THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL SCIENCE TEST

JUNE 2019 WRITTEN TEST

FOR TEACHERS ONLY

RATING GUIDE FOR PART II

This rating guide contains detailed directions for rating student responses to Part II of the written test in Intermediate-Level Science. All raters should become familiar with the detailed directions before beginning to rate student responses.

Appendix A provides a performance levels chart that translates final scores into four performance levels. A conversion chart is needed to translate a student's raw score on the written and performance tests to a final score. This chart will be posted on the Department's web site http://www.p12.nysed.gov/assessment/ through the "Scoring Information" link. Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2019 administration of this test.

Appendix B provides several charts that link the individual items on the test to the *Intermediate-Level Science Core Curriculum Grades 5–8*. This core curriculum is based on the *New York State Learning Standards in Mathematics, Science, and Technology*.

Any clarifications or changes to this rating guide will be posted on the New York State Education Department web site at http://www.p12.nysed.gov/assessment/ during the rating period. Check the "Scoring Information" link at this web site before starting the rating process and several times during the rating period.

Questions regarding this test should be directed to the Office of State Assessment at (518) 474-5900.

Note: Retain this guide for future use. Do *not* return it to SED with the performance test materials.

Detailed Directions for Rating Part II of the Written Test

Note: Teachers are not permitted to score their own students' responses.

This guide contains detailed directions and criteria for scoring student responses to the questions in Part II of the written test. Raters should become familiar with the detailed directions and rating criteria before beginning to score the student responses. Refer to the *2019 Manual for Administrators and Teachers* for suggestions about organizing the rating process.

In rating the student responses, follow the procedure outlined below.

1. Familiarize yourself with the system your school is using for processing the answer papers and recording the student scores.

2. Have a test booklet on hand. Read each Part II question carefully. Note exactly what is required.

3. Carefully read the criteria provided in this guide for scoring each question.

4. For most questions, examples of acceptable responses are provided. Acceptable responses include, but are not limited to, the examples given. Other responses that convey the same general meaning as those given in this guide should also receive credit. Raters must use their professional judgment to decide if the student's answer meets the criteria. You may find it helpful to discuss questionable student responses with other raters.

5. Acceptable responses separated by a slash (/) are considered to be the same response and should be counted for credit once.

6. To ensure the accuracy of overlays, select a printer setting such as *full*, *actual size*, or *100%* when printing this document. Do *not* select the *fit to print* setting.

7. Discuss with other raters the requirements of each question and the scoring criteria. When you are certain that you clearly understand the requirements and criteria, you are ready to begin scoring the student responses.

8. It is recommended that you score all the student responses to one question or group of questions before proceeding to the next question or group of questions. This method helps ensure that the scoring criteria are applied consistently.

9. Students should *not* lose credit for incorrect spelling, grammar, capitalization, or punctuation.

10. For questions where there is more than one answer and a specific number of answers are required, (e.g., identify *three* materials, give *two* examples), if the student provides more than the required number of responses, score only the required number, in the order in which they appear.

11. Sometimes in questions where there is only one acceptable answer, the student will provide more than one answer. These must be considered on a case-by-case basis. If the second answer indicates that the student does not understand the question or is simply guessing, then credit should not be allowed.

12. Record the number of credits you allow for each question in the table provided on the back cover of the test booklet. The maximum number of credits for each question appears in the table.

13. When you have finished scoring all the Part II questions, add the credits allowed for each question to obtain the total raw score for Part II.

14. Follow your school's procedure for transferring Part II scores to the student's scannable answer sheet. These are local decisions that depend on the answer sheet your school uses. Some schools will transfer a score for each Part II question while others may transfer a total raw score for Part II. Check to be certain that the student name on the test booklet matches the name on the answer sheet.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to http://www.p12.nysed.gov/assessment/teacher/evaluation.html.
2. Select the test title.
3. Complete the required demographic fields.
4. Complete each evaluation question and provide comments in the space provided.
5. Click the SUBMIT button at the bottom of the page to submit the completed form.

46 [1] Allow 1 credit for a testable hypothesis (statement). Acceptable responses include, but are not limited to:

— If young plants receive the greatest amount of water, then they will grow tallest.

— The young plants that receive the least water will grow tallest.

