



Teacher Guide

Directions for Test Administration

Science

Grade 5

Science Table of Contents

	Page
Purpose	1
MSAA Administration Materials	1
Directions	2
Beginning Science Grade 5	3

(Page is intentionally blank.)

Purpose

The Directions for Test Administration (DTA) is required for administration. The DTA provides the exact wording of the items to be read aloud by the TA during administration, the materials needed in preparation of the test, and guidelines for how to present the items to the student. Please use the DTA in conjunction with the Test Administration Manual (TAM) and the MSAA Online Assessment System User Guide for Test Administrators for detailed instructions.

MSAA Administration Materials

Document	Purpose
Test Administration Manual (TAM)	The TAM provides policies and procedures for TAs and TCs to prepare for the administration of the test, including a vocabulary list for ASL translation, tactile graphics, word boards or word banks, and AT/AAC devices.
Directions for Test Administration (DTA)	The DTA provides all directions for a successful one-to-one MSAA administration and includes directions and scripts for each item of the test.
MSAA Online Assessment System User Guide for Test Administrators	The user guide for TAs provides technical information and troubleshooting tips, plus step-by-step instructions to navigate the MSAA Online Assessment System, such as how to complete the Learner Characteristics Inventory (LCI); how to pause, resume, and submit a test for scoring; when to contact the MSAA Service Center; and how to administer the Student Response Check (SRC).

Directions

Become familiar with and follow all directions for test administration provided in the TAM. All text that TAs are to say aloud is boldfaced, and all text providing directions for what TAs are to do is in italics.

Please see the example below:

Item 1

3.ESS.2.1.1: Use observations to describe weather conditions.	
Teacher Script	
SAY	Sofia observes a tree bending as air blows on it outside. <i>Indicate the picture to the student.</i>
ASK	Which word can Sofia use to describe the weather? <i>Indicate and read each response option to the student.</i> foggy windy sleepy
Student Response	
RECORD	<i>Fill in the circle for the student's response.</i> <input type="radio"/> A. foggy <input type="radio"/> B. windy <input type="radio"/> C. sleepy <input type="radio"/> D. No Response

Boldfaced text:
TA reads item text to the student.

Italicized text:
Directions for what the TA is to do.

NOTE: For certain items, there is alternative text provided. Alternative text may appear in the SAY and/or ASK sections. It is **required** that TAs read the alternative text provided.

Beginning Science Grade 5

Item 1

5.ESS.1.2.1: Identify or label a model that shows the positions of the Sun, the Moon, and Earth in the solar system.	
Teacher Script	
SAY	Yuki wants to show the Sun, the Moon, and Earth in the solar system.
ASK	<p>Which model should Yuki choose to show the positions of the Sun, the Moon, and Earth in the solar system?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>A boat moves around a rock, and a fish moves around the rock.</p> <p>Earth moves around the Sun, and the Moon moves around Earth.</p> <p>A butterfly moves around a bee and a flower, and the bee moves around the flower.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. A boat moves around a rock, and a fish moves around the rock.</p> <p><input type="radio"/> B. Earth moves around the Sun, and the Moon moves around Earth.</p> <p><input type="radio"/> C. A butterfly moves around a bee and a flower, and the bee moves around the flower.</p> <p><input type="radio"/> D. No Response</p>

