

## NJSLA-S Online Practice Test Answer and Alignment Document Science: Grade 5

### Items 1-2

**Domain:** Physical Science

**Phenomenon:** An electric current can produce motion.

#### Item 1

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: PS3.B; SEP: CEDS; CCC: E&M

**Key:** A correct response will look like this:

	Battery	Wire Coil	Magnet
Supplies electric current	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carries electric current	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Causes the coil to spin	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

#### Rationale:

The battery produces electrical energy.

The wire coil transmits the electric current.

The magnet causes the wire coil to spin and converts electrical energy to motion energy.

#### Item 2

**Item Type:** Multiple Choice

**Standards alignment:** DCI: PS3.B; SEP: CEDS; CCC: E&M

**Key:** B

#### Rationale:

A toy car converts electrical energy to motion energy, while the three other foils all convert electrical energy into either sound or light energy.

### Items 3–4

**Domain:** Physical Science

**Phenomenon:** Two of the same type of ball are thrown at a wall, but one ball bounces back farther away from the wall than the other.

#### Item 3

**Item Type:** Multiple Choice

**Standards alignment:** DCI: PS3.A; SEP: CEDS; CCC: E&M

**Key:** A

**Rationale:**

More energy will cause the ball to bounce farther away from the wall, which would cause the ball to land closer to Student 1, as shown in the figure.

Answer B is invalid based on the diagram.

Answers C and D are invalid based on the diagram; both students hit the ball against the wall at the same height.

#### Item 4

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: PS3.A; SEP: EAE; CCC: E&M

**Key:** A correct response will look like this:

When the soccer ball hits the wall,  of the soccer

ball's energy is transferred to the air in the form of

**Rationale:**

Only some of the ball's energy is transferred to the air as sound. Light is not produced at all. If all of the energy were transferred, the ball would not have enough energy to bounce back away from the wall; and if none were transferred, a sound would not be produced.

## Items 5–6

**Domain:** Earth and Space Science

**Phenomenon:** A student on the way to school in January observes that some icy roads had been treated with sand and others with salt.

### Item 5

**Item Type:** Multiple Choice

**Standards alignment:** DCI: ESS3.B; SEP: EAE; CCC: C and E

**Key:** D

**Rationale:**

The table shows that tires skid less because sand helps the tires grip the road, and sand is also less expensive than salt. The table also states that sand does not melt ice and has some environmental impacts, making answers A, B, and C invalid.

### Item 6

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: ESS3.B; SEP: CEDS; CCC: C and E

**Key:** A correct response will look like this:

<p>Snow-covered roads with air temperature of 0°F</p> <p>Sand</p>	<p>Icy roads with air temperature of 20°F</p> <p>Salt</p>	<p>Icy roads with air temperature of 5°F</p> <p>Sand</p>
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**Rationale:**

The table shows:

Snow-covered roads: Sand helps the tires grip the road and salt does not help melt snow-covered roads when the air temperature is below 10°F.

Icy roads with air temperature of 20°F: Salt works when the temperature is above 10°F.

Icy roads with air temperature of 5°F: Sand would be better, since the temperature is below 10°F, and salt only works when the temperature is above 10°F. Sand helps the tires grip the road.

### Item 7–9

**Domain:** Earth and Space Science

**Phenomenon:** At night, a street light appears bigger and brighter than other street lights on the same street, just like some stars in the sky.

#### Item 7

**Item Type:** Multiple Choice

**Standards alignment:** DCI: ESS1.A; SEP: AID; CCC: S, P, and Q

**Key:** B

**Rationale:**

Table 1 shows street light X is closest to the student (1 km), and it appears the brightest (medium). Answer A is the opposite, therefore invalid.

Table 2 shows similar information as Table 1 for the relative distance and brightness of stars. The farther away the star is, the less bright it appears. Answers C and D are opposite of the information in the table, and therefore invalid.

#### Item 8

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: ESS1.A; SEP: AID; CCC: S,P, and Q

**Key:** A correct response will look like this:

Based on Tables 1 and 2, street light  has the same brightness as Arcturus. If the student moves away from Arcturus, the brightness of this star would appear to

**Rationale:**

Tables 1 and 2 show street light Z's brightness is "very low," which is the same level of brightness as Arcturus. The farther away the star, the less bright it appears. The Sun is the closest star and its brightness is very high.