— The more water a plant receives, the taller the plant will grow.

Note: Do *not* allow credit for responses written as a question since a hypothesis is a testable statement.

47 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— size of planters/containers

— type of soil

— amount of soil

— same amount of light/sunlight

— same location

— temperature of the water

— temperature of the environment

— source of water

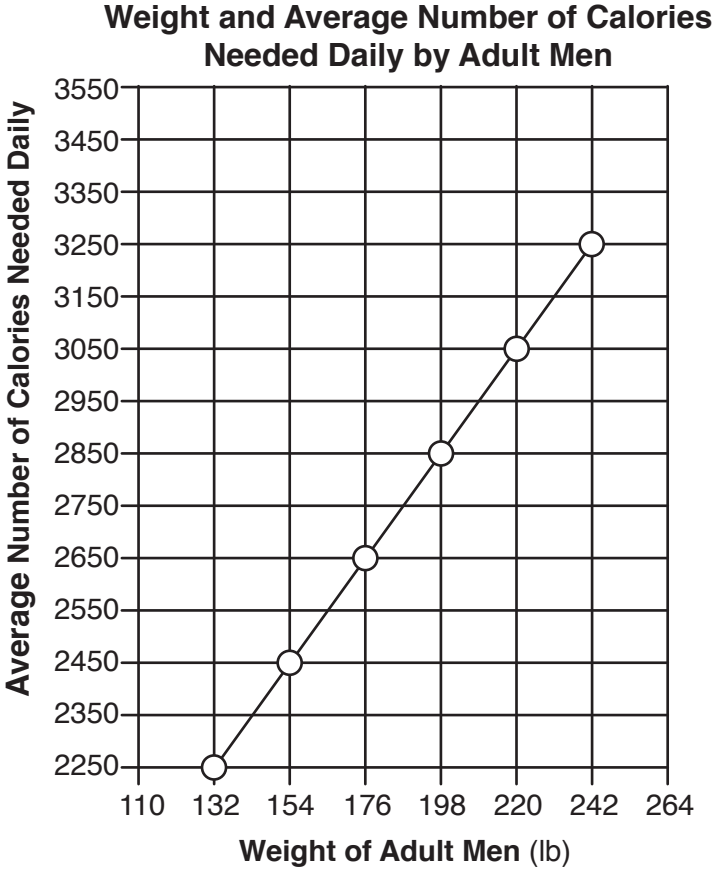
— time of day watered

48 [1] Allow 1 credit for an acceptable measurement tool and its use. Acceptable responses include, but are not limited to:

Measurement Tool	Data Measured by Tool
— ruler — meterstick — tape measure — yardstick	— measure height of plants — if plant got taller or larger
— graduated cylinder — beaker — measuring cup	— volume of water to add to plants — amount of soil
— balance	— mass of soil for each planter
— thermometer	— temperature of water — temperature of environment

49 [1] Allow 1 credit if the centers of *all six* **X**s are within or touch the circles shown and are correctly connected with a line that passes within or touches the circles.

Example of a 1-credit response:



Note: Do *not* allow credit for a bar graph.

Allow credit if the student-drawn line correctly extends the line beyond the data points.

Allow credit if the student uses a symbol other than an **X** to plot the points.

It is recommended that an overlay of the same scale as the student test booklet be used to ensure rating reliability.

50 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— As weight increases, the number of daily Calories increases.

— As one goes up, the other goes up.

— a direct/positive relationship

— Men who weigh less need fewer Calories to maintain weight.

— For every 22 extra pounds on an adult man, he will need 200 more Calories to maintain his weight.

— The graph shows a positive slope.

51 [1] Allow 1 credit for indicating an increase in the weight of the man *and* a correct explanation. Acceptable explanations include, but are not limited to:

— He will gain weight because he is consuming more Calories than he needs.

— The man is consuming more Calories than he needs to maintain his weight.

— 2700 Calories is greater than the 2450 Calories a 154-lb man needs to maintain weight.

— The man is eating the number of Calories necessary for a 185-lb male, not a 154-lb male.

— He only needs 2450 Calories to maintain his weight.

— The man is taking in 250 additional Calories.

52 [1] Allow 1 credit for the Punnett square completed correctly with each parent having either *BB* or *Bb*, for black fur.