Item 2

5.ESS.1.2.2: Use models or data to identify patterns of change related to the rotation of Earth, Earth's orbit around the Sun, and the Moon's orbit around Earth (e.g., length and direction of shadows, day and night, seasonal appearance of stars).	
Teacher Script	
SAY	<p>At school, Mariah does an experiment. She stands outside and her teacher measures the length of her shadow. Every hour, Mariah goes back outside to the same place and her shadow length is measured. The bar graph shows Mariah's data.</p> <p><i>Indicate and read the "Length of Mariah's Shadow over Time" bar graph to the student.</i></p> <p>The bar graph is titled Length of Mariah's Shadow over Time. At nine A.M., the shadow was seven point six meters long. At ten A.M., the shadow was four point five meters long. At eleven A.M., the shadow was three point three meters long. At twelve P.M., the shadow was two point seven meters long.</p>
ASK	<p>Based on the bar graph, which statement describes the pattern in shadow length?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>The shadows appear longer in length throughout the day. The shadows appear the same length throughout the day. The shadows appear shorter in length throughout the day.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p> <input type="radio"/> A. The shadows appear longer in length throughout the day. <input type="radio"/> B. The shadows appear the same length throughout the day. <input checked="" type="radio"/> C. The shadows appear shorter in length throughout the day. <input type="radio"/> D. No Response </p>

Item 3

5.ESS.1.2.3: Use models or data to predict or infer patterns of change related to the rotation of Earth, Earth's orbit around the Sun, and/or the Moon's orbit around Earth (e.g., length and direction of shadows, day and night, seasonal appearance of stars).

Teacher Script	
SAY	<p>In the morning, Naya sees a large rock from her classroom window and notices that it casts a shadow. At noon, she sees the rock again from her classroom window and notices that the shadow has changed direction. Naya wonders what direction the shadow will be facing later in the evening after school.</p> <p>She makes an incomplete model of the Sun shining on the rock and the direction of the rock's shadow throughout the day.</p> <p><i>Indicate and read the model to the student.</i></p> <p>The model shows the rock and the position of the Sun in the morning and at noon. In the morning, the Sun is low to the left of the rock and the rock's shadow points to the right of the rock. At noon, the Sun is high in the sky directly above the rock and the rock's shadow points in front of the rock. In the evening, the position of the Sun is not shown and the shadow direction is not shown.</p>
ASK	<p>Which diagram shows the direction of the rock's shadow in the evening?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>The Sun is above the rock and the shadow points in front of the rock.</p> <p>The Sun is to the right of the rock and the shadow points to the left of the rock.</p> <p>The Sun is to the left of the rock and the shadow points to the right of the rock.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. The Sun is above the rock and the shadow points in front of the rock.</p> <p><input type="radio"/> B. The Sun is to the right of the rock and the shadow points to the left of the rock.</p> <p><input type="radio"/> C. The Sun is to the left of the rock and the shadow points to the right of the rock.</p> <p><input type="radio"/> D. No Response</p>

Item 4

3.ESS.2.1.1: Use observations to describe weather conditions.	
Teacher Script	
SAY	Sofia observes a tree bending as air blows on it outside. <i>Indicate the picture to the student.</i>
ASK	Which word can Sofia use to describe the weather? <i>Indicate and read each response option to the student.</i> foggy windy sleepy
Student Response	
RECORD	<i>Fill in the circle for the student's response.</i> <input type="radio"/> A. foggy <input checked="" type="radio"/> B. windy <input type="radio"/> C. sleepy <input type="radio"/> D. No Response

Item 5

3.ESS.2.1.2: Use tables or graphical displays of data to describe patterns of typical weather conditions in a particular season.

Teacher Script**SAY**

This data table shows winter weather conditions in New York in 2015.

Indicate and read the data table to the student.

The data table is titled Winter Weather Conditions in New York. It lists data for weather conditions. Average snowfall is forty-three centimeters. Average temperature is thirty-one degrees Fahrenheit.

ASK

Based on the data table, which sentence best describes winter in New York?

Indicate and read each response option to the student.

It has few windy days.

It is warm with lots of rain.

It is cold with lots of snow.

Student Response**RECORD**

Fill in the circle for the student's response.

- ☐ A. It has few windy days.
- ☐ B. It is warm with lots of rain.
- ☒ **C. It is cold with lots of snow.**
- ☐ D. No Response

Item 6

3.ESS.2.1.3: Use tables and/or graphical displays of data to predict patterns of typical weather conditions for a particular season.

