



Guide to Assessment Item Types

Alaska Science Assessment



Item Types

Specific item types students may see are listed below and are taken from the Online Tools Training (OTT).

Selected-Response (SR) Items

Selected-Response (SR) items are an efficient method for measuring a broad range of content and can be used to assess a variety of skills. There are three types of SR items used on the assessments: Multiple-Choice (MC), Multi-Select (MS), and two-part Evidence-Based Selected Response (EBSR). In all cases, SR items require that students choose the correct answer or answers from a provided list. While students may perform some work directly related to determining the correct answer, they are not required to generate the content of the answer when responding to a selected-response item.

Multiple-Choice (MC) Items

All Multiple-Choice (MC) items have four answer choices, including three “distractors” (incorrect answers) and one correct answer. Distractors for science represent common misconceptions, common misinterpretations of data, computational errors, etc.

Multiple-Choice items may be linked to, or stand independent from, a stimulus source. Items that operate independent of a stimulus are also known as “Stand-alone MC.” Stand-alone MC items may still have tables, graphs, or other information used in support of the stem. Science uses a mixture of MC items linked to a stimulus and some that are stand-alone.

Many cactus plants produce colorful flowers. A teacher brought a cactus plant to school so students could watch it bloom. The cactus was placed in good soil in a sunny location in the classroom. The teacher watered the plant once a week. After three weeks, the cactus was soft and unhealthy.

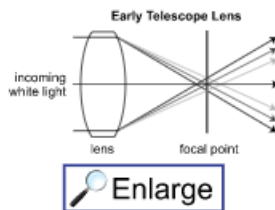
Which statement best describes why the cactus was unhealthy?

- a The cactus had traits to help it survive in dry places and got too much water in the classroom.
- b The cactus had traits to help it survive in dark places and got too much sunlight in the classroom.
- c The cactus had traits to help it survive in wet places and did not get enough water in the classroom.
- d The cactus had traits to help it survive in sunny places and did not get enough sunlight in the classroom.

Multi-Select (MS) Items

Multi-Select (MS) items are autoscored items with more than one correct answer. Some MS items are similar to MC items but have two or more correct answers. Other MS items are multipart autoscored items, which may have varying combinations of multiple-choice (MC), multiple-response, multi-part selected response, enhanced selected response, completion or short-answer, and technology-enhanced items.

A common problem with early telescopes was that images seen through glass lenses often had blurry, colorful edges. The diagram shows the behavior of light that causes this phenomenon as light passes through a glass lens. The focal point is the point in space where parallel light rays meet after passing through the lens.



Select the two statements that best describe the interaction of light waves and a lens in early telescopes.

- (a) White light is composed of different frequencies of light waves that behave differently when they pass through the lens.
- (b) White light is composed of different light waves with the same frequency that behave differently as they pass through the lens.
- (c) The curved shape of the lens affects how different frequencies of light bend as they pass through the lens.
- (d) The curved shape of the lens absorbs some of the frequencies of light, allowing only some to pass through it.
- (e) The curved shape of the lens reflects most frequencies of light, causing them to bend at the same angle as they pass through the lens.

Two-Part Evidence-Based Selected-Response (EBSR) Items

The Evidence-Based Selected-Response items (EBSR) have two parts and are designed to elicit an evidence-based response, usually based on what a student has read in a stimulus. Most EBSR items are linked to a stimulus.

This question has two parts.

In the Arctic desert, polar bears hunt seals from the edge of sea ice. Sometimes polar bears swim in the cold water for miles between pieces of sea ice.

Part A

Polar bears have clear fur that appears white in their snowy habitat. Select the statement that describes how having white fur most helps polar bears survive.

- (a) White fur lets polar bears swim long distances.
- (b) White fur keeps polar bears warm in cold water.
- (c) White fur makes it hard for seals to see polar bears.

Part B

Select the trait that most helps polar bears catch prey.