Examples of 1-credit responses:

	B	*B*
B	*BB*	*BB*
b	*Bb*	*Bb*

	B	*b*
B	*BB*	*Bb*
b	*Bb*	*bb*

	B	*B*
B	*BB*	*BB*
B	*BB*	*BB*

	B	*b*
B	*BB*	*Bb*
B	*BB*	*Bb*

Note: Allow credit for *Bb* or *bB*.

Acceptable responses must include genotypes of *both* parents and their possible offspring.

53 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— There is only one parent.

— There is no sperm or egg used.

— Budding is a type of asexual reproduction.

— The parent and offspring are genetically identical.

54 [1] Allow 1 credit for a physical adaptation represented in the diagram *and* a correct description. Acceptable responses include, but are not limited to:

Physical Adaptation	Description
— big ears	— helps them hear approaching danger — regulates body temperature
— nose	— helps it find food — detect predators
— eyes (side-facing)	— able to see predators approach from the sides
— fur	— helps it stay warm — camouflage/blend in

Note: Do *not* allow credit for behavioral adaptations because they are not represented in the diagram (e.g., running fast, eating during the day).

55 [1] Allow 1 credit for indicating a rabbit is an herbivore *and* an owl is a carnivore.

56 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Some energy is lost to the surrounding environment as heat at each level, making the top smaller.

— There are a greater number of organisms at the base/bottom of the pyramid.

— The bottom layer of the pyramid has the most food and/or energy.

— As you move up the pyramid, the amount of energy available decreases.

57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The invertebrates listed in the pyramid eat phytoplankton.

— The energy from the phytoplankton is transferred directly to the invertebrates.

— Some invertebrates are herbivores.

58 [1] Allow 1 credit for fertilization.

59 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Sweating is a way of getting rid of liquid waste.
— removal of wastes/salt
— Sweating helps remove excess heat from the body.

60 [1] Allow 1 credit for chromosome.

61 [1] Allow 1 credit for DNA *or* deoxyribonucleic acid.

62 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— absorb nutrients from the soil
— anchor the plant in the ground
— absorb water
— store food

Note: Do *not* accept "absorb food" as they absorb nutrients used to produce food.

63 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— leaf/leaves
— stem
— sepals

64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— produces/grows a new plant
— stores food
— provides energy for germinating plants
— germinates into a plant
— dispersal or a description of seed dispersal (carried by wind, water, or animals.)

65 [1] Allow 1 credit for athlete's foot *and* botulism.

Note: Do *not* accept fungus and bacteria, as they are the cause, not the disease.

66 [1] Allow 1 credit for any value from 365 days to 365.26 days *or* any equivalent fraction that fits into this range, e.g., 365 ¼.

67 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Halley's Comet revolves around the Sun.

— It orbits the Sun.

— gravitational pull of the Sun keeps the comet in its orbit

— moves around the Sun

Note: Do *not* allow credit for "rotation around the Sun" because the motion is revolution, not rotation.

68 [1] Allow 1 credit for any value from 14 to 15 days.

69 [1] Allow 1 credit for position 1/New Moon *or* position 5/Full Moon.

70 [1] Allow 1 credit for ocean tides *or* tides.

71 [1] Allow 1 credit for gravity *or* gravitational attraction.

72 [1] Allow 1 credit for stratosphere.

73 [1] Allow 1 credit for 90°C *or* –90°C.

74 [1] Allow 1 credit for fluorite *or* calcite *or* gypsum *or* talc.

75 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Many minerals may have similar colors.

— The same mineral can have a variety of colors.

— Many minerals are colorless.

— Hardness is consistent from sample to sample, but the color can vary.

— Impurities affect the color of a mineral.

76 [1] Allow 1 credit for identifying layer *F and* an acceptable explanation. Acceptable explanations include, but are not limited to:

— It is on the bottom.

— Other layers were deposited after layer *F*.

77 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— provides evidence for the theory of evolution

— indicates types of past environments

— provides evidence that a great variety of species once existed

— indicates past climate conditions

78 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Use a magnet.

— Use a magnet to pull the iron particles out of the mixture.

79 [1] Allow 1 credit for a rating of EF1 *and* a correct type of damage. Acceptable responses include, but are not limited to:

— Cars are pushed off the road.