#### Item 9

**Item Type:** Multiple Choice

**Standards alignment:** DCI: ESS1.A; SEP: EAE; CCC: S,P, and Q

**Key:** B

**Rationale:**

Table 2 shows that the Sun appears larger because it is the closest star to Earth and it is the brightest.

### Items 10–12

**Domain:** Earth and Space Science

**Phenomenon:** Earthquakes can strike anywhere on Earth, but they occur more frequently in certain areas.

#### Item 10

**Item Type:** Multiple Choice

**Standards alignment:** DCI: ESS2.B; SEP: AID; CCC: PAT

**Key:** A

**Rationale:**

The West Coast consists mainly of yellow and orange areas, which, according to the earthquake risk scale, represent the highest risk for earthquakes. The East Coast, Northeast, and South all contain mostly light or dark green areas, with some yellow in the South. According to the risk scale, these colors represent a lower risk than the orange color of the West Coast.

**Item 11**

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: ESS2.B; SEP: AID; CCC: PAT

**Key:** A correct response will look like this:

**Earthquake Risk in the United States**

Highest ↓ Lowest	Southern portion of the West Coast
	Northern Alaska
	Northern New Jersey
	Southern New Jersey
	Northern Central United States

**Rationale:**

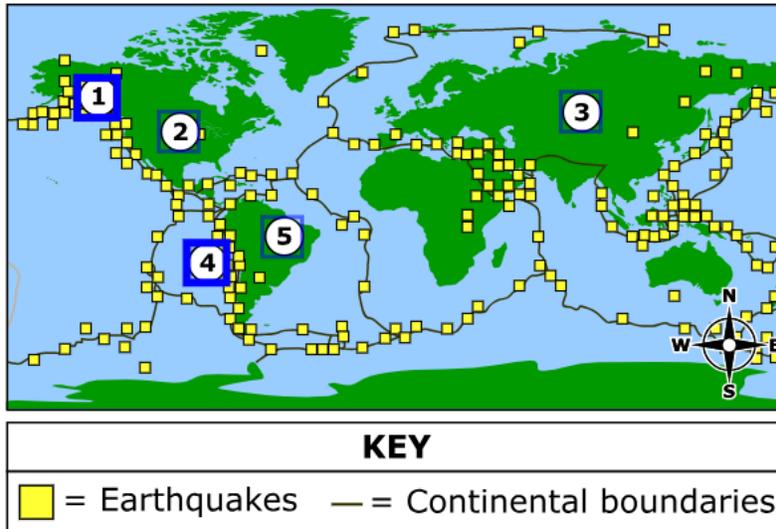
According to the earthquake risk scale, the southern portion of the West Coast has the highest risk for earthquakes, because the colors are mostly orange and yellow. The northern coast of Alaska is next, as the colors are mostly yellow and dark green. Northern NJ is next because the color is dark green. Southern NJ is next because the color is light green. The upper Midwest is last because that area is light blue.

**Item 12**

**Item Type:** Technology Enhanced

**Standards alignment:** DCI: ESS2.B; SEP: AID; CCC: PAT

**Key:** 1 and 4. A correct response will look like this:



**Figure 2. Map of Major Earthquakes since 1900**

**Rationale:**

Locations 1 and 4 show areas where earthquakes most likely will occur. As shown on the map, both areas have experienced numerous major earthquakes since 1900. Also, locations 1 and 4 are along continental boundaries where two tectonic plates are colliding, making earthquakes occur. Locations 2, 3, and 5 are not located on or directly next to a continental plate boundary, and do not fit either of these descriptions.

**Items 13–17**

**Domain:** Life Science

**Phenomenon:** Once a welcome part of the ecosystem in many New Jersey woodlands, the white-tailed deer are now unwelcome residents.

