THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL SCIENCE TEST

JUNE 2013 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 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/. Conversion charts provided for previous administrations of this test must not be used to determine student's final scores for the 2013 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 website http://www.p12.nysed.gov/assessment/ during the rating period. Check the "Scoring Information" link at this website 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: Beginning in the 2012-2013 school year, teachers are no longer 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 scoring criteria before beginning to score the student responses. Refer to the 2013 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 test 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 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. 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.

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

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

9. In responses to questions where 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 answers, score only the required number, in the order in which they appear.

10. 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.

11. 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.

12. 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. Acceptable responses include, but are not limited to:

— amount of water

— water

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

— number of seeds

— amount of sunlight/light

— amount of soil

— type of soil

— depth of seeds in soil

— type of seeds

— size of seeds

— type of container

— size of container

— same temperature

48 [1] Allow 1 credit for igneous *or* volcanic/extrusive.

49 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— heat/heating

— recrystallization of the minerals in the rock

— compression/pressure

— heat and/or pressure

Unacceptable responses include:

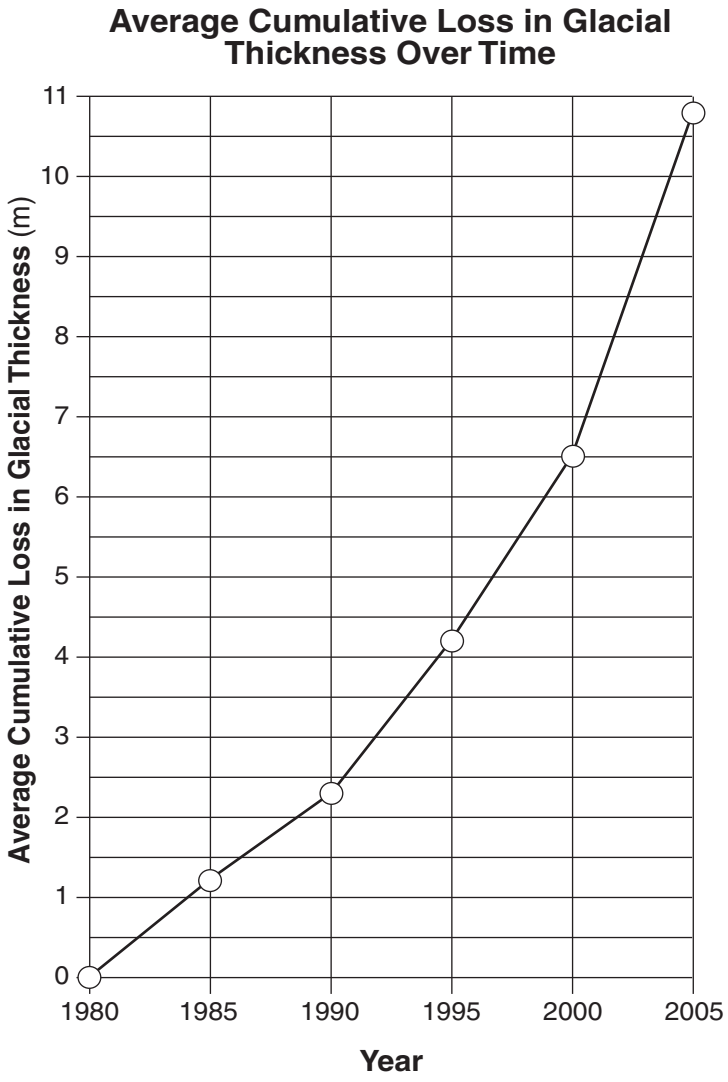
metamorphosis (It is stated in the question.)

50 [1] Allow 1 credit for any value from 39 grams to 41 grams.

51 [1] Allow 1 credit for between 2000 and 2005 *or* between 2005 and 2000.

52 [1] Allow 1 credit if the centers of *five or six* **X**s are within the circles shown and correctly connected with a line that passes within the circles.

Example of a 1-credit response:



Note: Allow credit if a symbol other than **X** is used to plot the data.
Do *not* allow credit for a bar graph.
Do *not* allow credit if no line is drawn.
It is recommended that an overlay be used to ensure reliability in rating.

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

— The squid population could decrease because there would be fewer cod for them to eat.

— The squid population would increase because there would be more small animals and krill for them to eat.

— There would be less food for the elephant seals, so they would eat more squid and the squid population would decrease.

— There would be less food for the penguins, so they would eat more squid, so the squid population would decrease.

— The squid and cod both eat krill and small animals.

— Cod is a food source for squid.

— Organisms in a food web are interdependent.

54 [1] Allow 1 credit for cod *or* krill.

