Science

Directions: Now you will be taking the Alaska Science Assessment. This test has one part that contains different types of questions.

The test will include questions that will ask you to provide your answer in a variety of ways.

• Most of the questions will have four answer choices and only one correct answer.

• Some questions will ask you to write your answer to provide your response.

When you come to the word STOP, you have finished the assessment. Make sure you have marked all of your answers clearly and that you have completely erased any marks you do not want. When you are finished, close your test booklet.
1. The chart below shows food sources for several organisms living in Alaska.

<table>
<thead>
<tr>
<th>Alaska Organisms</th>
<th>Food Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>moose</td>
<td>plants</td>
</tr>
<tr>
<td>wolves</td>
<td>other animals</td>
</tr>
<tr>
<td>muskoxen</td>
<td>plants</td>
</tr>
<tr>
<td>bears</td>
<td>plants and other animals</td>
</tr>
<tr>
<td>plants</td>
<td>make their own food</td>
</tr>
</tbody>
</table>

Which food chain is based on the information in the chart?

A. bears → plants → muskoxen
B. wolves → bears → moose
C. moose → muskoxen → plants
D. plants → moose → wolves
2. The drawing shows Alaska’s state flower, the forget-me-not.

Which tool would **best** be used to measure the length of the stem on this plant?

- A. ruler
- B. balance
- C. hand lens
- D. microscope
3. The drawing below shows a volcano.

Which statement is an inference based on the drawing?

A. The volcano is shaped like a cone.
B. The volcano has stopped erupting.
C. There is magma inside the volcano.
D. There are trees at the base of the volcano.
4. Lituya Bay is along the coast of Alaska.

In 1958, there were three major events that occurred one after another. During the events, many trees surrounding Lituya Bay were knocked down by large amounts of ocean water. Which of the following shows the most likely order of events that caused the change around Lituya Bay?

- A. earthquake → landslide → tsunami
- B. landslide → avalanche → earthquake
- C. avalanche → volcanic activity → flood
- D. tsunami → landslide → volcanic activity
5. A drawing of an insect and a chart are shown below.

Dragonfly and Damselfly Information

<table>
<thead>
<tr>
<th>Common Insect Name</th>
<th>Body Length (mm)</th>
<th>Resting Wing Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>sedge sprite damselfly</td>
<td>25–30</td>
<td>folded over its back</td>
</tr>
<tr>
<td>northern bluet damselfly</td>
<td>29–40</td>
<td>folded over its back</td>
</tr>
<tr>
<td>four-spotted skimmer dragonfly</td>
<td>40–45</td>
<td>flat out to its sides</td>
</tr>
<tr>
<td>common green darner dragonfly</td>
<td>70–80</td>
<td>flat out to its sides</td>
</tr>
</tbody>
</table>

Dragonflies and damselflies are insects that are often incorrectly identified because they look alike. Both insects have large eyes, needle-shaped bodies, and large clear wings. Based on the information, which insect is shown in the drawing?

- sedge sprite damselfly
- northern bluet damselfly
- four-spotted skimmer dragonfly
- common green darner dragonfly
This question is worth 2 points.

6. A student recorded air temperatures on Monday and Tuesday.

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM</td>
<td>45°F</td>
<td>50°F</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>47°F</td>
<td>52°F</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>48°F</td>
<td>53°F</td>
</tr>
<tr>
<td>11:00 AM</td>
<td>50°F</td>
<td>55°F</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>52°F</td>
<td>57°F</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

A. Describe a pattern in the student’s recorded data.

B. Based on the pattern, identify the most likely air temperature at 1:00 PM on each day.

Monday: ________________°F
Tuesday: ________________°F
7. The graph below shows what happens to water as heat is added.

Which chart best matches the three phases of water with the three parts labeled on the graph?

A. Part X Part Y Part Z
   gas   liquid   solid

B. Part X Part Y Part Z
   gas   solid   liquid

C. Part X Part Y Part Z
   solid   liquid   gas

D. Part X Part Y Part Z
   solid   gas   liquid
8. A food chain is shown.

\[ \text{the Sun} \rightarrow \text{plants} \rightarrow \text{caribou} \rightarrow \text{wolves} \]

The number of caribou in an area increases very quickly one summer. Which statement best describes a likely result of this change?

