

THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL TEST SCIENCE

MAY 2006

FOR TEACHERS ONLY

RATING GUIDE FOR WRITTEN TEST, 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.emsc.nysed.gov/osa/> on Monday, May 1, 2006. Conversion charts provided for previous administrations of this test must *not* be used to determine student's final scores for the 2006 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 NYS Education Department web site <http://www.emsc.nysed.gov/osa/> at the end of the test administration period. Check this web page before starting the rating process and several times during the rating period.

Questions regarding this test should be directed to the Office of Curriculum, Instruction, and Instructional Technology at (518) 474-5922.

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. For example, scores may be transferred to each student's scannable answer sheet or to the Class Record Sheet.
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. Look at the acceptable responses for each point value.
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. 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.
6. 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.
7. Students should *not* lose credit for incorrect spelling, grammar, capitalization, or punctuation.
8. 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.
9. 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.

10. 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.
11. The total raw score for Part II can be transferred to the student's scannable answer sheet. Check to be certain that the student name on the test booklet matches the name on the answer sheet. Scores may also be transferred to the Class Record Sheet if your school uses it.
12. Add the student's raw score for Part II to the raw score for Part I to determine the student's total raw score for the written test. Use the conversion chart to convert the written and performance test raw scores to a final score for the student. This chart will be provided on the Department's web site <http://www.emsc.nysed.gov/osa/> on Monday, May 1, 2006.

Submitting 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 www.emsc.nysed.gov/osa/exameval.
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 [3] Allow a maximum of 3 credits, allocated as follows:

- a Allow 1 credit if four or five **X**s are plotted correctly $\pm 0.5^\circ$ for September 6–10.
Allow 0 credit if only zero to three **X**s are plotted correctly $\pm 0.5^\circ$ for September 6–10.

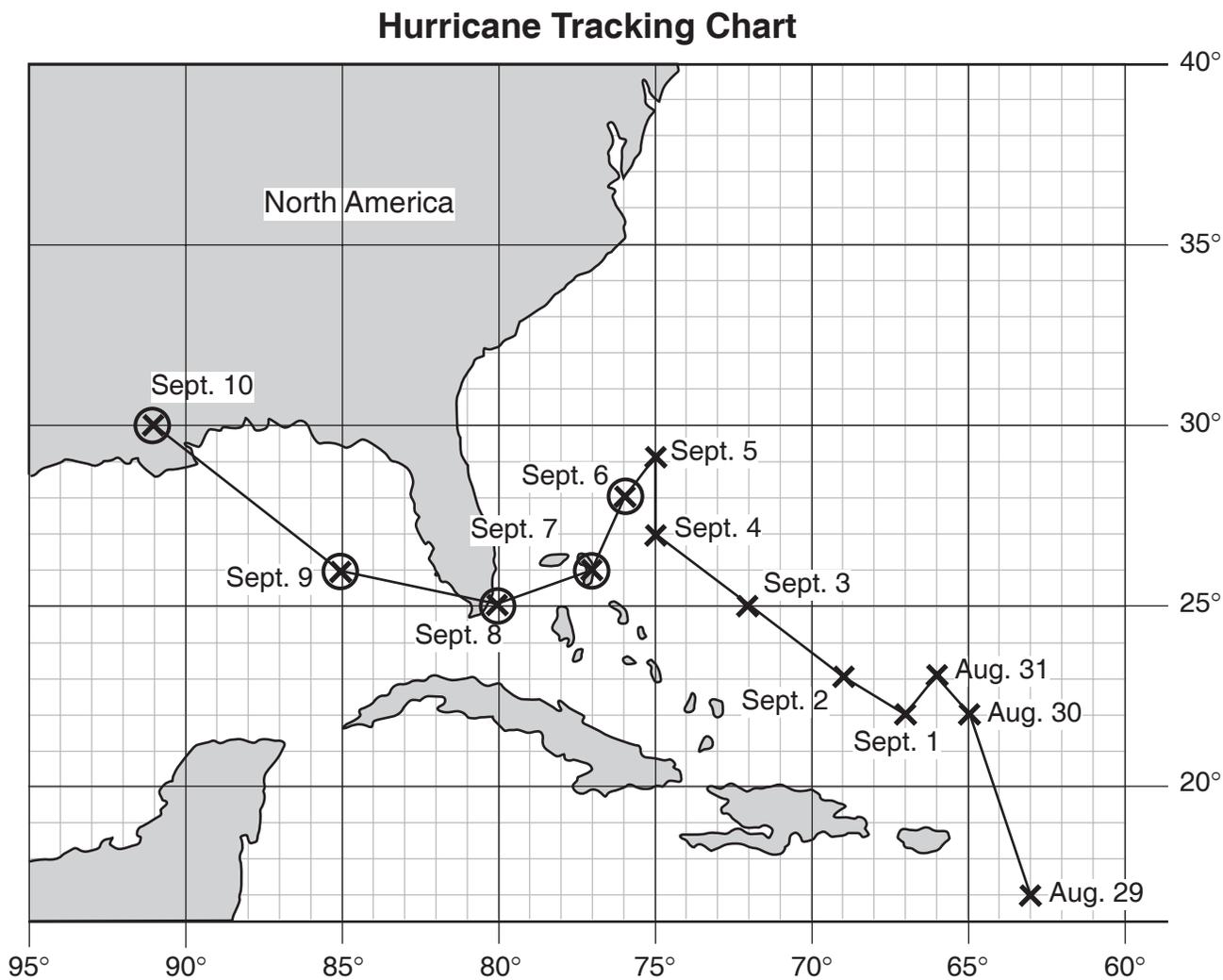
Note: Allow credit if the student uses a symbol other than an **X** to plot the points.