- (a) thick fur
- (b) long claws
- (c) layers of body fat

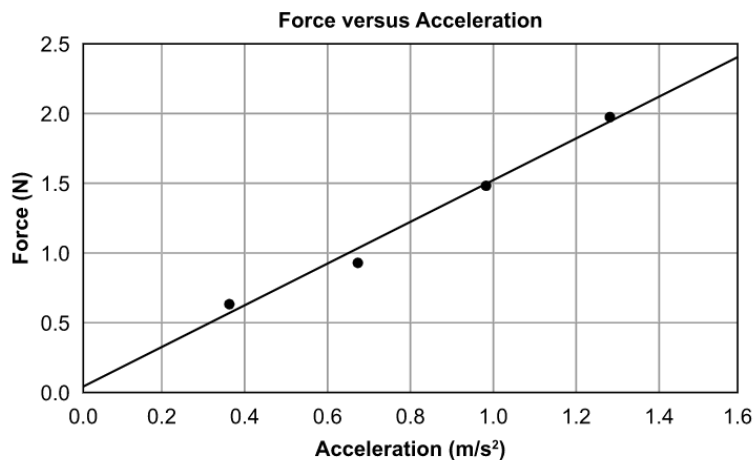
Technology-Enhanced (TE) Items

Technology-Enhanced (TE) items are computer-delivered, selected-response (SR) and open-ended response test items that use enhancements to augment the user interface. The TE items discussed below are representative of item types that may appear on the Alaska Science Assessment.

Short Answer/Text Input

Short Answer/Text Input or Keypad Input items allow for many types of inputs. The number of characters is usually limited to a relatively small number in order to facilitate autoscoring. The types of characters allowed can also be limited to text only, numbers only, or a mix.

A student performed an investigation to study Newton's second law. The student applied four different amounts of force to a solid block and then measured the acceleration of the block. The graph shows the student's data.



Using the information provided, type the mass of the block in the investigation to the nearest 0.5 kg.

(Practice Hint: Select the answer box to enter your answer.)

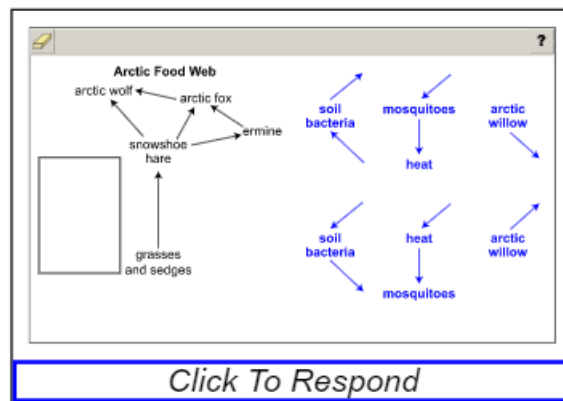
kg

Drag and Drop Input

Drag and Drop Input items can be used in a wide variety of ways. Students may move objects around the screen to categorize, sequence, build, or complete. A reset feature is available that allows the student to start over from the original configuration.

The food web can be modified to show the cycling of matter within the refuge. Select and move one of the food web parts into the box to best show the cycling of matter within the ecosystem.

(Practice Hint: Select the "Click to Respond" button below the food web to answer the question. Then, select a food web part and drag it into the box.)



Drop-Down List Input

Drop-Down List Input items can be used in a variety of ways. Most often, this item type is used for completing sentences or building expressions and equations.

(Practice Hint: Use the Pointer tool to select the arrow in each drop-down menu to select your answer.)

Use the drop-down menus to complete the statements describing how beluga whales receive sound information.

Sound information is received by the beluga whale's

. Next, the information moves through the ear,

where it is sent by the nerve to the for processing.

Matching Table Interaction

Matching Table Interaction items function by using the elements in the rows and columns of a table to create a match using check boxes.

Carbon is transferred throughout Earth's systems when different systems interact. A student wants to develop a model to show some of these interactions. Match each process listed in the chart below with the pair of systems that interact.

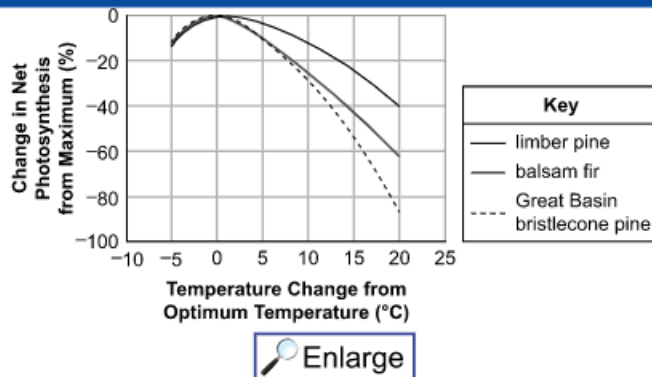
(Practice Hint: Match the statement listed in each row with a set of Earth systems listed in the columns. Select the box with the Pointer tool and a check mark will appear.)

