).

Part C (1 point)

- Any response indicating disagreement based on dinosaur fossils being found in the layers above the lava.

Missouri Science Scoring Rubric

Session: 1 Item: 6

Grade: 8

MLS Expectation: 6-8.ESS1.B.1

Item ID: 903807

Score	Description
2	This response demonstrates a thorough understanding of analyzing and interpreting data to determine scale properties of objects in the solar system by • explaining one error in the size of materials in the model; and • explaining one error in the distance between the materials in the model. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Any response indicating that the sizes of the circles are not to scale.
- Any response indicating that the circles are too close in size as compared to the other planets.

Part B (1 point)

- Any response indicating that the distances between the planets are not to scale.
- Any response indicating that the distances between the planets are too close together.

Missouri Science Scoring Rubric

Session: 1 Item: 7

Grade: 8

MLS Expectation 6-8.ESS3.D.1

Item ID: 903814

Score	Description
4	This response demonstrates a thorough understanding of analyzing evidence of the factors that have caused the change in global temperatures over the past century by • describing the overall pattern of change in average global temperatures; • explaining whether the student's claim is plausible based on the data; • describing a possible change to the environment likely caused by the pattern of average global air temperatures; and • describing an additional possible change to the environment as mentioned above. **The response is clear, complete, and correct.*
3	This response demonstrates a thorough understanding of three of the four key elements. **The response may contain some work that is incomplete or unclear.*
2	This response demonstrates a thorough understanding of two of the four key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the four key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Any response indicating that the average global temperature has increased.

Part B (1 point)

- Any response indicating that the student's claim is plausible due to the increased use of natural gas, coal, and/or oil.

Part C (2 points)

- Any response indicating **two** plausible negative environmental changes due to increased global temperatures.
  - melting glaciers
  - melting polar ice caps
  - increases in sea levels
  - changes in flooding occurrences
  - droughts
  - other weather/climate patterns, etc.

Missouri Science Scoring Rubric

Session: 1 Item: 13

Grade: 8

MLS Expectation: 6-8.PS3.A.1

Item ID: 912451

Score	Description
2	This response demonstrates a thorough understanding of constructing and interpreting graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object by • identifying whether the student's conclusion is correct or incorrect; and • using evidence to support the evaluation of the conclusion. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

(1 point)

- Any response indicating that the student's conclusion is incorrect (1 point)

(1 point)

- Any response indicating that the object with more mass will have more kinetic energy than the object with less mass.
- Any response indicating that the object with more mass will have a greater speed than an object with less mass.
- *NOTE: Students will receive credit if the terms "heavier" and "lighter" are used in place of "more mass" and "less mass")*

Missouri Science Scoring Rubric

Session: 1 Item: 20

Grade: 8

MLS Expectation: 6-8.LS2.C.1

Item ID: 912136

Score	Description
3	This response demonstrates a thorough understanding of constructing an argument supported by empirical evidence that explains how changes to physical or biological components of an ecosystem affect populations by • describing how a winter with less snowfall might affect populations of willow, aspen, and cottonwood trees; • describing how a winter with less snowfall might affect the elk population; and • using evidence to predict a long-term effect of the reduced snow cover in the ecosystem on the beaver population. **The response is clear, complete, and correct.*
2	This response demonstrates a thorough understanding of two of the three key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the three key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- More young willow, aspen, and cottonwood trees would survive.
- Since shorter plants and shrubs would be more available for the elk to eat, more young willow, aspen, and cottonwood trees would survive.

Part B (1 point)

- The elk population would increase.
- The elk would have a greater access to food sources.

Part C (1 point)

- The beaver population would increase if more young willow, aspen, and cottonwood trees would survive because more material would be available for food and/or shelter.
- Any response indicating that the beaver population would increase due to additional resources provided by the willow, aspen, and cottonwood trees.