- b Allow 1 credit for labeling all student-plotted **X**s with the correct date. The **X**s must be labeled in sequential order; the month and day must be included.

- c Allow 1 credit for a line connecting the student-plotted **X**s. To receive credit, the student must connect the **X** for September 5 with **at least three** student-plotted points in sequential order. For example, the student connects September 5, 6, 9, and 10, but skips September 7 and 8. This response would receive 1 credit.

Note: It is suggested that schools create an overlay to use in rating this question.

Example of a 3-credit response:



Source: Adapted from The Weather Underground, Inc., "Weather Underground: 1965 Hurricane Archive," www.wunderground.com/Hurricane/at196503.asp (9/27/02)

- 47 [2] Allow a maximum of 2 credits, 1 for each acceptable response. Acceptable responses include, but are not limited to:

- vacate area
- move to higher ground
- go to a shelter
- secure boats that are docked
- leave water areas
- board up windows
- prepare for a power outage/buy batteries
- stock up on supplies/food/water
- prepare home for severe wind damage
- evacuate areas near the coast

Unacceptable responses include:

- go to the basement
- take cover
- stay away from windows

- 48 [5] Allow a maximum of 5 credits, allocated as follows:

- a* • Allow 1 credit if both column headings are correct. Acceptable responses include, but are not limited to:

Column Related to Particle Size	Column Related to Water
<ul style="list-style-type: none"> — Average Particle Size — Particle Size — Soil Size 	<ul style="list-style-type: none"> — Amount of Water — Water Flow — Amount of Water in Cylinder — Amount of Water that Flowed Through the Soil — Volume of Water in Cylinder <p><i>Unacceptable</i> responses include: water</p>

- Allow 1 credit for correct units in the data table. Acceptable responses include, but are not limited to:

Column Related to Particle Size	Column Related to Water
<ul style="list-style-type: none"> — mm — millimeters 	<ul style="list-style-type: none"> — mL — milliliters

- Allow 1 credit if all eight numerical values are correct.

Examples of 3-credit responses to question 48 a:

Soil Color	Average Particle Size	Amount of Water that Flowed Through the Soil
gray	2.0 mm	80 mL
brown	1.5 mm	60 mL
black	1.0 mm	50 mL
tan	0.5 mm	40 mL

Soil Color	Amount of Water (mL)	Particle Size (mm)
gray	80	2
brown	60	1.5
black	50	1
tan	40	.5

b Allow 1 credit. Acceptable responses include, but are not limited to:

- volume of water in the cylinder
- amount of water flow
- how much water flowed through
- volume of water

Unacceptable responses include:

amount of water poured in

c Allow 1 credit. Acceptable responses include, but are not limited to:

- Gray soil allows the most water to flow through.
- Particle size affects the amount of water that will flow through the soil.
- As particle size changes, the amount of water that flows through the soil changes.
- Larger particles allow more water to flow through.
- Smaller particles allow less water to flow through.
- Tan soil allows the least amount of water to flow through.

