THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL SCIENCE TEST

JUNE 2011 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/osa/. Conversion charts provided for previous administrations of this test must *not* be used to determine student's final scores for the 2011 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/osa/ 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

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: Go to www.p12.nysed.gov/osa/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:

— Phenolphthalein is colorless in both acidic and neutral solutions, so it does not indicate whether the water is acidic or neutral.

— Phenolphthalein has the same color in both neutral and acidic solutions.

— It is colorless in both solutions.

47 [1] Allow 1 credit for circling "No" and an acceptable explanation. Acceptable responses include, but are not limited to:

— The indicator tests showed the water in the lake is acidic.

— The water is not safe for the fish to live in because it is acidic.

— The water in the lake is acidic.

— It is not a neutral environment.

48 [1] Allow 1 credit for May.

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

— deforestation

— destroying plants and trees

— burning fossil fuels and other materials

— increased industry

— an increase in the human population

50 [1] Allow 1 credit for any value from 36 g to 38 g.

51 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— As the temperature increases, the solubility of the gas decreases.
— Solubility goes down as temperature goes up.
— an inverse relationship

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

— increase the temperature of the water
— crush the solid into smaller particles
— stir the mixture

Unacceptable responses include:

add more water

53 [1] Allow 1 credit for hornblende.

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

— hardness
— Galena is soft.
— Galena is softer.

55 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— drag the mineral across a piece of porcelain tile
— rub the mineral on an unglazed ceramic tile
— rub the mineral on a streak plate
— rub the mineral on a harder mineral
— crush the mineral into powder

Unacceptable responses include:

use a streak plate

Note: Responses must indicate an action.

56 [1] Allow 1 credit for any value from 2 to 5 bubbles per minute.

57 [1] Allow 1 credit for *two* of the following responses: mice, rabbits, squirrels, sparrows.

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

— because they only eat meat
— because they only eat consumers
— because they eat other animals and not plants
— because they do not eat producers
— because they eat rabbits/mice/squirrels

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

— Hawks have more food sources than owls.
— Hawks also eat squirrels, birds, and rabbits.
— The owls have fewer food sources than the hawks.

60 [2] Allow a maximum of 2 credits, 1 credit for each acceptable response. Acceptable responses include, but are not limited to:

— *B* has a cell wall.
— *B* contains chloroplasts.
— It has a very large vacuole.
— It has a rectangular shape.

61 [2] Allow a maximum of 2 credits, allocated as follows:

Allow 2 credits if the correct type of digestion is circled in *all four* rows of the table below.
Allow 1 credit if the correct type of digestion is circled in *only three* rows of the table below.
Allow 0 credits if the correct type of digestion is circled in *only two or fewer* rows of the table below.

Note: Do *not* allow credit for a row if both types of digestion are circled.

Structure	Function	Type of Digestion
mouth	teeth grind food	(mechanical digestion) / chemical digestion
	saliva changes starch to sugar	mechanical digestion / (chemical digestion)
stomach	acids allow enzymes to break down food	mechanical digestion / (chemical digestion)
	food mixed and squeezed	(mechanical digestion) / chemical digestion

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

— circulatory
— cardiovascular
— transport

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

— The blood at location *B* has picked up oxygen in the lungs.
— The blood at location *B* has not yet traveled to the body cells.
— Most of the oxygen was used by the body cells before the blood reached location *A*.

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

— fossils
— dinosaur footprints
— petrified bones
— dinosaur bones
— bones

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

— sperm
— gamete
— sex cell
— haploid cell
— daughter cell

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

— *A* has twice as much as *D*.
— *D* has half as much as *A*.
— *A* and *D* have the same number of chromosomes. (Due to imprecision in the diagram, students might interpret both *A* and *D* to be haploid cells.)

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

— The equatorial region has a climate that is warm and humid.
— The polar region is too cold and dry.
— More precipitation occurs at the equator than at the poles.
— It is warmer at the equator than at the poles.
— High latitudes get less direct sunlight.
— The climate is different.

