NJSLA-S Online Practice Test Answer and Alignment Document
Science: Grade 5 – Unit 2

Items 1–2

Domain: Physical Science

Phenomenon: When water changes from a liquid to a solid, certain properties of the water change while others remain the same.

Item 1

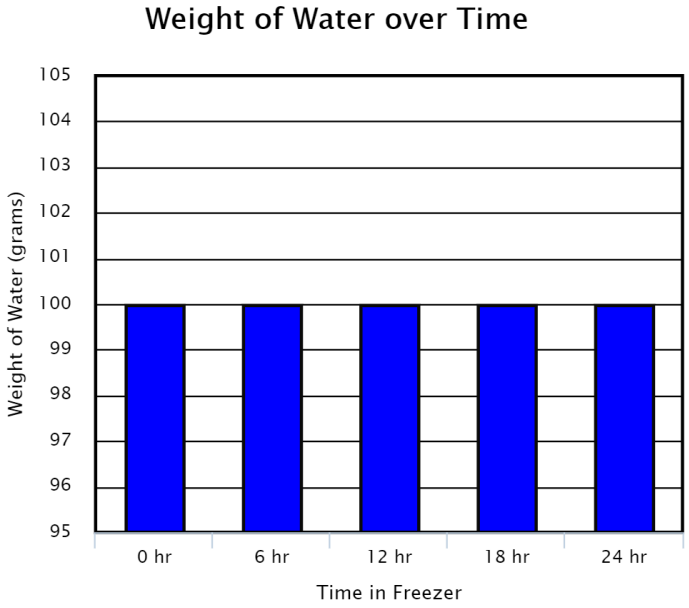
Item Type: Technology Enhanced

Standards Alignment: DCI: PS1.A; SEP: UMCT; CCC: PAT

Screen Reader (SR)/Assistive Technology (AT)/Paper Key: Part A: C; Part B: C

Key: Bar Graph: The values of the editable bars going from left to right should be 100, 100, 100, 100, 100. A correct response will look like this:

Part A



Part B

The weight of the water [remains the same] .

Rationale:

The bar graph shows the weight of the water remains the same at 100 grams over the 24-hour time period. Phase change does not affect the weight of the water.

Item 2

Item Type: Technology Enhanced
Standards Alignment: DCI: PS1.A; SEP: PACI; CCC: PAT
SR/AT/Paper Key: Box Y: A; Box Z: A
Key: A correct response will look like this:

In the new investigation, the weight of water is predicted to be [300] grams after 72 hours. This demonstrates that [weight is conserved] in a system over time.

Rationale: Even though the water will remain in the freezer 72 hours instead of 24 hours, the weight of the water will still be 300 grams, showing the weight of matter is conserved.

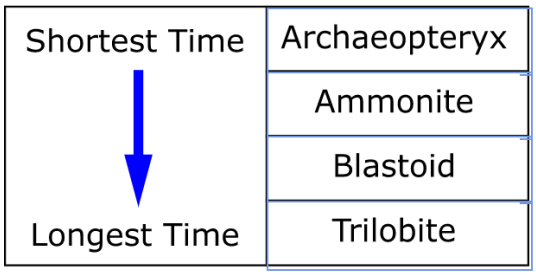
Items 3–6

Domain: Life Science
Phenomenon: Four types of fossils of extinct species are found in two locations. Paleontologists can gather important information about organisms from these species and the environment in which they lived.

Item 3

Item Type: Technology Enhanced
Standards Alignment: DCI: LS4.A; SEP: UMCT; CCC: S,P, and Q
SR/AT/Paper Key: Part A: A; Part B: B
Key: A correct response will look like this:

Part A



Part B

The organism that likely lived on Earth for the shortest time lived in a [land] environment.

Rationale:
According to the Age of Fossils table, archaeopteryx lived for 85 million years, ammonite lived for 175 million years, blastoid lived for 232 million years, and trilobite lived for 280 million years. Archaeopteryx lived the shortest amount of time and it was a land organism.

