THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL SCIENCE TEST

JUNE 2016 WRITTEN TEST

FOR TEACHERS ONLY

SCORING KEY AND RATING GUIDE

Note: All schools (public, nonpublic, and charter) administering the Grade 8 Intermediate-Level Science Test are required to make arrangements to obtain answer sheets and associated scanning services from a Regional Information Center (RIC) or a large-city scanning center. These centers will scan and score the answer sheets according to the following criteria:

1. One credit will be awarded for each correct response.
2. Credit will not be allowed if two or more answers have been marked for the same question.
3. The raw score for Part I will be determined by counting the number of correct responses.

For information only, correct responses are listed in the chart below.

Question Number	Correct Response	Question Number	Correct Response	Question Number	Correct Response
1	3	16	2	31	2
2	1	17	3	32	4
3	2	18	3	33	2
4	1	19	1	34	1
5	1	20	4	35	4
6	3	21	3	36	2
7	4	22	1	37	3
8	2	23	3	38	4
9	1	24	1	39	4
10	4	25	2	40	3
11	4	26	3	41	2
12	1	27	3	42	2
13	2	28	4	43	3
14	4	29	3	44	4
15	3	30	1	45	4

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/ through the "Scoring Information" link. Conversion charts provided for previous administrations of this test must not be used to determine student's final scores for the 2016 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 the Department 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 2016 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. 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 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.

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 responses, 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 if *all four* statements are correctly identified, as shown below.

I 1. In two more hours, a total of 3.0 inches of rain will have fallen.
O 2. The rain is falling on the tree and the ground.
O 3. The rain gauge shows 2.0 inches.
I 4. The air temperature is above freezing.

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

— time to complete one swing
— time
— period of the pendulum swing

48 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The longer the string, the longer/greater the time to complete one swing.
— The shorter the string, the shorter/less time for one swing.
— direct relationship

49 [1] Allow 1 credit for any value greater than 1.6 s but less than 1.8 s.

50 [1] Allow 1 credit for letter *A*.

51 [1] Allow 1 credit if *all four* distances are correctly filled in, as shown below.

Location in the Stream	**Distance from the Beginning of the Stream at Point A** (km)
B	20
C	80
D	130
E	200

52 [1] Allow 1 credit for 132 Calories.

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

— prevent weight gain
— build muscles
— stronger heart
— helps lose weight
— relieve stress
— live longer
— stronger immune system
— lower cholesterol
— prevent diabetes
— increase physical fitness
— increase strength
— better coordination
— use more Calories

Unacceptable responses include:

be healthier (This is repeating "health benefit" which is in the question.)
get exercise (This is given in the question.)
It's fun. (Does not directly explain the health benefit.)
It gives you more energy. (This is a common misconception. Energy is being *used*.)

54 [1] Allow 1 credit for *two* acceptable responses. Acceptable responses include, but are not limited to:

— amount of lotion
— amount of time exposed to the sun/time/two hours
— same arm
— size of area on her arm
— same SPF

55 [1] Allow 1 credit for 40.

56 [1] Allow 1 credit for 5.

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

— gamma rays

— x-rays

— ultraviolet/ultraviolet light/ultraviolet rays

— blue light

— violet light

Unacceptable responses include: "visible light" and "white light" as these contain some colors with wavelengths longer than green light.

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

— visible light

— sunlight

— light

— white light

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

— They kill/fight/attack germs.

— Specialized cells produce chemicals/antibodies to destroy microbes.

— These cells help destroy harmful organisms that do not belong in the body.

— White blood cells can get rid of things that enter the body before they become a problem.

Unacceptable responses include: "keep you healthy," because this is not specific enough.

60 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The bird gets half of its genetic material from each of its two parents, the ameba only gets it from one parent.

— Sexual reproduction in birds results in more variation in offspring.

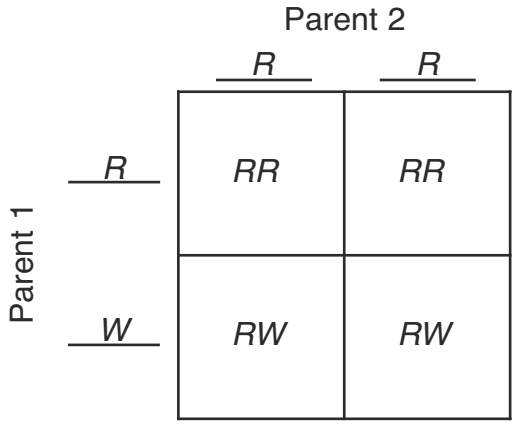
— Asexual reproduction in the ameba makes offspring that are genetically identical to the parent.