Note: Do *not* allow credit for “Gray soil has the largest particles” or any other statement that is an observation rather than a conclusion.

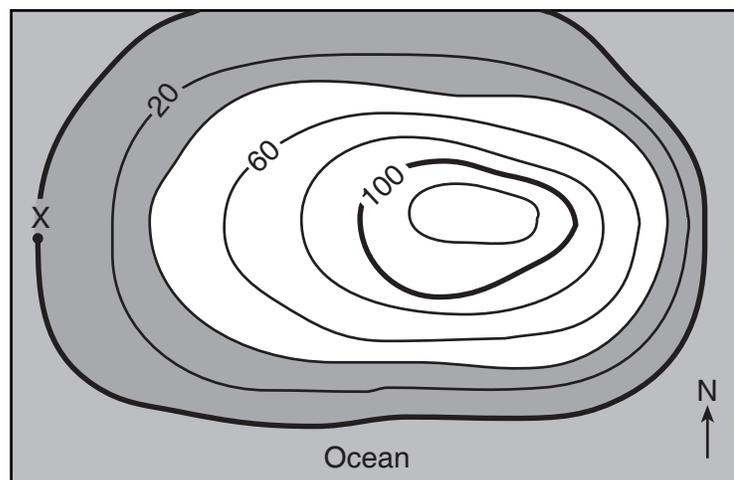
49 [1] Allow 1 credit for 0 *or* sea level.

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

- The contour lines that are closest together will have the steepest slope.
- The farther apart the lines, the less steep it is.
- The greater the difference in elevation per distance measurement, the steeper the area.

51 [1] Allow 1 credit for shading the entire area from the shoreline to the 40-meter contour line.

Example of a 1-credit response:



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

- heat/thermal
- electrical
- wind
- mechanical
- electromagnetic
- potential energy
- kinetic energy
- static electricity

Unacceptable responses include:

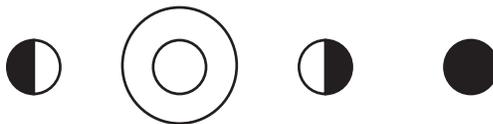
- static
- chemical

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

- Air particles carry the sound waves.
- The air particles speed up and bump into each other and that carries the sound.
- The air particles vibrate.

54 [2] Allow a maximum of 2 credits, allocated as follows:

a Allow 1 credit if the full Moon phase is circled, as shown below.



b Allow 1 credit. Acceptable responses include, but are not limited to:

- 1 month
- 4 weeks
- 27 to 31 days

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

- gravity
- centripetal force
- Sun's gravity

Unacceptable response include:

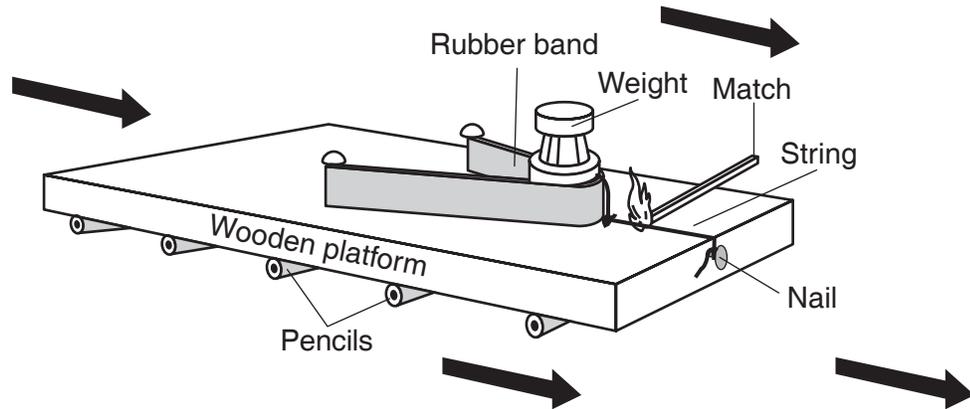
centrifugal force

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

- 1 year
- 365 days
- $365\frac{1}{4}$ days
- 12 months

57 [1] Allow 1 credit for an arrow showing forward movement of the wooden platform.

Examples of 1-credit responses:



Source: Adapted from, Constantine Constant, *Earth Science Workbook*, AMSCO, 1972

58 [3] Allow a maximum of 3 credits, allocated as follows:

- Allow 3 credits for all four correct responses circled on the chart.
- Allow 2 credits for only three correct responses circled on the chart.
- Allow 1 credit for only two correct responses circled on the chart.