	Hydrosphere and Atmosphere	Biosphere and Geosphere	Geosphere and Atmosphere	Atmosphere and Biosphere
Plants take in CO ₂ from the air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Decomposers break down carbon underground.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Methane gas is released from the ground to the air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CO ₂ from the air is taken in by oceans.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Click To Respond

Highlighting Text

Highlighting Text items allow a word, phrase, sentence, or paragraph of a designated text to be highlighted.







Students want to show how photosynthesis in the bristlecone pine may be affected by temperature changes.

Part B

Select how the products of photosynthesis are affected when the temperature increases to 20 degrees Celsius above the optimum temperature.

(Practice Hint: Select a statement and the text will become highlighted to show your answer.)

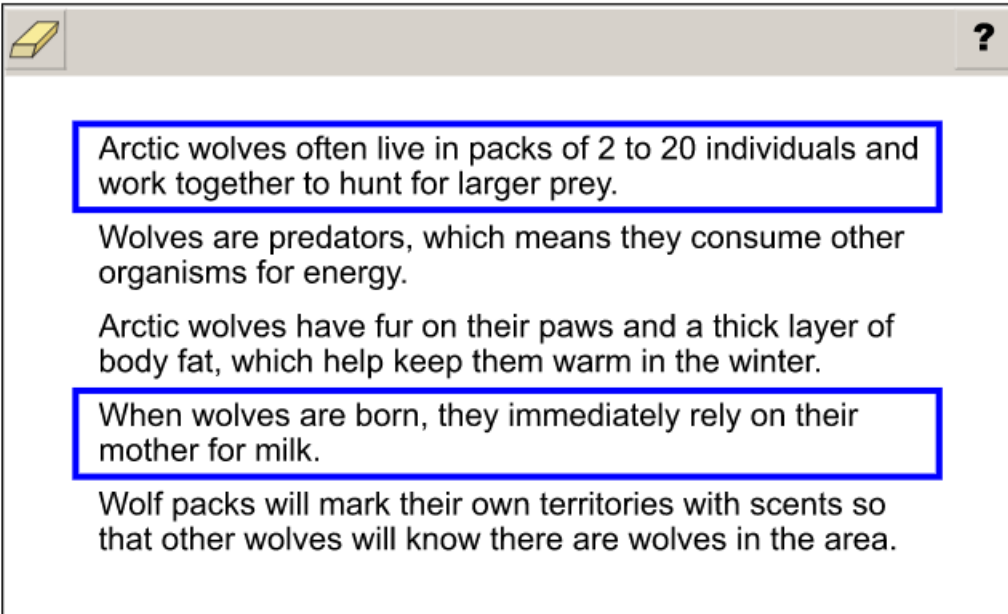
			
Effect of Temperature Increase on Photosynthesis Products			
The amount of product increases.			
The amount of product decreases.			
The amount of product remains the same.			

Hot Text or Hotspot Selection

Hot Text or Hotspot Selection items allow for the selection of text or graphics that identify the criteria for the solution to the problem. One or multiple words, numbers, equations, or other graphical elements can be selected. This is similar to Multiple Select but provides more options for item display as exemplified below.

Read the information below and select the two sentences that best identify behaviors that are likely learned by arctic wolves to help them survive.

(Practice Hint: Select a sentence and a box will appear around the sentence.)



The screenshot shows a digital assessment interface. At the top left is a yellow eraser icon, and at the top right is a question mark icon. The main content area contains five sentences about arctic wolves. Two sentences are highlighted with blue rectangular boxes: "Arctic wolves often live in packs of 2 to 20 individuals and work together to hunt for larger prey." and "When wolves are born, they immediately rely on their mother for milk." The other three sentences are not highlighted.

Arctic wolves often live in packs of 2 to 20 individuals and work together to hunt for larger prey.

Wolves are predators, which means they consume other organisms for energy.

Arctic wolves have fur on their paws and a thick layer of body fat, which help keep them warm in the winter.

When wolves are born, they immediately rely on their mother for milk.

Wolf packs will mark their own territories with scents so that other wolves will know there are wolves in the area.

Bar Graph Input

Bar Graph Input items allow students to select the heights of bars to create or complete a bar graph or histogram.

Identify the three months in which Juneau receives the most direct sunlight due to Earth's tilt. Complete the graph to show the average air temperature of these three months.

(Practice Hint 1: Select the "Click to Respond" button below the graph to make the graph larger.)

(Practice Hint 2: Select the text boxes at the bottom of the graph to type your response.)

(Practice Hint 3: To select a height for each bar on the graph, place the Pointer tool above each month. Move the Pointer tool upward to select a height for each bar.)