61 [1] Allow 1 credit for *three* acceptable responses, as shown below.

Percentage of red plants	0%
Percentage of white plants	0%
Percentage of pink plants	100%

Note: Allow credit for blank spaces for red/white if pink is labeled 100%.

62 [1] Allow 1 credit for a correctly completed Punnett square, as shown below.



63 [1] Allow 1 credit for rabbits *and* caterpillars.

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

— more caterpillars for the trout to eat

— more food for the trout

— less competition for resources

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

— Decomposers recycle the nutrients in the food web so they can be reused.

— A food web needs decomposers to break down waste and dead organisms.

— Decomposers eat dead plants and animals.

— They eat dead things.

— return nutrients to the soil

66 [1] Allow 1 credit for *A* and *B* or *B* and *A*.

67 [1] Allow 1 credit for circling sexually *and* an acceptable explanation. Acceptable responses include, but are not limited to:

— There is an egg and sperm.

— There are both male and female sex cells.

— Fertilization occurred.

— A zygote was formed.

68 [1] Allow 1 credit for 16.

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

— When more whales are present, the penguins eat more fish.

— Penguins eat fewer krill as the number of whales increases.

— The krill went from 90% of their diet to 22% of their diet.

— ate more fish

Unacceptable responses include: They had less food to eat. (They had food available, just different organisms.)

70 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— The whales eat the krill, so the penguins have to eat fish.
— The whales and penguins compete for krill.
— There weren't as many krill in the area.
— Whales eat some of the same food as penguins.

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

— They eat only other animals.
— Penguins eat fish/krill/squid.
— Penguins eat meat.
— They do not eat plants.

72 [1] Allow 1 credit for oxygen *or* O_2.

73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— carbon dioxide/CO_2
— fertilizer from solid waste

74 [1] Allow 1 credit for troposphere.

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

— As elevation increases, air pressure decreases.
— As air pressure decreases, elevation increases.
— The higher you go, the less air pressure there is.
— Camps higher up have lower air pressure.
— inverse/indirect relationship

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

— Gas bubbles were formed.

— bubbles in the liquid

— The balloon filled up with gas/carbon dioxide gas.

Unacceptable responses include: The balloon filled with helium. (Helium is not produced in this reaction.)

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

— The molecules of gas will spread throughout the container.

— Molecules will move to where there is less concentration.

— There will be fewer molecules on the left side than there were before.

— Some molecules will move into the right side.

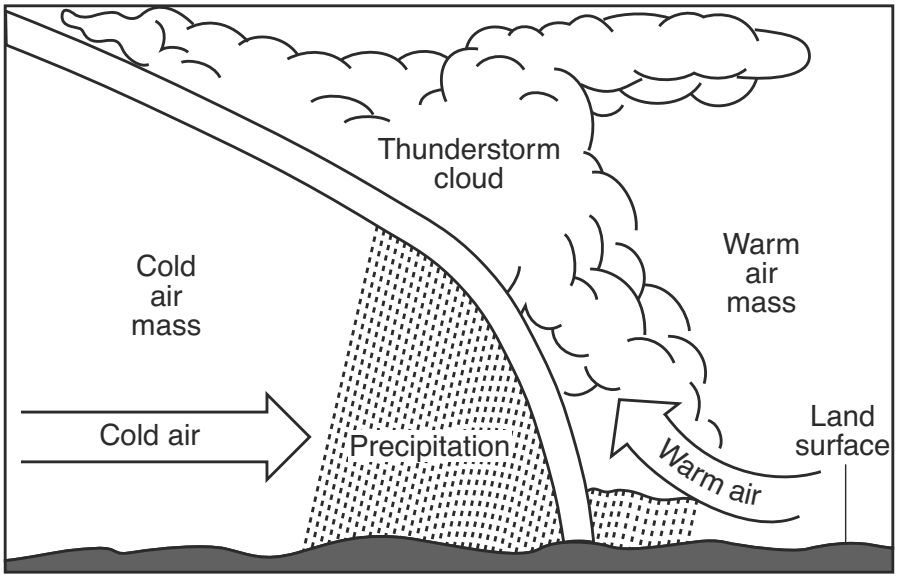
— They will fill all of the available space.

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

— The force of magnetic attraction is strongest near the poles.

— Greater magnetism is at the ends.

