THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL SCIENCE TEST

JUNE 2012 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/apda/. Conversion charts provided for previous administrations of this test must not be used to determine student's final scores for the 2012 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/apda/ 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 Assessment Policy, Development and Administration 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

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.

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/apda/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:

— Different types of plants will produce different amounts of oxygen.

— The cactus plant will produce the most oxygen.

— The type of plant will affect the amount of oxygen produced.

— Different plants will produce the same amount of oxygen.

Note: A hypothesis must be a statement. A response in question form is *not* a hypothesis. A hypothesis is not just a restatement of the problem. It must specify a result.

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

— amount of sunlight/light

— air temperature

— amount of water

— amount of plant food

— type of soil

— type of container (material)

— size of plants

Unacceptable responses include:

amount of oxygen (dependent variable)

type of plant (independent variable)

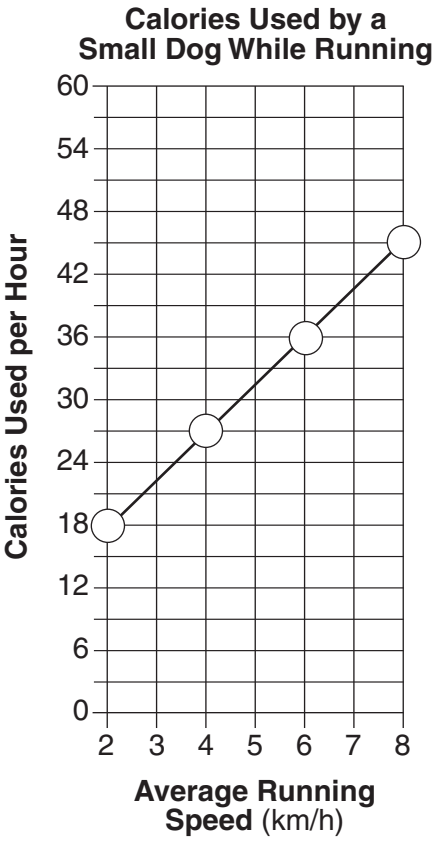
size of container (given in question)

amount of soil (given in question)

48 [1] Allow 1 credit for 54 Calories.

49 [1] Allow 1 credit if the centers of *all four* **X**s are correctly plotted within the circles shown below and the **X**s are correctly connected with a line that passes within the circles.

Example of a 1-credit response:



Note: Allow credit if a symbol other than an **X** is used to plot the data.
Do *not* allow credit for a bar graph.
It is recommended that an overlay be used to ensure reliability when rating.

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

— The faster the dog runs, the more Calories it uses.

— a direct relationship

— For every 2 km/hour increase in running speed, the Calories used increases by 9.

51 [1] Allow 1 credit for olivine.

52 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Magnetite is harder than galena.
— Magnetite is harder.
— Galena is softer than magnetite.
— Galena is softer.
— Galena is soft and magnetite is hard.

53 [1] Allow 1 credit for garden plants *or* plants.

Unacceptable responses include:

producer ("Producer" is not a label in the food web.)

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

— There would be less competition with aphids for food.
— Aphids and slugs both feed on garden plants.
— The centipedes would eat more slugs, so there would be fewer slugs to share the plants.

55 [1] Allow 1 credit if *all three* terms are arranged as shown below.

cells → tissues → organs → organ systems → organism

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

— The gene for black fur is dominant over the gene for white fur.

— In a hybrid, the dominant gene is expressed.

— The gene for white fur is recessive and is not expressed when the black gene is present.

— Black fur/*B* is the dominant trait.

Unacceptable responses include:

The gene for black fur is stronger/overpowers/cancels/hides the gene for white fur. (This is not scientifically accurate.)

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

— *Bb*

— *bB*

— hybrid

— heterozygous

58 [2] Allow 2 credits for an acceptable response in *all three rows* in the chart below.

Allow 1 credit for an acceptable response in *only one or two rows* in the chart below.

Major Function	Human Organ System
moves substances to and from all cells of the body	circulatory *or* cardiovascular
creates sex cells and offspring	reproductive
breaks down food	digestive

Note: Allow credit if the student uses a different form of an acceptable response, for example "circulation" instead of "circulatory."

59 [1] Allow 1 credit for 22.

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

— The fossils in layer *A* are in the top layer, so they are newer.
— The fossils in layer *A* were formed most recently.
— Rock layer *A* is the youngest layer.
— There was less time for evolution to occur.