Example of a 3-credit response:

Change to Materials	Effect this Change Will Have on the Distance the Wooden Platform Moves
Shorten the string to stretch the rubber band.	decrease <input checked="" type="radio"/> increase remain the same
Use a wooden platform that has a greater mass.	<input checked="" type="radio"/> decrease increase remain the same
Remove the pencils from under the wooden platform.	<input checked="" type="radio"/> decrease increase remain the same
Use scissors to cut the string instead of burning it with a match.	decrease increase <input checked="" type="radio"/> remain the same

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

- Ice is less dense than water.
- The density of the iceberg is less than the density of the ocean.
- The ice has more volume than water and the same mass, so its density is less.
- An iceberg is made of frozen water and when water freezes it expands and the density is lower, so it floats.
- Ocean water is more dense than ice.
- Its density is less than 1.
- Water expands when it freezes while its mass remains constant.

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

- The sea level would rise.
- The climate would change.
- Coastal areas would be under water.
- flooding
- less dry land, more water

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

- Allow 1 credit for a correct phase change occurring at pan *A*. Acceptable responses include, but are not limited to:

- water into vapor
- liquid to gas
- water into steam
- evaporation
- boiling
- vaporization

- Allow 1 credit for a correct phase change occurring at pan *B*. Acceptable responses include, but are not limited to:

- solid to liquid
- ice into water
- gas to liquid
- water vapor into water
- steam into water
- condensation
- melting

Note: For purposes of rating this item, the terms “steam” and “water vapor” can be used interchangeably.

62 [1] Allow 1 credit for leaves, leaf, *or* stem.

63 [2] Allow a maximum of 2 credits, allocated as follows:

- Allow 1 credit for carbon dioxide *or* CO₂.
- Allow 1 credit for water *or* H₂O.

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

- oxygen/O₂
- water/H₂O
- sugar/C₆ H₁₂ O₆/glucose
- food/nutrients/stored energy

Note: Do *not* allow credit for simply “energy” because energy is taken in and converted during photosynthesis, but it is *not* produced.

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

- the arrows
- the arrow symbol (→)
- consumes the previous organism
- Animals eat other animals.
- They eat the animals before them.

66 [1] Allow 1 credit for bacteria.

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

- Both are consumers.
- Both organisms are carnivores.
- Both organisms must eat to get their energy.
- They both eat other organisms/other living things.
- Both are predators.

Note: Do *not* allow credit for “both eat grasshoppers” or “both eat grain” unless the student refers to it as an *indirect* flow of energy (grain to grasshopper to frog to snake).

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

- Fossils can be used to study past environments.
- can be used to study extinct life-forms
- give us clues about the past

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

- Lava is so hot that the plant material is destroyed.
- The plant material will be destroyed.
- The amber would melt and the plant would be destroyed.
- The plant remains would burn because volcanic rocks are formed under heat, melting, and pressure.

Note: Do *not* allow credit for “plants do not grow near volcanoes.”

70 [1] Allow 1 credit for circling the symbol shown below.



71 [1] Allow 1 credit for Sun.

72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- There would be a decrease in the consumer population.
- less food for consumers
- less food for some of the animals
- decreased oxygen production
- Some animals will no longer be able to hide in the grass, so they may be killed.

Unacceptable responses include:

- Animals will die.
- Animals will become extinct.

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

- only one parent
- The offspring are identical to the parent.
- Fertilization does not occur.
- One cell divides into two.

Unacceptable responses include:

splitting of cells

Appendix A

New York State Grade 8 Intermediate-Level Science Test May 2006

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.emsc.nysed.gov/osa> on Monday, May 1, 2006.

Note: Conversion charts provided for previous administrations of this test must not be used to determine students' final scores for the 2006 administration.

Performance Levels
Grade 8 Intermediate-Level Science Test

Level	Score Range	Description of Student Performance
4	85 – 100	<p>Meeting the Standards with Distinction</p> <ul style="list-style-type: none"> • 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	<p>Meeting the Standards</p> <ul style="list-style-type: none"> • 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	<p>Not Fully Meeting the Standards</p> <ul style="list-style-type: none"> • 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	<p>Not Meeting the Standards</p> <ul style="list-style-type: none"> • Student is <i>unable</i> to demonstrate understanding of the intermediate-level science content and concepts in most of the learning standards and key ideas assessed. • Student is <i>unable</i> to demonstrate the science skills required for intermediate-level achievement in most of the learning standards and key ideas assessed. • Student is <i>unable</i> to demonstrate evidence of the basic science knowledge and skills required for a secondary academic environment.