**Item 13**

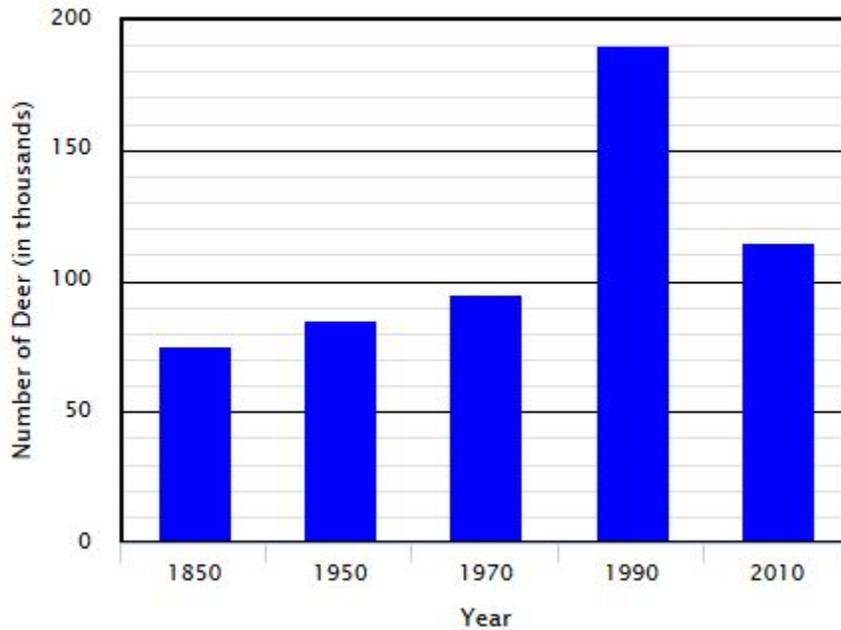
**Item Type:** Technology Enhanced

**Standards alignment:** DCI: LS2.C; SEP: AID; CCC: S & SM

**Key:** Bar Graph: The values of the editable bars going from left to right should be 75, 85, 95, 190, 115. A correct response will look like this:

**Part A**

**White-tailed Deer Population in New Jersey (in thousands)**



**Part B**

The deer population  until 1990  
and then the population started

**Rationale:**

The table shows the following data: the population increased from 75,000 in 1850, to 85,000 in 1950, to 95,000 in 1970. In 1990, the population reached the highest number at 190,000, but it then decreased to 115,000 in 2010.

**Item 14****Item Type:** Multiple Choice**Standards alignment:** DCI: LS2.C; SEP: AQDP; CCC: C and E**Key:** C and D**Rationale:**

Only C (How much deer habitat has been lost to development) and D (Has the number of the deer's natural predators changed) would affect the change in the deer population. The other three foils are questions that would not have an effect on the deer population.

**Item 15****Item Type:** Technology Enhanced**Standards alignment:** DCI: LS4.D; SEP: AID; CCC: PAT**Key:** 2000**Rationale:**

The table shows the population of deer decreased from 190,000 in 1990 to 155,000 in 2000, so the decrease in population indicates the program showed results due to the decrease in the population.

**Item 16****Item Type:** Technology Enhanced**Standards alignment:** DCI: LS4.D; SEP: AID; CCC: C and E**Key:** A correct response will look like this:

Deer density  as land development increases.

This is a result of  deer in the specific area,

which causes a(n)  in problems for people and their environment.

**Rationale:**

The table shows as land development increases (high), the number of deer per acre also increases. Because there are more deer found on the same amount of land, this will most likely cause more problems for the human population.

**Item 17****Item Type:** Constructed Response**Standards alignment:** DCI: LS4.D; SEP: EAE; CCC: S & SM

**Sample student response:** The best solution would be to increase hunting. This will permanently remove some of the deer from these areas. Another effective solution would be to use deer spray. This will keep deer out of gardens and therefore they will not be eating plants and crops. The deer spray will not injure the deer. The least effective solution would be to move deer out of the area. If deer are moved to another area, they can move back to where they originally came from and cause the same problems they did before. Or they could become somebody else's problem. Finally, another solution that would be less effective is using fences to block the deer. Using fences would only work if large areas of land were fenced. Building these fences would cost a lot of money.

**Key:**

This item has 4 quality points:

- 1 point for choosing one effective solution for reducing deer population and explaining why.
- 1 point for choosing a second effective solution for reducing deer population and explaining why.
- 1 point for choosing a less effective solution for reducing deer population and explaining why.
- 1 point for choosing a second less effective solution for reducing deer population and explaining why.

**Rationale:**

Students can justify any of the four solutions as being more or less effective than the others based on their own opinion, as long as they can support their choice.