- A. The number of wolves will increase and the number of plants will decrease.
- B. The number of wolves will decrease and the number of plants will increase.
- C. The number of plants will increase and the number of wolves will increase.
- D. The number of plants will decrease and the number of wolves will decrease.

9. The drawing below models the path of the Sun in Anchorage, Alaska.

Which statement best identifies and explains the path that would be a better model of the Sun on the first day of February?

- A. Path W would be a better model because there are more daylight hours in winter than in summer.
- B. Path W would be a better model because Earth is closer to the Sun in winter than in summer.
- C. Path X would be a better model because there are fewer daylight hours in winter than in summer.
- D. Path X would be a better model because Earth is farther away from the Sun in winter than in summer.
10. Students observed bluebirds in a park for three days. They recorded their observations in the chart below.

**Observations of Bluebirds in a Park**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Weather</th>
<th>Number of Bluebirds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8 AM</td>
<td>rainy</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>noon</td>
<td>rainy</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>8 AM</td>
<td>clear</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>noon</td>
<td>clear</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>8 AM</td>
<td>windy</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>noon</td>
<td>windy</td>
<td>1</td>
</tr>
</tbody>
</table>

Which statement about these bluebirds is **best** supported by the data?

- A. The bluebirds like noontime better than the morning.
- B. There are fewer bluebirds in the park during the morning.
- C. The bluebirds like rainy weather better than clear weather.
- D. There are fewer bluebirds in the park when the weather is windy.
11. A teacher asks students to complete the chart below.

<table>
<thead>
<tr>
<th>Living Organism</th>
<th>Non-Living Thing</th>
<th>Relationship</th>
</tr>
</thead>
</table>

Which chart is completed correctly?

A. bear | berry plant | The bear eats the berries.

B. snail | worm | The snail and the worm both live in the same area.

C. fish | water | The fish lays its eggs in the water.

D. soil | mouse | The mouse digs a hole in the soil.
12. The model shows the Sun and Earth.

Based on the model, which statement best describes Earth?

- A. Earth’s tilt changes as it rotates.
- B. Earth moves around the Sun once each year.
- C. Earth’s oceans cause it to be tilted on an axis.
- D. Earth changes its tilt while moving around the Sun.
13. The list below describes some effects of recycling newspapers.

**Effects of Recycling Newspapers**
- less paper waste in landfills
- fewer trees cut down
- increased costs to make paper

In which chart are the effects of recycling newspapers correctly organized?

A. | Positive Effect(s) | Negative Effect(s) |
   | less paper waste in landfills | fewer trees cut down |
   | increased costs to make paper |

B. | Positive Effect(s) | Negative Effect(s) |
   | increased costs to make paper | less paper waste in landfills |
   | fewer trees cut down |

C. | Positive Effect(s) | Negative Effect(s) |
   | less paper waste in landfills | increased costs to make paper |
   | fewer trees cut down |

D. | Positive Effect(s) | Negative Effect(s) |
   | fewer trees cut down | less paper waste in landfills |
   | increased costs to make paper |
14. The drawing shows a stalactite, a type of rock formation.

Stalactites form when water flows through the ground and eventually drips from the top of a cave. Which statement best describes a property of water that helps stalactites form?

- A. Water can melt solid rock.
- B. Water can dissolve solid rock.
- C. Water can freeze rock material.
- D. Water can make new rock material.

**Stalactites in a Cave**

stalactite

Stalactites form when water flows through the ground and eventually drips from the top of a cave. Which statement best describes a property of water that helps stalactites form?

- A. Water can melt solid rock.
- B. Water can dissolve solid rock.
- C. Water can freeze rock material.
- D. Water can make new rock material.
15. Scientists can classify leaves by the patterns of their veins.

**Leaf Type Classification**

<table>
<thead>
<tr>
<th>Leaf Type</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>parallel</td>
<td><img src="image" alt="parallel leaf" /></td>
</tr>
<tr>
<td>pinnate</td>
<td><img src="image" alt="pinnate leaf" /></td>
</tr>
<tr>
<td>palmate</td>
<td><img src="image" alt="palmate leaf" /></td>
</tr>
<tr>
<td>reticulate</td>
<td><img src="image" alt="reticulate leaf" /></td>
</tr>
</tbody>
</table>

**Unknown Leaf**

Based on the pattern of its veins, the unknown leaf is **most likely** which type of leaf?

- A. parallel
- B. pinnate
- C. palmate
- D. reticulate