Teacher Script

SAY

This data table shows the high temperatures for a town in Alaska in the spring and fall. Data for June, July, and August are missing.

Indicate and read the data table to the student.

The data table is titled High Temperatures for a Town in Alaska. It lists the high temperature in degrees Fahrenheit for nine months. The high temperature in April was forty-six degrees Fahrenheit. The high temperature in May was fifty-two degrees Fahrenheit. The high temperatures in June, July, and August are not listed. The high temperature in September was fifty degrees Fahrenheit. The high temperature in October was forty-seven degrees Fahrenheit. The high temperature in November was thirty-eight degrees Fahrenheit. The high temperature in December was thirty-five degrees Fahrenheit.

ASK

Based on the data table, which range of high temperatures is expected for the summer?

Indicate and read each response option to the student.

**between twenty and twenty-nine degrees Fahrenheit
between forty and forty-nine degrees Fahrenheit
between sixty and sixty-nine degrees Fahrenheit**

Student Response

RECORD

Fill in the circle for the student's response.

- ☐ A. between 20° and 29°F
- ☐ B. between 40° and 49°F
- ☐ **C. between 60° and 69°F**
- ☐ D. No Response

Items 7–12 Cluster Stimulus

Teacher Script	
SAY	<p>Arjun is learning about islands in class. He is surprised to find out from his teacher that there are many things that live on a volcanic island.</p> <p>Arjun wonders how a volcanic island supports life. His teacher shows him a model of the different systems on an island.</p> <p><i>Indicate and read the “Volcanic Island Systems Model” to the student.</i></p> <p>The model is titled Volcanic Island Systems Model. It shows the Sun shining on a volcanic island. The air is part of the atmosphere. The volcano and soil are part of the geosphere. The water is part of the hydrosphere. The bird and plants are part of the biosphere.</p> <p>Arjun’s teacher also shows him a list of some of the things that live on and around a volcanic island.</p> <p>Things that live on and around a volcanic island:</p> <ul style="list-style-type: none">• birds• horses• tiny living things in the water• plants <p>Arjun’s teacher also shows him a model of how energy flows in a volcanic island ecosystem.</p> <p><i>Indicate and read the “Energy Flow Model” to the student.</i></p> <p>The model is titled Energy Flow Model. It shows that the Sun shines on a plant, and the plant is eaten by a horse.</p>

Item 7

5.ESS.2.1.1: Use a model (diagram) to identify parts of various Earth systems (e.g., geosphere, hydrosphere, atmosphere, biosphere).

Teacher Script	
SAY	<p>Arjun looks at the model of a volcanic island.</p> <p><i>Indicate and read the “Volcanic Island Systems Model” to the student.</i></p> <p>The model is titled Volcanic Island Systems Model. It shows the Sun shining on a volcanic island. The air is part of the atmosphere. The volcano and soil are part of the geosphere. The water is part of the hydrosphere. The bird and plants are part of the biosphere.</p>
ASK	<p>What part of the model is included in the hydrosphere?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>pen</p> <p>water</p> <p>phone</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student’s response.</i></p> <p><input type="radio"/> A. pen</p> <p><input checked="" type="radio"/> B. water</p> <p><input type="radio"/> C. phone</p> <p><input type="radio"/> D. No Response</p>

Item 8

5.ESS.2.1.2: Use a model to describe how any two Earth systems interact.	
Teacher Script	
SAY	<p>Arjun looks at the volcanic island model and wonders how the systems on an island interact.</p> <p><i>Indicate and read the “Volcanic Island Systems Model” to the student.</i></p> <p>The model is titled Volcanic Island Systems Model. It shows the Sun shining on a volcanic island. The air is part of the atmosphere. The volcano and soil are part of the geosphere. The water is part of the hydrosphere. The bird and plants are part of the biosphere.</p>
ASK	<p>Which statement describes how the biosphere and the geosphere interact in the volcanic island model?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>The motor helps a car to move.</p> <p>The soil gives plants a place to grow.</p> <p>The air cools the water down with wind.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student’s response.</i></p> <p><input type="radio"/> A. The motor helps a car to move.</p> <p><input type="radio"/> B. The soil gives plants a place to grow.</p> <p><input type="radio"/> C. The air cools the water down with wind.</p> <p><input type="radio"/> D. No Response</p>