68 [1] Allow 1 credit for *two* acceptable responses: carbon dioxide (CO_2) and water (H_2O).

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

— oxygen
— O_2
— water
— H_2O
— water vapor

Unacceptable responses include:

gas (This response is not specific enough.)

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

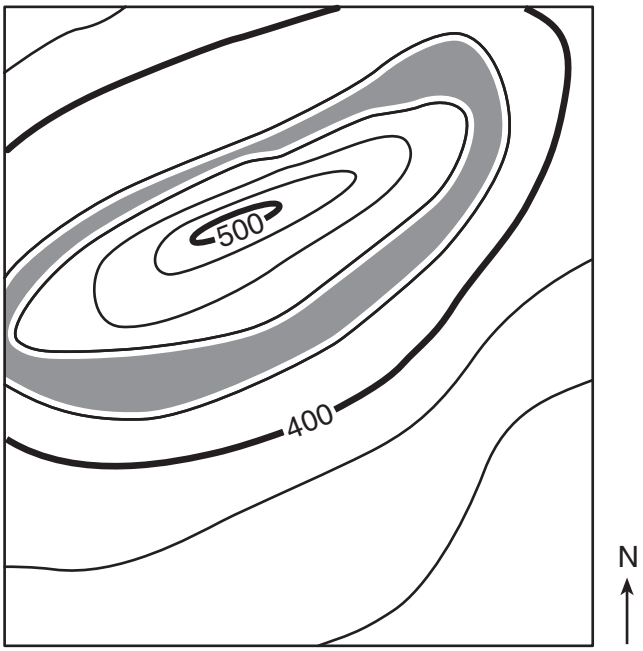
— liquid phase to gas phase
— liquid water phase to water vapor phase
— liquid phase to vapor phase

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

— coal
— oil
— natural gas

72 [1] Allow 1 credit if the center of the **X** is located anywhere between, but not on, the 420 and 440 contour lines as shown by the gray-shaded area on the map below.

Contour Map



Contour interval = 20 feet

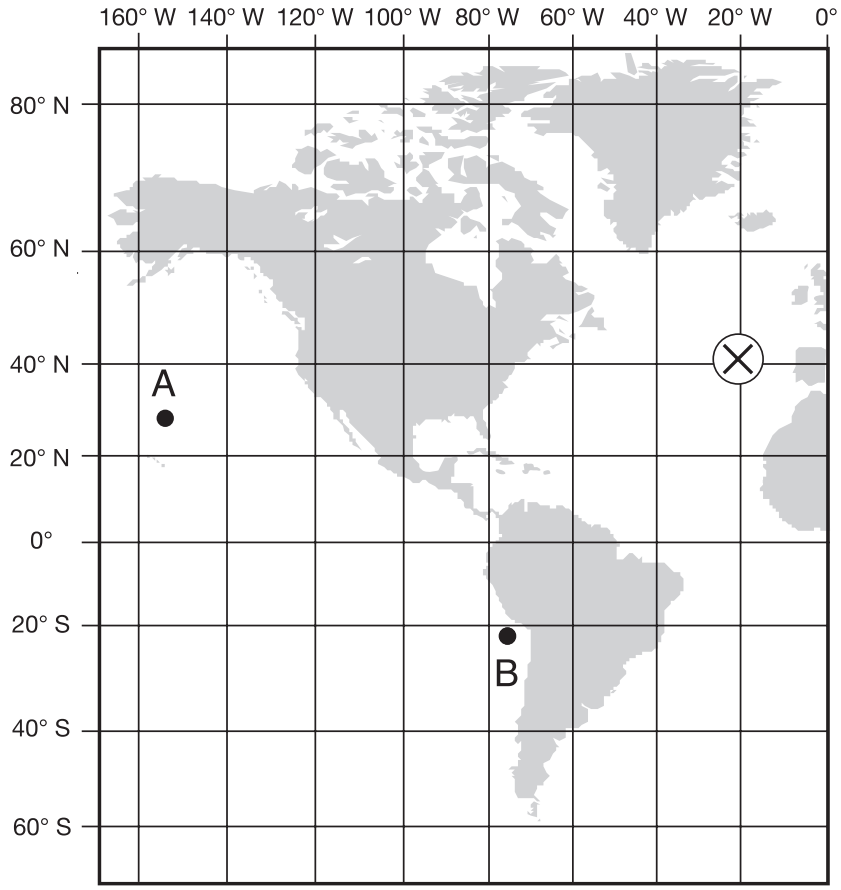
73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