— Shingles are torn from roofs.

— branches broken

— chimneys damaged

80 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Go into a basement or storm shelter.

— Stay away from windows.

— Go inside a building.

— Listen for emergency broadcasts.

— Go to an interior room or closet.

— Make sure emergency supplies are ready.

Note: Do *not* allow credit for "evacuate area" *or* "board up windows" because there is no time to do this with an approaching tornado.

81 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Global temperatures were cooler.

— colder

82 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— W

— from east to west

— southwest

Note: Do *not* accept a direction of "left" as this is not a compass direction.

83 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Volcanoes form at plate boundaries/subduction zones.

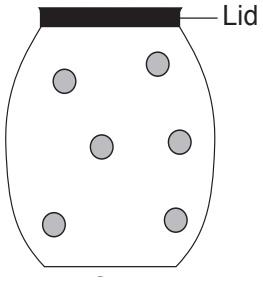
— at some plate boundaries where magma rises to the surface

— along the Ring of Fire

— where plates collide or separate

84 [1] Allow 1 credit for showing *all six* particles randomly spaced throughout the container.

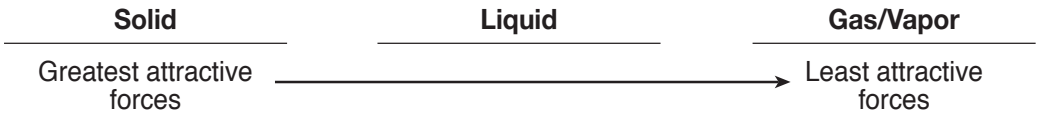
Example of a 1-credit response:



Note: Allow credit if motion lines are shown with particles *or* if particles are a different size.

Do *not* allow credit if more than six or fewer than six particles are shown.

85 [1] Allow 1 credit if *all three* phases of matter are in the correct sequence, as shown below:



Appendix A

New York State Grade 8 Intermediate-Level Science Test
June 2019

Performance Levels Chart

The chart on the next page defines the four performance levels for this test. The state-designated level of performance for this test is a final score of 65 or higher (levels 3 and 4). Students scoring below 65 (levels 1 and 2) must be provided with academic intervention services according to section 100.2(ee)(i) of the Regulations of the Commissioner of Education. The chart provides the score intervals and a brief description of student abilities at each level.

The conversion chart will be posted on the Department's web site http://www.p12.nysed.gov/assessment/ through the "Scoring Information" link.

Note: Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2019 administration.

Performance Levels
Grade 8 Intermediate-Level Science Test

Level	Final Test Score Range	Description of Student Performance
4	85–100	**Meeting the Standards with Distinction** • Student demonstrates superior understanding of the intermediate-level science content and concepts for each of the learning standards and key ideas assessed. • Student demonstrates superior intermediate-level science skills related to each of the learning standards and key ideas assessed. • Student demonstrates superior understanding of the intermediate-level science content, concepts, and skills required for a secondary academic environment.
3	65–84	**Meeting the Standards** • Student demonstrates understanding of the intermediate-level science content and concepts for each of the learning standards and key ideas assessed. • Student demonstrates the science skills required for intermediate-level achievement in each of the learning standards and key ideas assessed. • Student demonstrates understanding of the intermediate-level science content, concepts, and skills required for a secondary academic environment.
2	44–64	**Not Fully Meeting the Standards** • Student demonstrates only minimal proficiency in intermediate-level science content and concepts in most of the learning standards and key ideas assessed. • Student demonstrates only minimal proficiency in the skills required for intermediate-level achievement in most of the learning standards and key ideas assessed. • Student demonstrates marginal understanding of the science content, concepts, and skills required for a secondary academic environment.
1	0–43	**Not Meeting the Standards** • Student is *unable* to demonstrate understanding of the intermediate-level science content and concepts in most of the learning standards and key ideas assessed. • Student is *unable* to demonstrate the science skills required for intermediate-level achievement in most of the learning standards and key ideas assessed. • Student is *unable* to demonstrate evidence of the basic science knowledge and skills required for a secondary academic environment.