55 [1] Allow 1 credit if *both* the cause and effect are acceptable. Acceptable responses include, but are not limited to:

Cause: — touching hot stove

— hot stove

Effect: — pulling hand away

— hand gets burned

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

— These responses help protect parts of a person's body.

— These responses keep a person from being burned/injured.

— protection

— safety

57 [1] Allow 1 credit for *two* acceptable responses: *Neospirifer* and *Spirifer* (in either order).

58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Meekoceras is in the top layer.

— Layer *A* is at the top.

— The fossil is in the youngest rock layer, *A*.

— Layer *A* formed last.

59 [1] Allow 1 credit for circling sedimentary.

60 [1] Allow 1 credit for completing the Punnet square as shown.

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

Note: Allow credit if student uses *bB or Bb.*

61 [1] Allow 1 credit for $bb \times bb$.

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

— Body color *A* is better camouflaged on the trees.
— They are better adapted to their environment.
— natural selection
— They have a better chance of living to reproduce.
— Beetles with color *A* are less likely to be eaten by predators.
— Body color *B* is more easily seen by predators.
— The trees have light-colored bark.

63 [1] Allow 1 credit for *two* acceptable responses: bird *and* human (in either order).

64 [1] Allow 1 credit for *two* acceptable responses: bird *and* frog (in either order).

65 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— because a human gets half its chromosomes from each parent
— The egg and sperm are formed by a different type of cell division than body cells.
— They are reproductive cells/sex cells.
— The other cells (46) are formed after the sex cells (23) combine.
— The egg and sperm combine to get 46 chromosomes.
— The egg and sperm are formed by meiosis.

66 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— light

— Sun

— sunlight

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

— It uses sugar for food.

— uses it for energy

— growth

— repair

— carries on life processes

— to produce flowers

— uses it during cellular respiration

Unacceptable responses include:

photosynthesis

68 [1] Allow 1 credit for *two* acceptable responses. Acceptable responses include, but are not limited to:

1965 to 1970: — decreased
— went down

1970 to 1975: — increased
— went up

Note: Allow credit for an accurate numerical description of the changes, for example: went from 28(±1) to 16(±1), went up by 25(±1).

69 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— When there are more wolves, there are fewer moose.

— When there are fewer wolves, there are more moose.

— As the moose population increases, the wolf population increases because the wolves have more food.

— As the moose population goes down, the wolf population decreases, and then the moose population goes up.

70 [1] Allow 1 credit for San Francisco.

71 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Stockpile supplies (food, water, batteries, medical supplies, first aid kit, etc.)

— Modify building codes.

— Reinforce old buildings.

— Learn the locations of nearby shelters.

— Develop an evacuation plan.

— Build structures that can withstand earthquakes.

Note: The response needs to refer to a plan or action. Do *not* accept "evacuate" or "hide," or "move to another location."

72 [1] Allow 1 credit for the Catskills.

73 [1] Allow 1 credit for any value greater than 36 and less than 40.

74 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The air mass centered over zone *A* formed over Canada.
— The air mass over zone *B* originated in the Gulf of Mexico.
— Zone *A* is behind the cold front.
— Zone *A* is near a high-pressure center.
— Zone *B* is behind a warm front.

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

— east/E
— to the northeast/NE
— west to east/W to E

76 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— precipitation
— rain
— snow
— cloudiness
— storms
— unstable conditions
— increased humidity
— winds

Unacceptable responses include:
hurricanes (These do *not* form over land.)

77 [1] Allow 1 credit for volume.

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

— The student could have measured the mass wrong.
— The student could have rounded incorrectly.
— The student could have calculated wrong.
— The student did not calibrate/zero the balance.
— The student used sand that contained other minerals besides quartz.

79 [1] Allow 1 credit for *three or four* correct responses circled on the chart.

Description	Selective Breeding
A farmer develops seeds that are resistant to a fungal disease by crossing two disease-resistant plants.	(Yes) / No
A farmer found that if the temperature of the barn was kept 5 degrees warmer, the cows in the barn produced more milk.	Yes / (No)
A farmer planted corn seeds in the field two weeks earlier than usual. The earlier start yielded more corn.	Yes / (No)
A farmer mated his cattle with larger cattle. The offspring weighed more and provided more meat.	(Yes) / No

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

— Coal cannot be easily replaced once the supplies are used up.
— Supplies of coal are limited.
— Fossil fuels take millions of years to form.

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

— CO_2 is released.
— Harmful gases are produced.
— pollution
— global warming
— Burning coal/fossil fuels harms the environment.
— air pollution
— water pollution

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

— Use solar energy.
— wind
— geothermal energy
— running water
— hydroelectric
— nuclear
— biomass/biofuel
— burning wood

Unacceptable responses include:

"water" alone

83 [1] Allow 1 credit if *all three* correct answers are circled as shown.