Missouri Science Scoring Rubric

Item ID: 929707

Session: 2 Item: 4

Grade: 8

Scoring Guide: 6-8.LS1.A.2

Score	Description
2	This response demonstrates a thorough understanding of developing and using a model to describe the function of a cell as a whole and ways parts of the cells contribute to that function by • identifying two organelles that are present in plant cells but absent in animal cells; and • explaining why one of the organelles identified in part A is not necessary for animal cells to survive. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- chloroplast and cell wall
- *NOTE: central vacuole is a less common option but should be accepted with one of the two organelles listed above.*

Part B (1 point)

- Any response indicating that the chloroplast is not necessary for an animal cell to survive because animals get their energy (food/nutrients) from other organisms.

Missouri Science Scoring Rubric

Session: 2 Item: 5

Grade: 8

MLS Expectation: 6-8.PS3.A.2

Item ID: 904190

Score	Description
2	This response demonstrates a thorough understanding of developing a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system by • identifying two spheres that have the same potential energy and explaining how this can be determined from the diagram; and • identifying two spheres that have unequal potential energy and identifying the sphere with the greater potential energy. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Spheres 1 and 2 have the same potential energy because they are the same distance from the ground.

Part B (1 point)

- Sphere 1 and sphere 3 have unequal potential energy. Sphere 1 has more potential energy than sphere 3.
- Sphere 2 and sphere 3 have unequal potential energy. Sphere 2 has more potential energy than sphere 3.

Missouri Science Scoring Rubric

Session: 2 Item: 6

Grade: 8

MLS Expectation: 6-8.ESS3.A.1

Item ID: 903811

Score	Description
3	This response demonstrates a thorough understanding of constructing a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes and human activity by • identifying the main areas people would expect to find 100-million-year-old sedimentary rocks that contain the given fossils; • evaluating the student's claim that based on the map, the oil and gas deposits in Missouri are about 100-million years old; and • explaining the decision made when evaluating the student's claim. **The response is clear, complete, and correct.*
2	This response demonstrates a thorough understanding of two of the three key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the three key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Any response indicating that locations covered by the Western Interior Seaway, the Labrador Seaway, and the Hudson Seaway would contain fossils of ocean organisms that are about 100-million years old.
- Any response indicating that areas of North America that were covered by ocean water 100-million years ago would contain fossils of approximately the same age.

Part B (2 points)

- Any response indicating that the student's claim is incorrect.

AND

- Missouri was not covered by water 100-million years ago.
- The oil and gas deposits in Missouri are likely from more ancient organisms.

Missouri Science Scoring Rubric

Session: 2 Item: 7

Grade: 8

MLS Expectation: 6-8.PS2.A.2

Item ID: 904188

Score	Description
2	This response demonstrates a thorough understanding of planning and conducting an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object by • describing the motion of a stone sphere based on forces shown acting on it in a diagram; and • describing how the motion of the same sphere will most likely change when placed on a rougher surface. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- The sphere is moving, or will move, to the left.
- The sphere is moving, or will move, in the direction of the greater force being applied to it.

Part B (1 point)

- Any response indicating that the motion of the sphere will be slower or decreased.
- Any response indicating that the motion of the sphere will be influenced by a greater force of friction.

Missouri Science Scoring Rubric

Session: 2 Item: 9

Grade: 8

MLS Expectation: 6-8.LS4.A.1

Item ID: 913235

Score	Description
2	This response demonstrates a thorough understanding of analyzing and interpreting evidence from the fossil record to infer patterns of environmental change resulting in extinction and changes to life forms throughout the history of Earth by • using data from the chart to identify the species of horse fossil that would be found in the uppermost layer of rock; and • using data from the chart to identify the species of horse fossil that would be found in the bottommost layer of rock. **The response is clear, complete, and correct.*
1	This response demonstrates a thorough understanding of one of the two key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Species of fossil found in uppermost layer or rock (1 point)

- Any response indicating *Miohippus*.