Item 9

5.ESS.2.1.3: Develop a model to show ways in which any two Earth systems interact.	
Teacher Script	
SAY	<p>Arjun wants to make a model to show how ash released from a volcano on an island affects the atmosphere.</p> <p><i>Indicate and read the “Effect of Volcanic Ash on the Atmosphere Model” to the student.</i></p> <p>The model is titled Effect of Volcanic Ash on the Atmosphere Model. The model shows that ash from the volcano moves into the air, travels down the right side of the volcano, and falls into nearby water. The ash floats on the surface of the water.</p>
ASK	<p>What should Arjun do to the model to show how the atmosphere and geosphere interact?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>Draw tiny living things in the water eating the ash.</p> <p>Draw lines in the air to show wind moving the ash.</p> <p>Draw clouds raining in the sky and mixing with the ash.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student’s response.</i></p> <p><input type="radio"/> A. Draw tiny living things in the water eating the ash.</p> <p><input type="radio"/> B. Draw lines in the air to show wind moving the ash.</p> <p><input type="radio"/> C. Draw clouds raining in the sky and mixing with the ash.</p> <p><input type="radio"/> D. No Response</p>

Item 10

5.PS.3.1.1: Identify food chains or drawings of ecosystems that show the Sun as the common source of energy for ecosystems.	
Teacher Script	
SAY	Arjun learns that birds and plants, such as shrubs, live in a volcanic island ecosystem. He wonders where the energy for a volcanic island comes from to support these living things.
ASK	<p>Which model shows the source of energy for a volcanic island ecosystem?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>A hat is next to a shirt, a jacket, and pants.</p> <p>A plate is placed near a teacup, a mug, and a spoon.</p> <p>The Sun is shining on a large bird, a small bird, and a shrub.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. A hat is next to a shirt, a jacket, and pants.</p> <p><input type="radio"/> B. A plate is placed near a teacup, a mug, and a spoon.</p> <p><input type="radio"/> C. The Sun is shining on a large bird, a small bird, and a shrub.</p> <p><input type="radio"/> D. No Response</p>

Item 11

5.PS.3.1.2: Use a model to describe or show the direction of energy transfer between two organisms (e.g., plant-animal, animal-animal) or between the Sun and a plant.	
Teacher Script	
SAY	<p>Arjun looks at the model about energy flow in a volcanic island ecosystem.</p> <p><i>Indicate and read the “Energy Flow Model” to the student.</i></p> <p>The model is titled Energy Flow Model. It shows that the Sun shines on a plant, and the plant is eaten by a horse.</p>
ASK	<p>Which model shows an object or organism receives its energy from plants?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>from a chair to a desk</p> <p>from a plant to a horse</p> <p>from a horse to the Sun</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student’s response.</i></p> <p><input type="radio"/> A. from a chair to a desk</p> <p><input type="radio"/> B. from a plant to a horse</p> <p><input type="radio"/> C. from a horse to the Sun</p> <p><input type="radio"/> D. No Response</p>

Item 12

5.PS.3.1.3: Use a model to describe or show how the energy animals obtain from food comes from the Sun.