Appendix B

New York State Grade 8 Intermediate-Level Science Test
May 2006 Written Test
Performance Test Form A

Reference to *Intermediate-Level Science Core Curriculum Grades 5-8*

Reference to Process Skills in Core Curriculum

Reference to Core Curriculum for Individual Test Questions on May 2006 Written Test

Reference to Core Curriculum for Individual Test Questions on Performance Test, Form A

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

<i>NYS Learning Standards for Mathematics, Science, and Technology Standard/Area</i>	<i>Reference to Intermediate-Level Science Core Curriculum</i> Key Idea or Performance Indicator	Performance Test Form A Question Number			May 2006 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			59
	1.2 Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.		8	4	2, 58
	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	21, 27
	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			45
	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		20, 46, 48
	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	18, 23, 32, 45
	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		
	2 Deductive and inductive reasoning are used to reach mathematical conclusions.		4, 5, 6, 7		16, 33, 49, 50
	3 Critical thinking skills are used in the solution of mathematical problems.				

<i>NYS Learning Standards for Mathematics, Science, and Technology Standard/Area</i>	<i>Reference to Intermediate-Level Science Core Curriculum</i> Key Idea or Performance Indicator	Performance Test Form A Question Number			May 2006 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.				51
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.				6
Standard 4 Physical Setting	1 Earth and celestial phenomena can be described by principles of relative motion and perspective.				2, 54, 55, 56
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				3, 4, 6, 7, 8, 9, 10, 14, 15, 46, 47, 48, 60, 68, 69
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				11, 12, 13, 16, 21, 59, 61
	4 Energy exists in many forms, and when these forms change energy is conserved.				17, 18, 19, 20, 52, 53
	5 Energy and matter interact through forces that result in changes in motion.				5, 57, 58
Standard 4 Living Environment	1 Living things are both similar to and different from each other and from nonliving things.				22, 24, 27, 30, 32, 33, 62
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				29, 34, 35, 36, 73
	3 Individual organisms and species change over time.				26, 28, 31, 38, 68
	4 The continuity of life is sustained through reproduction and development.				1, 23, 43, 44, 73
	5 Organisms maintain a dynamic equilibrium that sustains life.				25, 39, 40, 41, 45, 65, 66, 67
	6 Plants and animals depend on each other and their physical environment.				41, 62, 63, 64, 65, 71
	7 Human decisions and activities have had a profound impact on the physical and living environment.				28, 37, 42, 70, 71, 72
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.				

<i>NYS Learning Standards for Mathematics, Science, and Technology Standard/Area</i>	<i>Reference to Intermediate-Level Science Core Curriculum</i> Key Idea or Performance Indicator	Performance Test Form A Question Number			May 2006 Written Test Question Number
		Station 1	Station 2	Station 3	
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	2, 4, 7, 8, 13, 14, 15, 17, 19, 22, 24, 30, 31, 33, 34, 35, 36, 38, 42, 43, 49, 51, 53, 54, 57, 59, 61, 62, 65, 66, 67, 68, 69, 70, 71, 72, 73
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.				47
	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.				

**Intermediate-Level Science Core Curriculum Grades 5-8
Process Skills Based On Standard 4**

	Process Skills	Performance Test Form A Question Number			May 2006 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		21
	3. use appropriate units for measured or calculated values			1, 2, 3	
	4. recognize and analyze patterns and trends		7, 8		16, 33
	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	2, 17, 25, 57, 58, 59, 60
	9. use indicators and interpret results				
Living Environment Skills	1. manipulate a compound microscope to view microscopic objects	6, 8			27
	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				35, 36
	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				65, 66, 67
	8. identify pulse points and pulse rates				
	9. identify structure and function relationships in organisms				62
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				
	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				
	4. plot the location of recent earthquake and volcanic activity on a map and identify patterns of distribution				46
	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				14, 15, 49, 50, 51
	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				
	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 – May 2006