Item 4

Item Type: Technology Enhanced
Standards Alignment: DCI: LS4.A; SEP: OECI; CCC: PAT
SR/AT/Paper Key: Box Y: A; Box Z: D
Key: A correct response will look like this:

Based on fossil evidence, Location 1 changed to a [land] environment [between 60–65] million years ago.

Rationale: According to the Age of Fossils table, ammonite was a marine organism in Location 1 that lived 65 million years ago. Looking at Table 1, Additional Fossil Information, fossils of a leaf and archaeopteryx, both land organisms, lived in Location 1 between 50 and 60 million years ago. Therefore, Location 1 was land at least 60 million years ago. Somewhere between 60 and 65 million years ago, Location 1 changed from marine to land.

Item 5

Item Type: Technology Enhanced
Standards Alignment: DCI: LS4.A; SEP: AQDP; CCC: SC
SR/AT/Paper Key: Box W: A; Box X: B; Box Y: B; Box Z: A
Key: A correct response will look like this:

Question	Can Be Answered	Cannot Be Answered
What was the environment at each location over time?	◉	○
How did the climate change at each location over time?	○	◉
How many fossils were found at each location over time?	○	◉
What types of fossils were found at each location over time?	◉	○

Rationale:

- By looking at the type of fossils that were found at each location, it can be determined whether the organisms lived in either a marine or a land environment.
- There are no data in the Age of Fossils table that describe the type of climate or how the climate may have changed in each location.
- Only the type of fossils are shown in the Age of Fossils table, not how many were found at each location.
- The different types of fossils are identified in the Age of Fossils table.

Question 1: By looking at the type of fossils that were found at each location, it can be determined whether the organisms lived in either a marine or a land environment.
Question 2: There are no data in the Age of Fossils table that describe the type of climate or how the climate may have changed in each location.
Question 3: Only the type of fossils are shown in the Age of Fossils table, not how many were found at each location.
Question 4: The different types of fossils are identified in the Age of Fossils table.

Item 6

Item Type: Technology Enhanced
Standards Alignment: DCI: LS4.A; SEP: EAE; CCC: SC
SR/AT/Paper Key: Box X: B; Box Y: B; Box Z: A
Key: A correct response will look like this:

At Location [2] , the fossils of the [archaeopteryx and blastoid]
show the area had species that [were both marine and terrestrial] .

Rationale:
The types of fossils (ammonite and trilobite) at Location 1 were both created from marine organisms. The fossils at Location 2 (archeopteryx and blastoid) were created from both terrestrial and marine organisms, therefore in that location the environment changed.

Items 7–10

Domain: Earth and Space Science
Phenomenon: Two cities can be across the world from each other, yet have very similar climates.

Item 7

Item Type: Technology Enhanced
Standards Alignment: DCI: ESS2.D; SEP: AID; CCC: PAT
SR/AT/Paper Key: B
Key: A correct response will look like this:

City 1	City 2
Adak	Klaksvik
Richland	Tehran
Needles	Riyadh
Los Angeles	Athens

Rationale:
These cities show similar amounts of annual precipitation.

- Annual precipitation in Adak is 61 inches and annual precipitation in Klaksvik is 56 inches.
- Annual precipitation in Richland is 7 inches and annual precipitation in Tehran is 9 inches.
- Annual precipitation in Needles is 4 inches and annual precipitation in Riyadh is also 4 inches.
- Annual precipitation in Los Angeles is 16 inches and annual precipitation in Athens is also 16 inches.

Item 8

Item Type: Multiple Choice
Standards Alignment: DCI: ESS2.D; SEP: CEDS; CCC: PAT
Key: B
Rationale:

- Adak and Tehran are far from each other, but their average highs are very different. Adak's average high temperature is 52°F and Tehran is 81°F.
- Needles and Riyadah are far from each other. Their average high temperatures are the same at 95°F and their average low temperatures are similar at 54°F and 57°F respectively.
- Needles and Riyadah are far from each other, but their average high and low temperatures are very similar.
- Needles and Richland are close to each other, yet have very different average temperatures.