Teacher Script	
SAY	<p>Arjun makes a model to show how energy flows in a volcanic island ecosystem. His model shows energy flowing from tiny plant-like living things in the water, to tiny animals living in the water, to a fish, and then to a puffin bird.</p> <p><i>Indicate the “Energy Flow in Volcanic Ecosystem Model” to the student.</i></p>
ASK	<p>What should Arjun add to his model to show the source of energy for all the organisms that live in or around the water?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>the Sun the Moon the Earth</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student’s response.</i></p> <p><input type="radio"/> A. the Sun</p> <p><input type="radio"/> B. the Moon</p> <p><input type="radio"/> C. the Earth</p> <p><input type="radio"/> D. No Response</p>

Items 13–18 Cluster Stimulus

Teacher Script	
SAY	<p>Alma finds a diagram of a solar cooker made out of a box. A solar cooker uses energy from the Sun to cook food.</p> <p><i>Indicate and read the diagram to the student.</i></p> <p>The diagram is titled Solar Cooker. It shows the Sun shining on a box. The top side of the box is folded up and labeled Reflector flap. The inside bottom of the box is labeled Cooking surface. Two arrows point from the Sun to the box. One arrow points to the reflector flap and then from the flap to the cooking surface inside the box. Another arrow points to the cooking surface inside the box.</p> <p>Food is cooked inside the box on the cooking surface.</p> <p>Investigation One</p> <p>Alma sets up an investigation to find out the best color to make the cooking surface in her solar cooker. She places three pieces of paper that are different colors in the sun. One is red. One is green. One is blue. The papers are all the same size. Then, Alma places an ice cube on each piece of paper. The ice cubes are all the same size. Next, she measures how long it takes each ice cube to melt. Alma makes a data table to show her results.</p> <p><i>Indicate and read the data table to the student.</i></p> <p>The data table is titled What Color Paper Melts Ice Fastest? It lists three colors of paper and the time it takes to melt an ice cube in minutes. Red paper takes thirty-five minutes to melt an ice cube. Green paper takes thirty-nine minutes to melt an ice cube. Blue paper takes thirty-seven minutes to melt an ice cube.</p> <p>Investigation Two</p> <p>Alma removes the paper from the solar cooker she used in Investigation One and does another investigation. She wants to know if cheese will change weight when it melts. She weighs some solid pieces of cheese. Then, she melts the cheese in her solar cooker and weighs the melted cheese. The data table shows the weights Alma measured.</p> <p><i>Indicate and read the data table to the student.</i></p> <p>The data table is titled Weight of Cheese. It lists the weight of the solid pieces of cheese as fifty grams. It lists the weight of the melted cheese as fifty grams.</p>

Item 13

4.PS.3.4.1: Identify forms of energy present in a system.	
Teacher Script	
SAY	<p>Alma's solar cooker uses energy from the Sun to heat food.</p> <p><i>Indicate and read the diagram to the student.</i></p> <p>The diagram is titled Solar Cooker. It shows the Sun shining on a box. The top side of the box is folded up and labeled Reflector flap. The inside bottom of the box is labeled Cooking surface. Two arrows point from the Sun to the box. One arrow points to the reflector flap and then from the flap to the cooking surface inside the box. Another arrow points to the cooking surface inside the box.</p>
ASK	<p>What type of energy comes from the Sun?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>rain</p> <p>cold</p> <p>light</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. rain</p> <p><input type="radio"/> B. cold</p> <p><input type="radio"/> C. light</p> <p><input type="radio"/> D. No Response</p>

Item 14

4.PS.3.4.2: Describe the energy transfer that occurs in an everyday object or device.	
Teacher Script	
SAY	<p>When the solar cooker is placed in the sun, it warms up the food inside.</p> <p><i>Indicate and read the diagram to the student.</i></p> <p>The diagram is titled Solar Cooker. It shows the Sun shining on a box. The top side of the box is folded up and labeled Reflector flap. The inside bottom of the box is labeled Cooking surface. Two arrows point from the Sun to the box. One arrow points to the reflector flap and then from the flap to the cooking surface inside the box. Another arrow points to the cooking surface inside the box.</p>
ASK	<p>How does the energy from the Sun change form when the solar cooker warms up food?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>from light to heat</p> <p>from heat to light</p> <p>from sound to cold</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. from light to heat</p> <p><input type="radio"/> B. from heat to light</p> <p><input type="radio"/> C. from sound to cold</p> <p><input type="radio"/> D. No Response</p>

Item 15

4.PS.3.4.3: Identify which design or improvement will work best to transfer energy from one form to another.