Sample	**Classification** (circle one)		
noble gas	(element)	compound	mixture
salt dissolved in water	element	compound	(mixture)
hydrogen chemically combined with oxygen	element	(compound)	mixture

84 [1] Allow 1 credit for 40 joules.

85 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— *B* has the highest energy output with the same energy input.

— *B* has the least amount of heat produced by friction.

— Machine *B* has the most energy output.

Appendix A

New York State Grade 8 Intermediate-Level Science Test
June 2013

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 website at http://www.p12.nysed.gov/assessment/.

Note: Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2013 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 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 2013 Written Test
Performance Test Form A

Item maps contained in this appendix:

- Reference to *Intermediate-Level Science Core Curriculum Grades 5–8* — June 2013 Written Test and Performance Test, Form A
- Reference to Process Skills Based on Standard 4 — June 2013 Written Test and Performance Test, Form A
- Reference to Core Curriculum for Individual Test Questions — June 2013 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 2013 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	
	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	79
	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			1, 46, 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		52
	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	2, 50, 51, 57, 68, 69, 78
	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
	M2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		50, 68, 69, 73, 77
	M3 Critical thinking skills are used in the solution of mathematical problems.				2, 37, 84, 85

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 2013 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 Physical Setting	**1** Earth and celestial phenomena can be described by principles of relative motion and perspective.				2, 24, 25, 28, 29, 30, 33
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				18, 26, 27, 32, 34, 35, 48, 49, 51, 59, 70, 71, 72, 73, 74, 75, 76
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				31, 36, 37, 38, 50, 77, 78, 83
	4 Energy exists in many forms, and when these forms change energy is conserved.				39, 40, 41, 44, 80, 82, 84, 85
	5 Energy and matter interact through forces that result in changes in motion.				24, 42, 43, 45, 85
Standard 4 Living Environment	**1** Living things are both similar to and different from each other and from nonliving things.				3, 4, 6, 7, 8, 9, 10, 11, 13, 16
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				12, 60, 61
	3 Individual organisms and species change over time.				5, 14, 57, 58, 62, 79
	4 The continuity of life is sustained through reproduction and development.				15, 19, 46, 47, 63, 64, 65
	5 Organisms maintain a dynamic equilibrium that sustains life.				20, 21, 54, 55, 56, 66, 67
	6 Plants and animals depend on each other and their physical environment.				7, 18, 53, 66
	7 Human decisions and activities have had a profound impact on the physical and living environment.				1, 17, 22, 23, 35, 53, 68, 69, 81

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 2013 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	3, 4, 15, 17, 18, 20, 24, 28, 29, 30, 31, 32, 33, 38, 39, 44, 45, 48, 49, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 66, 67, 70, 72, 73, 74, 76, 80
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.				
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	25, 75
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	**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.				71, 82
	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 2013 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		37
	3 Use appropriate units for measured or calculated values			1, 2, 3	
	4 Recognize and analyze patterns and trends		7, 8		68, 69, 85
	5 Classify objects according to an established scheme and a student-generated scheme				83
	6 Develop and use a dichotomous key	1–5, 9			3, 4
	7 Sequence events				17
	8 Identify cause-and-effect relationships		4, 5, 6	6, 7	40, 53, 55, 56, 65, 69, 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				60, 61
	6 Classify living things according to a student-generated scheme and an established scheme	9			3, 4, 79
	7 Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web				54
	8 Identify pulse points and pulse rates				
	9 Identify structure and function relationships in organisms				
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				28
	2 Using identification tests and a flow chart, identify mineral samples				
	3 Use a diagram of the rock cycle to determine geological processes that led to the formation of a specific rock type				48, 49
	4 Plot the location of recent earthquake and volcanic activity on a map and identify patterns of distribution				70
	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				72, 73, 74
	8 Predict the characteristics of an air mass based on the origin of the air mass				74
	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	77
	11 Determine the volume of a regular- and an irregular-shaped solid, using water displacement				37
	12 Using the periodic table, identify an element as a metal, nonmetal, or noble gas				
	13 Determine the identity of an unknown element, using physical and chemical properties				
	14 Using appropriate resources, separate the parts of a mixture				
	15 Determine the electrical conductivity of a material, using a simple circuit				
	16 Determine the speed and acceleration of a moving object				42

Grade 8 Intermediate-Level Science
Reference to Core Curriculum for Individual Test Questions on Written Test — June 2013