61 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Different environmental conditions existed in the past.
— Many life-forms have become extinct.
— Earth was different and different animals lived then.
— Life-forms have changed over time.
— Certain organisms existed for only a short time.
— Different organisms lived in earlier times.
— There are many fossils that are similar to existing life-forms.
— The organism that formed fossil *F* existed before the organism that formed fossil *C*.
— Scientists concluded what the habitat was like in the past.

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

— sperm
— male sex cell

— egg
— female sex cell

Unacceptable responses include:

fertilized egg (Stage *A* does not show a fertilized egg; Stage *B* is the fertilized egg.)

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

— Sexual reproduction requires both male and female sex cells.
— Asexual reproduction requires only one parent.
— Half the genetic material comes from each parent in sexual reproduction.
— In asexual reproduction, the offspring are identical to the parent.
— Sexual reproduction involves fertilization.
— Sexual reproduction requires two parents.

64 [1] Allow 1 credit for *three* acceptable responses as shown in the chart below.

Example of a 1-credit response:

Organism	Source of Nutrients	Type of Organism
mushroom	breaks down dead tree roots	decomposer *or* consumer
algae	makes its own food	producer
cow	eats plants	consumer

Note: Decomposers are a type of consumer.

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

— The organism loses its tail.

— It grows legs.

— The organism loses its gills.

— The frog develops lungs.

— The legs become larger.

— The frog develops webbed feet.

Unacceptable responses include:

responses that refer only to the stage of development, for example, "egg → tadpole" or "The frog increases in size." (Responses must refer to a body structure, not only to the stage of development.)

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

— The tadpole gets its oxygen from the water.

— The adult frog can get oxygen from the air.

— Tadpoles can only live in water.

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

— cell wall
— chloroplast
— large vacuole

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

— nucleus
— chromosome
— nuclear membrane
— ribosome
— mitochondria

Unacceptable responses include:

centrioles (These are only found in animal cells.)
any of the five structures labeled in the diagram

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

— Bubbles formed.
— The bubbles stopped after 20 minutes.

Note: Allow credit for "A gas was formed.", even though the gas was not directly observed.

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

— The effects of acid rain are cumulative.
— Acid rain damage takes years, not minutes.
— Acid rain takes more than 20 minutes to damage buildings.
— The change in the limestone in the experiment was too small to see.
— Buildings are hit by acid rain over a long period of time.
— They get weathered from being outside every day, but the experiment only lasted 20 minutes.
— Only a small volume of acid was used in the experiment.

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

— rotation
— spinning on its axis

72 [1] Allow 1 credit for *two* acceptable responses:

Latitude: 30° N

Longitude: 45° W

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

— Erosion occurred when water moved the rock material.

— Erosion is a transportation process and the rocks were transported.

— The rocks were moved by the water.

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

— The water in stream *B* was moving faster.

— There was a greater volume of water in stream *B*.

— Stream *B* has a steeper slope.

— There is a stronger current in *B*.

— The force of the water is greater in *B*.

75 [2] Allow 2 credits for an acceptable response in *all four rows* of the chart below.
Allow 1 credit for an acceptable response in *only two or three rows* of the chart below.

Example of a 2-credit response:

Water Cycle

Letter	Process
A	evaporation
B	condensation
C	precipitation
D	runoff

Note: Allow credit for any specific form of precipitation at *C*, for example: rain, snow, etc.

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

— crustal plate movement
— seafloor spreading
— convection cells in the mantle
— plate tectonics
— continental drift

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

— matching bedrock layers along the coastlines
— Similar fossils are found in their rock layers.
— matching rock layers
— matching mineral deposits
— The continents fit together like puzzle parts.

78 [1] Allow 1 credit for *two* acceptable responses:

Diagram *A*: solid
Diagram *B*: liquid

79 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— Oppositely charged objects are attracted to each other.
— Objects that have a positive charge are attracted to objects that have a negative charge.
— The balloon is negative and the glass rod is positive.

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

— chlorine
— bromine
— iodine
— astatine

Note: Allow credit for a correct chemical symbol instead of the name of the element, for example, Br instead of bromine.

81 [1] Allow 1 credit for *two* acceptable responses: hydrogen and oxygen.

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

— The aluminum does not change into a new substance.
— The aluminum can still has the same chemical properties.
— The aluminum can has only changed in its size/shape/appearance.