Teacher Script	
SAY	<p>Alma tests paper of different colors to see which one melts ice fastest. Alma's results are listed in the data table.</p> <p><i>Indicate and read the data table to the student.</i></p> <p>The data table is titled What Color Paper Melts Ice Fastest? It lists three colors of paper and the time it takes to melt an ice cube in minutes. Red paper takes thirty-five minutes to melt an ice cube. Green paper takes thirty-nine minutes to melt an ice cube. Blue paper takes thirty-seven minutes to melt an ice cube.</p>
ASK	<p>Based on Alma's results, which color material will make the solar cooker heat food fastest?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>red</p> <p>green</p> <p>blue</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. red</p> <p><input type="radio"/> B. green</p> <p><input type="radio"/> C. blue</p> <p><input type="radio"/> D. No Response</p>

Item 16

5.PS.1.2.1: Match the appropriate tools or standard units of measurement to physical quantities such as weight, time, temperature, or volume to complete a scientific task.

Teacher Script	
SAY	Alma places her solar cooker in the sun. She wants to know the temperature inside the cooker.
ASK	<p>Which tool can Alma use to measure the temperature inside the solar cooker?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>television</p> <p>calculator</p> <p>thermometer</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. television</p> <p><input type="radio"/> B. calculator</p> <p><input checked="" type="radio"/> C. thermometer</p> <p><input type="radio"/> D. No Response</p>

Item 17

5.PS.1.2.2: Use data to compare the weight of substances before and after they are heated, cooled, or mixed.

Teacher Script	
SAY	<p>Alma weighs some solid pieces of cheese. Then, she melts the cheese in her solar cooker and weighs the melted cheese. The data table shows the weights Alma measured.</p> <p><i>Indicate and read the data table to the student.</i></p> <p>The data table is titled Weight of Cheese. It lists the weight of the solid pieces of cheese as fifty grams. It lists the weight of the melted cheese as fifty grams.</p>
ASK	<p>How does the weight of the melted cheese compare to the weight of the solid cheese?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>The cooker is easy to put together.</p> <p>The solid and melted cheese weigh the same.</p> <p>The melted cheese weighs more than the solid cheese.</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. The cooker is easy to put together.</p> <p><input type="radio"/> B. The solid and melted cheese weigh the same.</p> <p><input type="radio"/> C. The melted cheese weighs more than the solid cheese.</p> <p><input type="radio"/> D. No Response</p>

Item 18

5.PS.1.2.3: Measure, graph, or use mathematical relationships to show that the weight of substances (in standard units) does not change when they are heated, cooled, or mixed.

Teacher Script	
SAY	<p>Alma decides to try another food in her solar cooker. She weighs a marshmallow. Then, she melts the marshmallow in her solar cooker. The data table shows Alma's observations.</p> <p><i>Indicate and read the data table to the student.</i></p> <p>The data table is titled Weight of One Marshmallow. Before melting, the marshmallow weighed seven grams. After melting, the marshmallow's weight is not listed.</p>
ASK	<p>What is the weight of the marshmallow after it melts?</p> <p><i>Indicate and read each response option to the student.</i></p> <p>5 grams</p> <p>7 grams</p> <p>9 grams</p>
Student Response	
RECORD	<p><i>Fill in the circle for the student's response.</i></p> <p><input type="radio"/> A. 5 grams</p> <p><input type="radio"/> B. 7 grams</p> <p><input type="radio"/> C. 9 grams</p> <p><input type="radio"/> D. No Response</p>