Appendix B

Item Maps

New York State Grade 8 Intermediate-Level Science Test
June 2019 Written Test
Performance Test Form A

Item maps contained in this appendix:

- Reference to *Intermediate-Level Science Core Curriculum Grades 5–8* — June 2019 Written Test and Performance Test, Form A
- Reference to Process Skills Based on Standard 4 — June 2019 Written Test and Performance Test, Form A
- Reference to Core Curriculum for Individual Test Questions — June 2019 Written Test
- Reference to Core Curriculum for Individual Test Questions — Performance Test, Form A

Note: Core curriculum is based on *NYS Learning Standards for Mathematics, Science, and Technology.*

NYS Learning Standards for Mathematics, Science, and Technology **Standard/Area**	*Reference to Intermediate-Level Science Core Curriculum* **Key Idea or Performance Indicator**	**Performance Test Form A Question Number**			**June 2019 Written Test Question Number**
		Station 1	**Station 2**	**Station 3**	
Standard 1 Scientific Inquiry Key Idea 1 The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.	**S1.1** Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.	2 3			
	S1.2 Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.		8	4	46
	S1.3 Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.		7 8	5 6	
	S1.4 Seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers, teachers, authors, and scientists.		7		
Standard 1 Scientific Inquiry Key Idea 2 Beyond the use of reasoning and consensus, scientific inquiry involves the testing of proposed explanations involving the use of conventional techniques and procedures and usually requiring considerable ingenuity.	**S2.1** Use conventional techniques and those of their own design to make further observations and refine their explanations, guided by a need for more information.	3 4 5 6		1 2	48
	S2.2 Develop, present, and defend formal research proposals for testing their own explanations of common phenomena, including ways of obtaining needed observations and ways of conducting simple controlled experiments.	2 3 4			47
	S2.3 Carry out their research proposals, recording observations and measurements (e.g., lab notes, audiotape, computer disk, videotape) to help assess the explanation.	1 3 4	1 2 3	1 2 4	
Standard 1 Scientific Inquiry Key Idea 3 The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.	**S3.1** Design charts, tables, graphs, and other representations of observations in conventional and creative ways to help them address their research question or hypothesis.	1 3 5	2 8		45, 49
	S3.2 Interpret the organized data to answer the research question or hypothesis and to gain insight into the problem.	1	4 5 6	4, 5, 6, 7	11, 26, 72, 73, 74, 79
	S3.3 Modify their personal understanding of phenomena based on evaluation of their hypothesis.			5	
Standard 1 Mathematical Analysis	**M1** Abstraction and symbolic representation are used to communicate mathematically.		3 8		42, 50
	M2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		43
	M3 Critical thinking skills are used in the solution of mathematical problems.				44

NYS Learning Standards for Mathematics, Science, and Technology Standard/Area	*Reference to Intermediate-Level Science Core Curriculum* Key Idea or Performance Indicator	Performance Test Form A Question Number			June 2019 Written Test Question Number
		Station 1	Station 2	Station 3	
Standard 1 Engineering Design	**T 1.1–T 1.5** Engineering design is an iterative process involving modeling and optimization to develop technological solutions to problems within given constraints.				
Standard 2 Information Systems	**1.1–1.5** Information technology is used to retrieve, process, and communicate information as a tool to enhance learning.				
	2.1–2.3 Knowledge of the impacts and limitations of information systems is essential to its effectiveness and ethical use.				
	3.1–3.3 Information technology can have positive and negative impacts on society, depending upon how it is used.				
Standard 4 The Physical Setting	**1** Earth and celestial phenomena can be described by principles of relative motion and perspective.				22, 23, 66, 67, 68, 70, 71
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				19, 21, 24, 25, 28, 75, 76, 80, 81, 83
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				20, 27, 29, 31, 40, 78, 84, 85
	4 Energy exists in many forms, and when these forms change, energy is conserved.				30, 32, 33, 34, 35, 36, 37
	5 Energy and matter interact through forces that result in changes in motion.				38, 39
Standard 4 The Living Environment	**1** Living things are both similar to and different from each other and from nonliving things.				1, 2, 3, 4, 5, 7, 59, 62, 63, 65
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				52, 53, 60, 61
	3 Individual organisms and species change over time.				12, 77
	4 The continuity of life is sustained through reproduction and development.				6, 8, 14, 58, 64
	5 Organisms maintain a dynamic equilibrium that sustains life.				9, 41, 51, 54, 55
	6 Plants and animals depend on each other and their physical environment.				10, 15, 57
	7 Human decisions and activities have had a profound impact on the physical and living environment.				13, 16, 17, 18