79 [1] Allow 1 credit if the center of the student-plotted **X** is located within or touches the outlined boundary line between the warm and cold air masses as shown below.



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

Allow one credit if a symbol other than an **X** is used.

80 [1] Allow 1 credit for condensation.

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

— Warm air is rising.
— Unstable weather conditions exist.
— Precipitation is occurring.
— cloudy conditions
— A thunderstorm is occurring.

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

— Go inside a building or car.
— Stay away from tall objects and trees.
— Avoid bodies of water.
— Crouch down on the ground.

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

— gravity
— the pulling of the cart
— friction
— weight of the box
— force pushing upward on cart from surface (normal force)
— weight of air on box/air pressure
— air resistance

Unacceptable responses include:

person (This is not specific enough.)
box (This is not specific enough.)
acceleration (This is not a force.)
momentum (This is not a force.)

84 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— not enough force/friction to stop the box

— The box is not attached to the cart.

— Newton's First Law of Motion

— Objects in motion will remain in motion in the same direction until acted on by a force.

— The box has inertia.

— The box still has momentum.

Unacceptable responses include:

because of gravity

There was no force/friction to stop the box. (There is some force/friction, but not enough to prevent the box from moving.)

85 [1] Allow 1 credit if the seasons in *all three* unshaded rows are correct, as shown below.

Data Table

Season	Sunrise	Sunset
fall	6:43 a.m.	6:54 p.m.
summer	5:42 a.m.	8:30 p.m.
winter	7:16 a.m.	4:31 p.m.
spring	6:59 a.m.	7:07 p.m.

Appendix A

New York State Grade 8 Intermediate-Level Science Test
June 2016

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). 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 2016 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 2016 Written Test
Performance Test Form A

Item maps contained in this appendix:

- Reference to *Intermediate-Level Science Core Curriculum Grades 5–8* — June 2016 Written Test and Performance Test, Form A
- Reference to Process Skills Based on Standard 4 — June 2016 Written Test and Performance Test, Form A
- Reference to Core Curriculum for Individual Test Questions — June 2016 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 2016 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	43, 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	30
	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, 54
	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		51
	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	41, 45, 69, 74
	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		48, 52
	M2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		40, 49, 68
	M3 Critical thinking skills are used in the solution of mathematical problems.				

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 2016 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.				20, 21, 23, 39, 85
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				24, 25, 26, 27, 28, 29, 75, 79, 81, 82
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				19, 31, 32, 33, 76, 77, 80
	4 Energy exists in many forms, and when these forms change energy is conserved.				34, 35, 36, 42, 50, 58, 78
	5 Energy and matter interact through forces that result in changes in motion.				37, 38, 83, 84
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, 15, 59
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				7, 60
	3 Individual organisms and species change over time.				6, 8, 12, 17, 70
	4 The continuity of life is sustained through reproduction and development.				10, 13, 66, 67
	5 Organisms maintain a dynamic equilibrium that sustains life.				9, 16, 53, 63, 65, 71
	6 Plants and animals depend on each other and their physical environment.				5, 72, 73
	7 Human decisions and activities have had a profound impact on the physical and living environment.				11, 14, 18, 22, 44, 56

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 2016 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	55, 57, 61, 62, 64
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	
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 2016 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		49, 85
	5 Classify objects according to an established scheme and a student-generated scheme				
	6 Develop and use a dichotomous key	1–5, 9			
	7 Sequence events				
	8 Identify cause-and-effect relationships		4, 5, 6	6, 7	6, 9, 11, 21, 36, 41, 48, 59, 64, 75, 77
	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				61, 62
	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				63, 64, 65
	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				39
	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				28
	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				
	8 Predict the characteristics of an air mass based on the origin of the air mass				27
	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				30
	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				

Grade 8 Intermediate-Level Science
Reference to Core Curriculum for Individual Test Questions on Written Test — June 2016