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	1	-	S 2.2b	S1, S2, S3; LE 7.1c	
2	1	-	S 3.2h	M3; PS 1.1c	
3	6	-	2.2	LE 1.1h	General skill 6 LE skill 6
4	6	-	2.2	LE 1.1h	General skill 6 LE skill 6
5	4	LE	3.2b		
6	4	LE	1.1e		
7	4	LE	1.1c	6.2a	
8	4	LE	1.2j		
9	4	LE	1.2g		
10	4	LE	1.2e		
11	4	LE	1.2d	1.2b	
12	4	LE	2.1a		
13	4	LE	1.2d		
14	4	LE	3.1a		
15	4	LE	4.4a	St 6 KI 2.2	
16	4	LE	1.2c	1.2f	
17	4	LE	7.2b	St 6 KI 2.2	General skill 7
18	4	PS	2.1j	LE 6.1c; St 6 KI 2.2	
19	4	LE	4.4d		
20	4	LE	5.1e	St 6 KI 2.2	
21	4	LE	5.1e		
22	4	LE	7.1a		
23	4	LE	7.2a		
24	4	PS	1.1d	5.2a; St 6 KI 2.2	
25	4	PS	1.1g	1.1e; St 6 KI 5	
26	4	PS	2.1a		
27	4	PS	2.1h		
28	4	PS	1.1f	St 6 KI 2.2	PS skill 1
29	4	PS	1.1i	St 6 KI 2.2	
30	4	PS	1.1g	St 6 KI 2.2	
31	4	PS	3.1d	St 6 KI 2.2	
32	4	PS	2.2f	St 6 KI 2.2	
33	4	PS	1.1c	St 6 KI 2.2	
34	4	PS	2.2d		
35	4	PS	2.2r	LE 7.2d	
36	4	PS	3.1a		
37	1	-	M3.1a	PS 3.1f	PS skill 11 General skill 2
38	4	PS	3.2a	St 6 KI 2.2	
39	4	PS	4.1e	St 6 KI 2.2	
40	4	PS	4.4b		General skill 8
41	4	PS	4.4c	4.1d	
42	4	PS	5.1d	St 1 M 1.1c	PS Skill 16

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	4	PS	5.2c		
44	4	PS	4.4g	St 6 KI 2.2	
45	4	PS	5.1e	St 6 KI 2.2	
46	1	-	S 2.2d	LE 4.3e	
47	1	-	S 2.2d	LE 4.3e	
48	6	-	KI 2.2	PS 2.2g, 2.2h	PS skill 3
49	6	-	KI 2.2	PS 2.2h	PS skill 3
50	1	-	M 2.1a	S 3.2h; PS 3.1b	
51	1	-	S 3.2h	PS 2 intro	
52	1	-	S 3.1a	PS	
53	6	-	KI 2.2	LE 7.2a, 6.1b	General skill 8
54	4	LE	5.1e	St 6 KI 2.2	LE Skill 7
55	4	LE	5.1g	St 6 KI 2.2	General skill 8
56	4	LE	5.1g	St 6 KI 2.2	General skill 8
57	1	-	S 3.2h	LE 3.2c; St 6 KI 2.2	
58	4	LE	3.2c	St 6 KI 2.2	
59	4	PS	2.1f	2.2g; St 6 KI 2.2	
60	4	LE	2.2c	St 6 KI 2.2	LE skill 5
61	4	LE	2.2b	St 6 KI 2.2	LE skill 5
62	4	LE	3.1b	LE KI 3 intro; St 6 KI 2.2	
63	4	LE	4.1d	St 6 KI 2.2	
64	4	LE	4.1d	St 6 KI 2.2	
65	4	LE	4.4c	4.1c, 4.2b	General skill 8
66	4	LE	5.1d	6.2a; St 6 KI 2.2	
67	4	LE	5.2a	5.1d; St 6 KI 2.2	
68	1	-	S 3.2h	M 2.1b; LE 7.1b, 7.1c	General skill 4
69	4	LE	7.1c	M 2.1b; S 3.2h	General skill 4 General skill 8
70	4	PS	2.2f	2.2a; St 6 KI 2.2	PS skill 4
71	7	-	1.1	PS 2.2f	
72	6	-	KI 2.2	PS 2.2j	PS skill 7
73	1	-	M 2.1b	PS 2.2j; St 6 KI 2.2	PS skill 7
74	4	PS	2.2l	St 6 KI 2.2	PS skills 7 & 8
75	4	PS	2.2p	St 6 KI 5	
76	4	PS	2.2o	2.2p; St 6 KI 2.2	
77	4	PS	3.1h	St 1 S 3.2h	PS skill 10
78	1	-	S 3.2b	PS 3.1h	
79	4	LE	3.1c	St 1 S 2.1d	LE skill 6
80	4	PS	4.1b	St 6 KI 2.2	
81	4	LE	7.2d		General skill 8
82	4	PS	4.1b	St 7 KI 1	
83	4	PS	3.3f	3.3g, 3.2b	General skill 5
84	1	-	M 3.1	PS 4.5b	
85	4	PS	4.5b	5.2e, St 1 M 3.1	General skill 4

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