— direction of plate motion
— relative movement of plates
— plates moving apart/divergence
— plate movement

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

— forest fire
— harmful gases enter the atmosphere
— lava flows
— volcanic ash/dust blocks sunlight
— earthquakes
— Habitats are destroyed.
— Plants/animals are killed.

75 [1] Allow 1 credit if the center of the **X** is within the circle shown on the map below.



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

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

— The Sun rises in the east.

— Location *B* is east of location *A*.

— Earth rotates west to east.

— the direction of Earth's rotation

Unacceptable responses include:

Earth's rotation (This is *not* a complete response.)

They are in different time zones. (Sunrise will occur at different times for locations in the same time zone.)

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

— precipitation/rain/hail

— cloudy

— stormy weather

— unstable conditions

Unacceptable responses include:

snow, sleet, freezing rain (These forms of precipitation do not usually occur in New York State in July.)

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

— Syracuse is located behind the warm front.

— Syracuse is located in a warm air mass.

— Rochester is located behind a cold front.

— Rochester is located in a cool air mass.

79 [1] Allow 1 credit if all *four* element symbols are placed correctly in the chart, as shown below.

Element Classification	Element Symbol
metals	Cu, Cd
nonmetals	Br, P

Note: Allow credit if the element name is used instead of the element symbol.

80 [1] Allow 1 credit for Group 18.

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

— The trains are moving at the same speed.

— The trains have the same velocity.

Note: Allow credit if students provide a response in numerical or variable form as long as the speeds are equal. For example: Both trains are going at 60 mph. Both trains are moving at *X* mph.

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

— When they look at any fixed object ahead of the train, it seems to approach, and then to move away in the opposite direction.

— The trees appear to move.

— The tracks appear to move.

— They use a reference point. For example, the trees appear to move but we know that the trees do not move, which shows that the train is moving.

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

— Make the lever longer on the input force side.

— Move the fulcrum closer to the person.

— Apply the input force farther to the left of the fulcrum.

Appendix A

New York State Grade 8 Intermediate-Level Science Test
June 2011

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 (level 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/osa/.

Note: Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2011 administration.

Performance Levels
Grade 8 Intermediate-Level Science Test

Level	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 2011 Written Test
Performance Test Form A

Item maps contained in this appendix:

- Reference to *Intermediate-Level Science Core Curriculum Grades 5-8* — June 2011 Written Test and Performance Test, Form A
- Reference to Process Skills Based on Standard 4 — June 2011 Written Test and Performance Test, Form A
- Reference to Core Curriculum for Individual Test Questions — June 2011 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 2011 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
	1.2 Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.		8	4	
	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	
	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			
	2.3 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		
	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	2, 6, 7, 46, 47, 48, 49, 50, 53, 54, 56, 83
	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		51
	2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		3
	3 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 2011 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, 6, 7, 28, 31, 32, 75, 76
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				29, 30, 33, 49, 53, 54, 55, 64, 72, 73, 74, 77, 78
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				1, 3, 35, 36, 37, 38, 45, 50, 51, 52, 70, 79, 80
	4 Energy exists in many forms, and when these forms change energy is conserved.				4, 34, 38, 39, 40, 41 42, 44, 45, 50, 51, 70, 71
	5 Energy and matter interact through forces that result in changes in motion.				43, 81, 82, 83
Standard 4 Living Environment	**1** Living things are both similar to and different from each other and from nonliving things.				10, 11, 15, 23, 26, 60, 61, 62, 63, 68
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				5, 8, 16
	3 Individual organisms and species change over time.				12, 13, 18, 19, 64
	4 The continuity of life is sustained through reproduction and development.				14, 20, 21, 59, 65, 66
	5 Organisms maintain a dynamic equilibrium that sustains life.				9, 22, 24, 25, 57, 58
	6 Plants and animals depend on each other and their physical environment.				17, 56, 59, 68, 69
	7 Human decisions and activities have had a profound impact on the physical and living environment.				27, 49, 67