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	St 6 KI 2.2	
2	4	LE	1.1e	1.2a	
3	4	LE	1.1f		
4	4	LE	1.2g	1.2a	
5	4	LE	6.2a	1.1c	
6	4	LE	3.2a	7.1c	GS 8
7	4	LE	2.1a	2.1b	
8	4	LE	3.1b	intro 3	
9	4	LE	5 intro		GS 8
10	4	LE	4.1d		
11	4	LE	7.1b		GS 8
12	4	LE	3.2c	St 6 KI 2.2	
13	4	LE	4.3d	4.3c; St 6 KI 2.2	
14	4	LE	7.2b	St 6 KI 2.2	
15	4	LE	1.1f	St 6 KI 2.2	
16	4	LE	5.2d	St 1 S 3.2h	
17	4	LE	3.1c		
18	4	LE	7.1c		
19	4	PS	3.2a		
20	4	PS	1.1a		
21	4	PS	1.1d		GS 8
22	4	LE	7.2d	St 6 KI 2.2	
23	4	PS	1.1h	St 6 KI 2.2, 5.2	
24	4	PS	2.2b	St 6 KI 2.2	
25	4	PS	2.2e	St 6 KI 2.2	
26	4	PS	2.1c		
27	4	PS	2.2l	St 6 KI 2.2	PS 8
28	4	PS	2.2h	St 6 KI 2.2; St 1 S3.2h	PS 3
29	4	PS	2.2c	St 6 KI 2.2	
30	1	-	S 2.1d	PS 3.1a	PS 11
31	4	PS	3.3b		
32	4	PS	3.3f	3.3c; St 6 KI 2.2	
33	4	PS	3.3f	St 6 KI 2.2	
34	4	PS	4.1c		
35	4	PS	4.1b		
36	4	PS	4.2e	3.1b	GS 8
37	4	PS	Intro 5	St 6 KI 2.2	
38	4	PS	5.2f	5.1b; St 6 KI 2.2	
39	4	PS	1.1f		PS 1
40	1	-	M 2.1a	PS 4.2a, b	
41	1	-	S 3.2d	4.2a, b; St 6 KI 2.2	GS 8
42	4	PS	4.4b	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	-	S 1.2a	S 3.2c; PS 2.1g	
44	4	LE	7.1b	St 1 S 3.2h	
45	1		S 3.2h	St 6 KI 2.3; PS 2.1d	
46	1	-	S 1.2c	St 6 KI 2.2; PS 2.2i	
47	1	-	S 2.2d	St 6 KI 2.2; PS 5.1b	
48	1	-	M 1.1b	M 2.1b; S 3.2h; PS 5 intro	GS 8
49	1	-	M 2.1a	S 3.2f; PS 5.1c	GS 4
50	4	PS	4.1e	St 1 S3.2h	
51	1	-	S3.1a	S 3.2h	
52	1	-	M 1.1c	LE 5.2d	
53	4	LE	5.2e	5.2c; St 6 KI 1	
54	1	-	S 2.2d	LE 7.1e	
55	6	-	2.2	LE 7.1a; St 1 M 1.1c	
56	4	LE	7.1a	St 6 KI 2.2	
57	6	-	2.2	PS 4.4a	
58	4	PS	4.4b	4.4a; 1.1g; St 6 KI 2.2	
59	4	LE	1.2j	St 6 KI 1	GS 8
60	4	LE	2.1e	3.1a, 4.2b; St 6 KI 2.2	
61	6	-	2.2	LE 2.2b, c	LE 5
62	6	-	2.2	LE 2.2b, c	LE 5
63	4	LE	5.1d	6.1b; St 6 KI 2.2	LE 7
64	6	-	2.2	LE 6.1b; 7.1b, c	LE 7; GS 8
65	4	LE	5.1e	6.1a; St 6 KI 1, 2.2	LE 7
66	4	LE	4.2a	St 6 KI 2.2	
67	4	LE	4.1c	4.1a; St 6 KI 2.2	
68	1	-	M 2.1b	4.3a; St 6 KI 2.2	
69	1	-	S 3.2h	M 1.1b; LE 3.2a	
70	4	LE	3.2a	St 1 S 3.2d	
71	4	LE	5.1e	St 1 S 3.2h	
72	4	LE	6.1c	6.2b; 7.1c; St 6 KI 2.2	
73	4	LE	6.1c	6.2b,c; 7.1c; St 6 KI 2.2	
74	1	-	S 3.2h	PS 2.1a	
75	4	PS	2.1b	St 1 M 1.1b	GS 8
76	4	PS	3.2c	St 1 S 1.2	
77	4	PS	3.1d	St 6 KI 2.2	GS 8
78	4	PS	4.4g	St 6 KI 2.2	
79	4	PS	2.2o	St 6 KI 2.2	
80	4	PS	3.2a	St 6 KI 2.2	
81	4	PS	2.2p	2.2i; St 6 KI 2.2	
82	4	PS	2.2q	St 7 KI 1	
83	4	PS	Intro 5	St 6 KI 2.2	
84	4	PS	5.1c	St 6 KI 2.2	
85	4	PS	1.1i	St 6 KI 5.2	GS 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