NYS Learning Standards for Mathematics, Science, and Technology Standard/Area	*Reference to Intermediate-Level Science Core Curriculum* Key Idea or Performance Indicator	Performance Test Form A Question Number			June 2019 Written Test Question Number
		Station 1	Station 2	Station 3	
Standard 6 Interconnectedness: Common Themes	Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.				
Standard 6 Systems Thinking	**1.1–1.4** Through systems thinking, people can recognize the commonalities that exist among all systems and how parts of a system interrelate and combine to perform specific functions.				
Standard 6 Models	**2.1–2.3** Models are simplified representations of objects, structures, or systems used in analysis, explanation, interpretation, or design.	1, 2, 3, 4	3, 8	4	69, 82
Standard 6 Magnitude and Scale	**3.1–3.2** The grouping of magnitudes of size, time, frequency, and pressures or other units of measurement into a series of relative order provides a useful way to deal with the immense range and the changes in scale that affect the behavior and design of systems.				56
Standard 6 Equilibrium and Stability	**4.1–4.2** Equilibrium is a state of stability due either to a lack of change (static equilibrium) or a balance between opposing forces (dynamic equilibrium).				
Standard 6 Patterns of Change	**5.1–5.2** Identifying patterns of change is necessary for making predictions about future behavior and conditions.		3, 4, 5, 6, 7	6	
Standard 6 Optimization	**6.1–6.2** In order to arrive at the best solution that meets criteria within constraints, it is often necessary to make trade-offs.				
Standard 7 Interdisciplinary Problem Solving Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.	**1 Connections** The knowledge and skills of mathematics, science, and technology are used together to make informed decisions and solve problems, especially those related to issues of science/technology/society, consumer decision making, design, and inquiry into phenomena.				
	2 Strategies Solving interdisciplinary problems involves a variety of skills and strategies, including effective work habits; gathering and processing information; generating and analyzing ideas; realizing ideas; making connections among the common themes of mathematics, science, and technology; and presenting results.				

Grade 8 Intermediate-Level Science
Reference to Process Skills Based on Standard 4

	Process Skills (From *Intermediate-Level Science Core Curriculum Grades 5–8)*	Performance Test Form A Question Number			June 2019 Written Test Question Number
		Station 1	Station 2	Station 3	
General Skills	1 Follow safety procedures in the classroom and laboratory				
	2 Safely and accurately use the following measurement tools: metric ruler, balance, stopwatch, graduated cylinder, thermometer, spring scale, voltmeter		1		
	3 Use appropriate units for measured or calculated values			1, 2, 3	
	4 Recognize and analyze patterns and trends		7, 8		43, 50, 51, 70, 82
	5 Classify objects according to an established scheme and a student-generated scheme				55
	6 Develop and use a dichotomous key	1–5, 9			
	7 Sequence events				
	8 Identify cause-and-effect relationships		4, 5, 6	6, 7	8, 17, 27, 51, 81
	9 Use indicators and interpret results				
Living Environment Skills	1 Manipulate a compound microscope to view microscopic objects	6, 8			
	2 Determine the size of a microscopic object, using a compound microscope	7			
	3 Prepare a wet mount slide				
	4. Use appropriate staining techniques				
	5 Design and use a Punnett square or a pedigree chart to predict the probability of certain traits				52
	6 Classify living things according to a student-generated scheme and an established scheme	9			
	7 Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web				15, 56, 57
	8 Identify pulse points and pulse rates				
	9 Identify structure and function relationships in organisms				62, 63, 64
Physical Setting Skills	1 Given the latitude and longitude of a location, indicate its position on a map and determine the latitude and longitude of a given location on a map				23
	2 Using identification tests and a flow chart, identify mineral samples				74
	3 Use a diagram of the rock cycle to determine geological processes that led to the formation of a specific rock type				
	4 Plot the location of recent earthquake and volcanic activity on a map and identify patterns of distribution				
	5 Use a magnetic compass to find cardinal directions				
	6 Measure the angular elevation of an object, using appropriate instruments				
	7 Generate and interpret field maps including topographic and weather maps				21, 82
	8 Predict the characteristics of an air mass based on the origin of the air mass				
	9 Measure weather variables such as wind speed and direction, relative humidity, barometric pressure, etc.				
	10 Determine the density of liquids, and regular- and irregular-shaped solids			3	
	11 Determine the volume of a regular- and an irregular-shaped solid, using water displacement				44
	12 Using the periodic table, identify an element as a metal, nonmetal, or noble gas				29
	13 Determine the identity of an unknown element, using physical and chemical properties				
	14 Using appropriate resources, separate the parts of a mixture				78
	15 Determine the electrical conductivity of a material, using a simple circuit				
	16 Determine the speed and acceleration of a moving object				