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

— Recycling allows us to conserve our natural resources.
— Recycling will decrease the amount of garbage in landfills.
— It allows us to conserve energy.
— Recycling decreases pollution.

Appendix A

New York State Grade 8 Intermediate-Level Science Test
June 2012

Performance Levels Chart

The chart on the next page defines the four performance levels for this test. 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/apda/.

Note: Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2012 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 2012 Written Test
Performance Test Form A

Item maps contained in this appendix:

- Reference to *Intermediate-Level Science Core Curriculum Grades 5–8* — June 2012 Written Test and Performance Test, Form A
- Reference to Process Skills Based on Standard 4 — June 2012 Written Test and Performance Test, Form A
- Reference to Core Curriculum for Individual Test Questions — June 2012 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 2012 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.	**1.1** Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.	2 3			
	1.2 Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.		8	4	3, 46, 74, 79
	1.3 Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.		7 8	5 6	
	1.4 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.	**2.1** 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	55, 69
	2.2 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			2, 47
	2.3 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.	**3.1** 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		49
	3.2 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	1, 4, 7, 50, 51, 52, 59, 61, 81
	3.3 Modify their personal understanding of phenomena based on evaluation of their hypothesis.			5	
Standard 1 Mathematical Analysis	**1** Abstraction and symbolic representation are used to communicate mathematically.		3 8		50
	2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		48
	3 Critical thinking skills are used in the solution of mathematical problems.				4, 7

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 2012 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.				25, 26, 37, 71, 72
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				1, 27, 30, 31, 33, 34, 35, 36, 38, 39, 51, 52, 61, 70, 73, 74, 75, 76, 77
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				28, 29, 32, 69, 75, 78, 80, 81, 82
	4 Energy exists in many forms, and when these forms change energy is conserved.				24, 40, 41, 43, 44, 79
	5 Energy and matter interact through forces that result in changes in motion.				4, 42, 45
Standard 4 Living Environment	**1** Living things are both similar to and different from each other and from nonliving things.				5, 8, 10, 11, 16, 17, 55, 58, 67, 68
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				9, 12, 56, 57
	3 Individual organisms and species change over time.				6, 15, 60, 61, 82
	4 The continuity of life is sustained through reproduction and development.				13, 14, 59, 62, 63, 65, 66
	5 Organisms maintain a dynamic equilibrium that sustains life.				5, 7, 11, 16, 18, 21, 49, 53, 64, 66
	6 Plants and animals depend on each other and their physical environment.				2, 20, 46, 47, 53

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 2012 Written Test Question Number
		Station 1	Station 2	Station 3	
	7 Human decisions and activities have had a profound impact on the physical and living environment.				19, 22, 23, 54, 70, 83
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.				55, 58
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	8, 10, 20, 21, 22, 23, 24, 25, 29, 33, 34, 35, 36, 37, 38, 39, 41, 44, 45, 53, 54, 56, 57, 60, 62, 63, 65, 66, 67, 68, 71, 72, 73, 74, 75, 76, 77, 78, 80, 81, 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.				
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.				83
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.				
	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 2012 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		48, 50, 70
	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	69, 74, 76
	9 Use indicators and interpret results				2
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				56, 57
	6 Classify living things according to a student-generated scheme and an established scheme	9			64
	7 Interpret and/or illustrate the energy flow in a food chain, energy pyramid, or food web				21, 53, 54
	8 Identify pulse points and pulse rates				
	9 Identify structure and function relationships in organisms				55, 58
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				72
	2 Using identification tests and a flow chart, identify mineral samples				51, 52
	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				34, 35, 36, 38, 39
	8 Predict the characteristics of an air mass based on the origin of the air mass				31
	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				
	12 Using the periodic table, identify an element as a metal, nonmetal, or noble gas				80
	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 2012