Item 9

Item Type: Technology Enhanced
Standards Alignment: DCI: ESS2.D; SEP: EAE; CCC: PAT
SR/AT/Paper Key: Box W: B; Box X: A; Box Y: A; Box Z: B
Key: A correct response will look like this:

Claim	Supported by Data	Not Supported by Data
Athens and Tehran, because they have the greatest amount of precipitation.	○	◉
Adak and Klaksvik, because they have the same average high temperature.	◉	○
Klaksvik and Tehran, because they have the same average low temperature.	◉	○
Richland and Los Angeles, because they have the lowest amount of precipitation.	○	◉

Rationale:

- Neither Athens nor Tehran have the greatest amount of precipitation. Adak has the greatest amount of precipitation at 61 inches.
- Adak and Klaksvik both have the same average high temperature of 52°F .
- Klaksvik and Tehran both have the same average low temperature of 37°F .
- Neither Richland nor Los Angeles have the lowest amount of precipitation. Riyadh and Needles have the lowest amount of precipitation at 4 inches.

Item 10

Item Type: Technology Enhanced
Standards Alignment: DCI: ESS2.D; SEP: OECI; CCC: S,P, and Q
SR/AT/Paper Key: Box Y: A; Box Z: B
Key: A correct response will look like this:

The two cities that have the most similar climate to Newark are
Klaksvik and Adak . They are all similar because they all have
cooler and wetter conditions than other cities.

Rationale:
The average high and low in Klaksvik are 52°F and 37°F, with 56 inches of precipitation per year. The average high and low in Adak are 52°F and 32°F, with 61 inches of precipitation per year. The average high and low in Newark are 63°F and 46°F, with 46 inches of precipitation per year. Even though the temperatures are similar, the precipitation for Newark is more similar to the precipitation in Klaksvik and Adak. These three cities are cooler and have more precipitation than the other cities listed.

Items 11–13

Domain: Life Science
Phenomenon: Potatoes are usually grown in soil , but some potatoes are able to grow without soil.

Item 11

Item Type: Technology Enhanced
Standards Alignment: DCI: LS1.C; SEP: EAE; CCC: E&M
Key: B, C
Rationale:

A. The heaviest potatoes were grown in soil but this does not support the claim that potatoes can be successfully grown without soil.
B. The greatest number of potatoes were grown in air (28), therefore soil is not needed.
C. Both water and air produced the same average weight per potato (12 grams), which shows that potatoes can be successfully grown without soil.
D. Although it is true that both soil and air produced plants with greater total weight than water, this does not support the claim that potatoes can be successfully grown without soil.
E. Although it is true that both soil and water produced the same average number of potatoes per plant, this does not support the claim that potatoes can be successfully grown without soil.

Item 12

Item Type: Multiple Choice
Standards Alignment: DCI: LS1.C; SEP: CEDS; CCC: E&M
Key: C
Rationale:
Since the weight of the soil did not change from the beginning to the end of the experiment, the soil therefore did not provide the majority of nutrients to the plants. C is the only option that does not include soil.

Item 13

Item Type: Technology Enhanced
Standards Alignment: DCI: LS1.C; SEP: OECI; CCC: S & SM
SR/AT/Paper Key: Box Y: D; Box Z: C
Key: A correct response will look like this:

In their natural environment, plants need the energy from [sunlight] in order to use [water and air only] to make their own food for growth.

Rationale:
In nature, plants receive energy from sunlight, not air, soil, or water. They then use water and air, not soil, to make food.

Items 14–17

Domain: Physical Science
Phenomenon: Marbles can roll down ramps at different speeds.

Item 14

Item Type: Technology Enhanced
Standards Alignment: DCI: PS3.A; SEP: AQDP; CCC: E&M
Key: A, D
Rationale:

A. The height of the ramp changes from 30 centimeters in Investigation 1 to 60 centimeters in Investigation 2, so this is a possible question.
B. The weight of the marble does not change in either investigation.
C. The path the marble takes does not change in either investigation.
D. The height of the ramp changes from 30 centimeters in Investigation 1 to 60 centimeters in Investigation 2 and there is a measuring tape at the end of the ramp, so this is a possible question.
E. Even though the height of the ramp changes from 30 centimeters in Investigation 1 to 60 centimeters in Investigation 2, the weight is placed at 0 centimeters on the tape for both investigations.