Grade 8 Intermediate-Level Science
Reference to Core Curriculum for Individual Test Questions on Written Test — June 2019

Question Number	MST Learning Standard	Area within Standard 4 (PS or LE)	Key Idea or Major Understanding	Other Standards, Key Ideas, or Major Understandings	Process Skills Based on Standard 4
1	4	LE	1.1c		
2	4	LE	1.1e		
3	4	LE	1.2c		
4	4	LE	1.2h		
5	4	LE	1.2d	5.1c	
6	4	LE	4.3a		
7	4	LE	1.1h	St 6 KI 2.2	
8	4	LE	4.4d		GS 8
9	4	LE	5.2b		
10	4	LE	6.2a		
11	1		S3.2h	LE 3.1b	
12	4	LE	3.1a	3.1b; St 1 S3.2h	
13	4	LE	7.2b	St 6 KI 2.2	
14	4	LE	4.3c	4.3d; St 6 KI 2.2	
15	4	LE	6.1b	5.1e; St 6 KI 2.2	LE 7
16	4	LE	7.1a		
17	4	LE	7.1b		GS 8
18	4	LE	7.2d	7.1e; St 7 KI 1	
19	4	PS	2.1h		
20	4	PS	3.3a		
21	4	PS	2.2o	St 6 KI 2.2	PS 7
22	4	PS	1.1i		
23	4	PS	1.1f	St 6 KI 2.2	PS 1
24	4	PS	2.1i	2.1g; St 6 KI 2.2	
25	4	PS	2.1e	St 6 KI 2.2	
26	1		St 1 S3.2h	M2.1b; PS 3.1b	
27	4	PS	3.3b	4.2d	GS 8
28	4	PS	2.2c	St 6 KI 2.2	
29	4	PS	3.3g	St 6 KI 2.2	PS 12
30	4	PS	4.1e	St 6 KI 2.2	
31	4	PS	3.2b		
32	4	PS	4.1b	St 6 KI 2.2	
33	4	PS	4.4f	St 6 KI 2.2	
34	4	PS	4.2b	St 6 KI 2.2	
35	4	PS	4.1d	St 6 KI 2.2	
36	4	PS	4.4g	St 6 KI 2.2	
37	4	PS	4.5a		
38	4	PS	5.2e	St 6 KI 2.2	
39	4	PS	5.2g	St 6 KI 2.2	
40	4	PS	3.2a	St 6 KI 2.2	
41	4	LE	5.2a	5.2d; St 6 KI 2.2	
42	1		M1.1c	LE 5.2a; St 6 KI 2.2	