Species of fossil found in bottommost layer or rock (1 point)

- Any response indicating *Orohippus*.

Missouri Science Scoring Rubric

Session: 2 Item: 18

Grade: 8

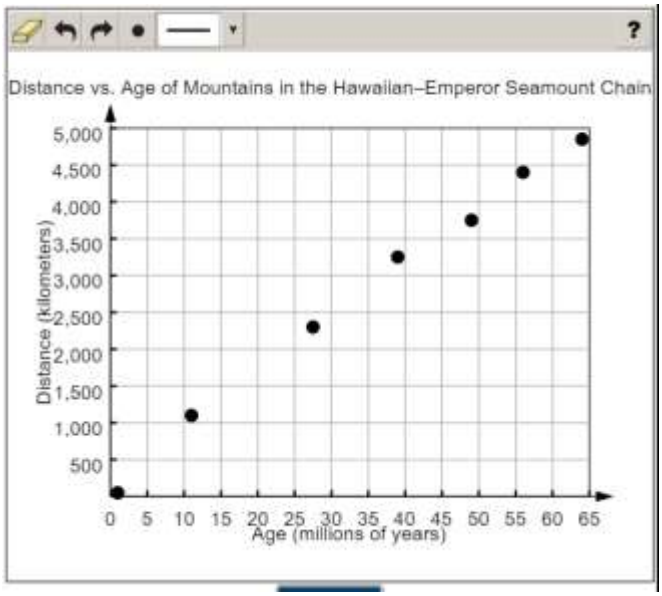
MLS Expectation: 6-8.ESS.2.A.2

Item ID: 903995

Score	Description
4	All 7 plots are correct in the graph and all 3 drop-down selections are correct.
3	6 or 7 plots are correct in the graph and all 3 drop-down selections are correct. OR All 7 plots are correct in the graph and any 2 of the 3 drop-down selections are correct.
2	6 of 7 plots are correct in the graph and any 2 of the 3 drop-down selections are correct.
1	6 of the 7 plots are correct in the graph and less than 2 of the 3 drop-down selections are selected. OR 6 of the 7 plots are correct in the graph and any 2 of the 3 drop-down selections are selected.
0	5 or less plots are correct in the graph

Screenshot or List of Correct Response(s)

Part A:



Part B: Use the drop-down menus to make a conclusion based on the data in the graph.

As the Pacific Plate moves [northwest ▾], the age of each mountain [increases ▾] as the distance from the hotspot [increases ▾].

NOTE: The plots can be anywhere inside the current square they are shown in above.

Missouri Science Scoring Rubric

Item ID: 903989

Session: 2 Item: 21

Grade: 8

Scoring Guide: 6-8.ESS3.B.1

Score	Description
3	This response demonstrates a thorough understanding of analyzing and interpreting data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects by • describing a recommendation that the researchers should make to people in the area about the risk for eruption events in April after the most recent activity in March; • describing a difference, based on the data, in the warning time given to people preceding volcanic events compared to the warning time preceding a tornado; and • explaining how the warning time can have a positive effect on mitigating the hazards of a volcanic eruption. **The response is clear, complete, and correct.*
2	This response demonstrates a thorough understanding of two of the three key elements. **The response may contain some work that is incomplete or unclear.*
1	This response demonstrates a thorough understanding of one of the three key elements. **The response may contain some work that is incomplete or unclear.*
0	The response provides insufficient evidence to demonstrate any understanding of the concept being tested.

Exemplar Responses:

Part A (1 point)

- Any response indicating that the researchers should communicate that eruptions tend to follow an increase in tectonic earthquakes.

Part B (2 points)

First Point:

- The warning time for volcanic events can be days while the warning time for tornadoes can be only minutes.

- Any response indicating that the warning time for possible volcanic events is much longer than that of tornadoes.

Second Point:

- Any response indicating that more time allows people to evacuate areas that may be impacted by the eruption.
- Any response indicating that more time allows people to prepare more effectively.