Item 15

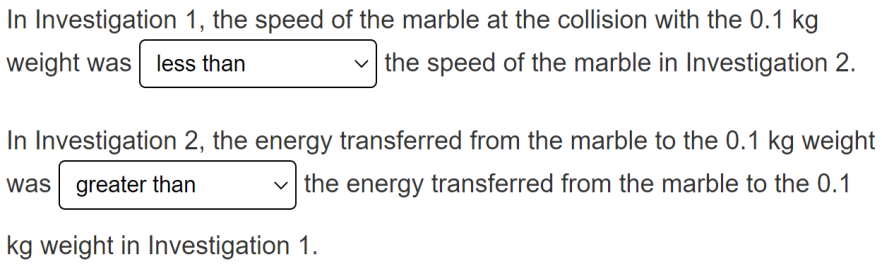
Item Type: Constructed Response
Standards Alignment: DCI: PS3.A; SEP: PACI; CCC: E&M
Sample student response:
If the weight of the marble increases in Investigation 2, then the marble will move faster down the ramp and the weight will move farther because more energy is being transferred.
If the height of the ramp and the weight of the marble remain the same but the weight now is 0.2 kilograms instead of 0.1 kilogram, the weight will not move as far. Although the same amount of energy is transferred, more energy would be required because the weight is heavier.
Key:
This item has 4 quality points:

- 1 point for predicting the results if the weight of the marble increases.
- 1 point for explaining the prediction.
- 1 point for predicting the results if a 0.2 kg weight is used.
- 1 point for explaining the prediction.

Rationale:
Students can make other predictions as long as they are able to justify those predictions with data from the investigations.

Item 16

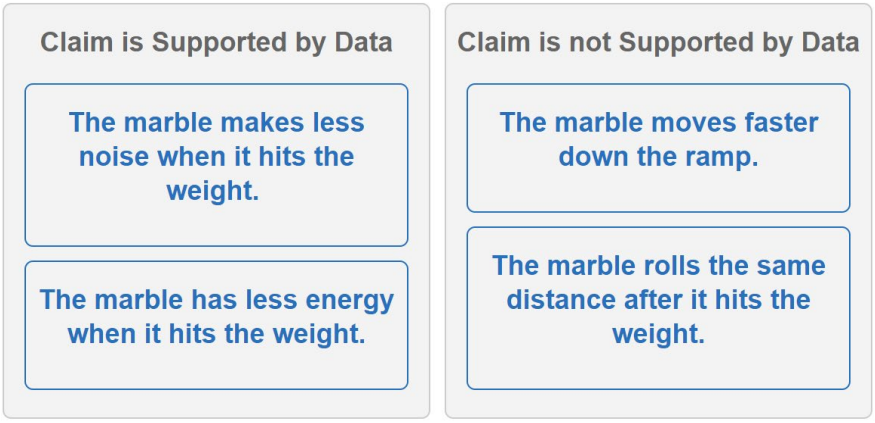
Item Type: Technology Enhanced
Standards Alignment: DCI: PS3.B; SEP: DUM; CCC: E&M
SR/AT/Paper Key: Box Y: B; Box Z: C
Key: A correct response will look like this:



Rationale:
The speed of the marble in Investigation 1 is less than Investigation 2 because the ramp is not as high.
The energy transferred from the marble to the weight in Investigation 2 was greater (shown by the weight being moved farther along) than in Investigation 1, because more speed means more energy transferred.

Item 17

Item Type: Technology Enhanced
Standards Alignment: DCI: PS3.B; SEP: EAE; CCC: C and E
SR/AT/Paper Key: Box W: B; Box X: A; Box A; Box Z: B
Key: A correct response will look like this:



Rationale:

- The marble will make less noise in Investigation 3 because the marble will be moving slower, therefore less energy will be transferred and less noise created.
- The marble will have less energy in Investigation 3 because the marble will be moving slower.
- The marble will move slower down the ramp in Investigation 3 because the marble will have less energy.
- The marble will not move the same distance after it hits the weight because it will have less energy.