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 3.2h	PS 2.2l	
2	1	-	S 2.2c	LE 6.2b	General skill 9
3	1	-	S 1.2c	PS	
4	1	-	S 3.2h	M 3.1; PS 5.1b	
5	4	LE	1.2h		
6	4	LE	3 intro	3.1b	
7	1	-	S 3.2h	M 3.1; LE 5.2b	
8	4	LE	1.2d	St 6 KI 2.2	
9	4	LE	2.1a		
10	4	LE	1.2e	St 6 KI 2.2	
11	4	LE	1.2j	5.2f	
12	4	LE	2.1b	2.1a	
13	4	LE	4.1d	4.3b	
14	4	LE	4.4d		
15	4	LE	3.1c		
16	4	LE	1.2d	5.1c	
17	4	LE	1.1a		
18	4	LE	5.2c		
19	4	LE	7.1b		
20	4	LE	6.2a	6.2b; St 6 KI 2.2	
21	4	LE	5.1e	St 6 KI 2.2	LE skill 7
22	4	LE	7.1a	St 6 KI 2.2	
23	4	LE	7.2b	St 6 Ki 2.2	
24	4	PS	4.4b	St 6 KI 2.2	
25	4	PS	1.1e	St 6 KI 2.2	
26	4	PS	1.1c		
27	4	PS	2.1c		
28	4	PS	3.1b		
29	4	PS	3.1e	St 6 KI 2.2	
30	4	PS	2.2g		
31	4	PS	2.2l		PS skill 8
32	4	PS	3.1a	3.2a	
33	4	PS	2.2q	St 6 KI 2.2	
34	4	PS	2.2p	St 6 KI 2.2	PS skill 7
35	4	PS	2.2o	St 6 KI 2.2	PS skill 7
36	4	PS	2.2p	St 6 KI 2.2	PS skill 7
37	4	PS	1.1g	1.1e; St 6 KI 2.2	
38	6	-	KI 2.2	PS 2 intro	PS skill 7
39	6	-	KI 2.2	PS 2 intro	PS skill 7
40	4	PS	4.1b		
41	4	PS	4.1e	St 6 KI 2.2	
42	4	PS	5.1d		

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	4.4c		
44	4	PS	4.4g	St 6 KI 2.2	
45	4	PS	5.2g	St 6 KI 2.2	
46	1	-	S 1.2a	LE 6.2b	
47	1	-	S 2.2d	LE 6.2b	
48	1	-	M 2.1a	LE	General skill 4
49	1	-	S 3.1a	LE 5.2d	
50	1	-	M 1.1b	S 3.2h; LE	General skill 4
51	1	-	S 3.2h	PS 2.1e	PS skill 2
52	1	-	S 3.2h	PS 2.1e	PS skill 2
53	6	-	KI 2.2	LE 6.1b, 5.1d	LE skill 7
54	6	-	KI 2.2	LE 7.1b	LE skill 7
55	4	LE	1.1e	St 1 S 2.1d; ST 6 KI 1	LE skill 9
56	4	LE	2.2b	2.2c; St 6 KI 2.2	LE skill 5
57	4	LE	2.2c	St 6 KI 2.2	LE skill 5
58	4	LE	1.2a	1.2c, 1.2f, 1.2i; St 6 KI 1	LE skill 9
59	4	LE	4.2b	St 1 S 3.2h	
60	4	LE	3.2c	St 6 KI 2.2	
61	4	LE	3.2b	PS 2.1f; St 1 S 3.2d	
62	4	LE	4.2a	St 6 KI 2.2	
63	4	LE	4.1a	4.1c, 4.1b, 4.2b; St 6 KI 2.2	
64	4	LE	5.1 d	5.1e	LE skill 6
65	4	LE	4.3c	4.3d; St 6 KI 2.2	
66	4	LE	4.3d	4.3c, 5.1b; St 6 KI 2.2	
67	4	LE	1.1c	St 6 KI 2.2	
68	4	LE	1.1c	St 6 KI 2.2	
69	4	PS	3.2c	St 1 S 2.1d	General skill 8
70	4	LE	7.2d	PS 2.1h	General skill 4
71	4	PS	1.1h	1.1i; St 6 KI 2.2	
72	4	PS	1.1f	St 6 KI 2.2	PS skill 1
73	4	PS	2.1i	St 6 KI 2.2	
74	4	PS	2.1i	St 1 S 1.2; St 6 KI 2.2	General skill 8
75	4	PS	2.1j	3.2a; St 6 KI 2.2	
76	4	PS	2.2e	2.2f; St 6 KI 2.2	General skill 8
77	4	PS	2.2d	St 6 KI 2.2	
78	4	PS	3.1c	3.1e, 3.1f; St 6 KI 2.2	
79	4	PS	4.4f	St 1 S 1.2	
80	4	PS	3.3g	St 6 KI 2.2	PS skill 12
81	1	-	S 3.2h	PS 3.3f; St 6 KI 2.2	
82	4	PS	3.2a	St 6 KI 2.2	
83	4	LE	7.2d	7.2c; St 7 KI 1.2	

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