Question Number	MST Learning Standard	Area within Standard 4 (PS or LE)	Key Idea or Major Understanding	Other Standards, Key Ideas, or Major Understandings	Process Skills Based on Standard 4
43	1		M2.1a	St 1 S3.2h, M2.1b; St 6 KI 5.1	GS 4
44	1		M3.1a	St 6 KI 2.2	PS 11
45	1		S3.1b	St 1 S3.2h	
46	1		S1.2a		
47	1		S2.2d		
48	1		S2.1d		
49	1		S3.1a		
50	1		M1.1b	LE 5.2d	GS 4
51	4	LE	5.2e	5.2c, d; St 1 S3.2h	GS 4, 8
52	4	LE	2.2c	St 6 KI 2.2	LE 5
53	4	LE	2.1d	St 6 KI 2.2	
54	4	LE	5.1g	5.1b; St 6 KI 2.2	
55	4	LE	5.1e	St 1 S2.1d; St 6 KI 2.2	GS 5
56	6		KI 3	LE 6.1a; St 6 KI 2.2	LE 7
57	4	LE	6.1a	St 6 KI 2.2; St 6 KI 1	LE 7
58	4	LE	4.2a	St 6 KI 2.2	
59	4	LE	1.2e	St 6 KI 2.2	
60	4	LE	2.1a	St 6 KI 2.2	
61	4	LE	2.1a	St 6 KI 2.2	
62	4	LE	1.1f	St 6 KI 1	LE 9
63	4	LE	1.1f	6.2a; St 6 KI 1	LE 9
64	4	LE	4.3e	St 6 KI 1	LE 9
65	4	LE	1.2j	St 1 S3.2h	
66	4	PS	1.1h	St 6 KI 2.2	
67	4	PS	1.1c	1.1e; St 6 KI 2.2; St 1 KI 1	
68	4	PS	1.1e	1.1g; St 6 KI 2.2; St 1 M2.1b	
69	6		KI 2.2	PS 1.1e, g	
70	4	PS	1.1e	St 1 KI 1	GS 4
71	4	PS	1.1d	5.2a; St 1 S3.2h	
72	1		S3.2h	PS 2.1a	
73	1		S3.2h	St 1 M2.1b; PS 2.1a	
74	1		S3.2h	PS 2.1e	PS 2
75	4	PS	2.1e	St 1 S1.2	
76	4	PS	2.2d	LE 3.2c; St 6 KI 2.2	
77	4	LE	3.2b	3.2c; St 1 S1.2	
78	4	PS	3.1g	3.2b; St 1 S3.2a	PS 14
79	1		S3.2h	PS 2.2q	
80	4	PS	2.2q	St 7 KI 1.1	
81	4	PS	2.2r	St 6 KI 2.2; St 1 KI 1	GS 8
82	6		KI 2.2	PS 2.2n	PS 7, GS 4
83	4	PS	2.2f	St 1 KI 1	
84	4	PS	3.1d	3.1c; St 1 S1.2; St 6 KI 2.2	
85	4	PS	3.1c	St 6 KI 2.2; St 1 S2.1d	

Grade 8 Intermediate-Level Science
Reference to Core Curriculum for Individual Test Questions on Performance Test Form A

Station	Question Number	Credits	Reference to Grade 8 Intermediate-Level Science Core Curriculum		
			MST Standard 1 (Mathematical Analysis, Scientific Inquiry, and Engineering Design) Key Idea/Performance Indicator	MST Standard 6 Interconnected/ Common Themes	Process Skills Based on MST Standard 4
1	1	3	S 2.3, S 3.1, S 3.2	KI 2	General Skill 6
	2	2	S 1.1, S 2.2	KI 2	General Skill 6
	3	2	S 1.1, S 2.1, S 2.2, S 2.3, S 3.1	KI 2	General Skill 6
	4	2	S 2.1, S 2.2, S 2.3	KI 2	General Skill 6
	5	2	S 2.1, S 3.1		General Skill 6
	6	1	S 2.1		LE Skill 1
	7	1			LE Skill 2
	8	1			LE Skill 1
	9	1			General Skill 6 LE Skill 6
2	1	5	S 2.3		General Skill 2
	2	3	S 2.3, S 3.1		
	3	1	S 2.3 M 1	KI 2 KI 5	
	4	1	S 3.2 M 2	KI 5	General Skill 8
	5	1	S 3.2 M 2	KI 5	General Skill 8
	6	1	S 3.2 M 2	KI 5	General Skill 8
	7	2	S 1.3, S 1.4 M 2	KI 5	General Skill 4
	8	3	S 1.2, S 1.3, S 3.1 M 1	KI 2	General Skill 4
3	1	3	S 2.1, S 2.3		General Skill 3
	2	4	S 2.1, S 2.3		General Skill 3
	3	4			General Skill 3
	4	1	S 1.2, S 2.3, S 3.2	KI 2	
	5	2	S 1.3, S 3.2, S 3.3		
	6	2	S 1.3, S 3.2	KI 5	General Skill 8
	7	2	S 3.2		General Skill 8