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 2011 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				52
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	5, 15, 16, 17, 18, 19, 23, 31, 33, 34, 35, 37, 38, 40, 44, 45, 57, 58, 59, 60, 62, 63, 65, 66, 67, 68, 70, 71, 72, 73, 75, 76, 77, 81, 82, 83
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	**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 2011 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
	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				64
	8. identify cause-and-effect relationships		4, 5, 6	6, 7	49, 78, 83
	9. use indicators and interpret results				46, 47
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				15
	5. design and use a Punnett square or a pedigree chart to predict the probability of certain traits				5
	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				57, 58, 59
	8. identify pulse points and pulse rates				
	9. identify structure and function relationships in organisms				68
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				75
	2. using identification tests and a flow chart, identify mineral samples				53, 54, 55
	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				72
	8. predict the characteristics of an air mass based on the origin of the air mass				
	9. measure weather variables such as wind speed and direction, relative humidity, barometric pressure, etc.				
	10. determine the density of liquids, and regular- and irregular-shaped solids			3	
	11. determine the volume of a regular- and an irregular-shaped solid, using water displacement				
	12. using the periodic table, identify an element as a metal, nonmetal, or noble gas				79, 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 2011

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 1.2c	PS 3.1e	
2	1	—	S 3.2h	PS 1.1	
3	1	—	M 2.1b	PS 3	
4	4	PS	4.1c		
5	4	LE	2.2b	St 6 KI 2.2	LE skill 5
6	1	—	S 3.2h	PS 1.1	
7	4	PS	1.1i	St 1 S 3.2h	
8	4	LE	2.1a	2.1b	
9	4	LE	5.2c		
10	4	LE	1.2h		
11	4	LE	1.2i		
12	4	LE	3.1a		
13	4	LE	3.2a		
14	4	LE	4.3d		
15	4	LE	1.1	St 6 KI 2.2	LE skill 4
16	4	LE	2.1d	St 6 KI 2.2	
17	4	LE	6.1a	St 6 KI 2.2	
18	4	LE	intro 3	St 6 KI 2.2	
19	4	LE	intro 3	St 6 KI 2.2	
20	4	LE	4.3e		
21	4	LE	4.4d		
22	4	LE	5.1g		
23	4	LE	1.2d	St 6 KI 2.2	
24	4	LE	5.2e		
25	4	LE	5.1e		
26	4	LE	1.1e		
27	4	LE	7.1e	7.2d	
28	4	PS	1.1d		
29	4	PS	2.1h		
30	4	PS	2.2c		
31	4	PS	1.1g	St 6 KI 2.2	
32	4	PS	1.1g		
33	4	PS	2.2d	St 6 KI 2.2	
34	4	PS	4.1e	St 6 KI 2.2	
35	4	PS	3.1h	St 6 KI 2.2	
36	4	PS	3.2c		
37	4	PS	3.2a	3.2c; St 6 KI 2.2	
38	4	PS	3.1c	4.2c; intro 4; St 6 KI 2.2	
39	4	PS	4.1b		
40	4	PS	4.2b	St 6 KI 2.2	
41	4	PS	4.4a		
42	4	PS	4.4c		

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

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