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	4.3d		
2	4	PS	1.1h	St 1 S1.2; St 6 KI 2.2	General Skill 8
3	4	PS	2.1a		
4	4	PS	2.1e	St 6 KI 2.2	
5	4	PS	5.2e		
6	2	—	KI 3.2	PS 2.2i	
7	4	PS	2.1g	2.1i; St 6 KI 2.2	
8	4	PS	2.2b	St 6 KI 2.2	
9	4	PS	2.2e		
10	4	PS	2.2g		
11	4	PS	3.1g	3.2b	
12	4	PS	3.2c		
13	4	PS	3.3c	St 6 KI 2.2	
14	4	PS	2.2o	St 6 KI 2.2	PS Skill 7
15	4	PS	2.2n	2.2p; St 6 KI 2.2	PS Skill 7
16	1	—	M 2.1a	PS 3.1a	General Skill 4
17	4	PS	4.2d	St 6 KI 2.2	General Skill 8
18	4	PS	4.2e	St 1 S 3.2h	
19	4	PS	4.4g	St 6 KI 2.2	
20	4	PS	4.4a	St 1 S 3.1a	
21	4	PS	3.1f	3.1e; St 1 S 2.1d	General Skill 2
22	4	LE	1.1a	St 6 KI 2.2	
23	4	LE	4.2b	4.2a; St 1 S 3.2h	
24	4	LE	1.1b	1.1a; St 6 KI 2.2	
25	4	LE	5.1e	5.1d	General Skill 8
26	4	LE	3.2d		
27	4	LE	1.1a	St 1 S 2.1d	LE Skill 1
28	4	LE	3.2a	7.1c	
29	4	LE	2.1a		
30	4	LE	1.2g	St 6 KI 2.2	
31	4	LE	3.1c	St 6 KI 2.2	
32	1	—	S 3.2h	LE 1.1h	
33	1	—	M 2.1b	LE 1.1b; St 6 KI 2.2	General Skill 4
34	1	LE	2.2c	2.2a, 2.2b; St 6 KI 2.2	
35	1	LE	2.2a	2.2c; St 6 KI 2.2	LE Skill 5
36	1	LE	2.2b	2.2c; St 6 KI 2.2	LE Skill 5

Grade 8 Intermediate-Level Science
Reference to Core Curriculum for Individual Test Questions on Written Test – May 2006

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
37	1	LE	7.1c		
38	1	LE	3.2b	St 6 KI 2.2	
39	1	LE	5.1c		
40	1	LE	5.1e		
41	4	LE	5.1d	6.1b	
42	4	LE	7.2b	St 6 KI 2.2	
43	4	LE	4.3a	St 6 KI 2.2	
44	4	LE	4.3b		
45	1	—	S 2.2d	S 3.2b; LE 5.1e	
46	1	—	S 3.1a	PS 2.2q	PS Skill 4
47	7	—	1.1	PS 2.2q	
48	1	—	S 3.1a	PS 2.1h	
49	1	—	M 2.1a	St 6 KI 2.2	PS Skill 7
50	1	—	M 2.1b		PS Skill 7
51	1	—	T 1.4a	St 6 KI 2.2	PS Skill 7
52	4	PS	4.1d		
53	4	PS	4.4c	St 6 KI 2.2	
54	4	PS	1.1g	1.1e, St 6 KI 2.2	
55	4	PS	1.1d		
56	4	PS	1.1h		
57	4	PS	5.1e	St 6 KI 2.2	General Skill 8
58	4	PS	5.1d	5.2d; St 1 S 1.2	General Skill 8
59	4	PS	3.1i	3.1h; St 1 S 1.1; St 6 KI 2.2	General Skill 8
60	4	PS	2.2r		General Skill 8
61	4	PS	3.1c	3.2a; St 6 KI 2.2	
62	4	LE	6.2a	1.1f; St 6 KI 2.2	LE Skill 9
63	4	LE	6.2a		
64	4	LE	6.2b	6.2a	
65	4	LE	6.1a	5.1c; St 6 KI 2.2	LE Skill 7
66	4	LE	5.1e	5.1d; St 6 KI 2.2	LE Skill 7
67	4	LE	5.1e	St 6 KI 2.2	LE Skill 7
68	4	PS	2.1f	LE 3.2b, 3.2c; St 6 KI 2.2	
69	4	PS	2.2g	2.1f; St 6 KI 2.2	
70	4	LE	7.1a	St 6 KI 2.2	
71	4	LE	6.1a	7.1a; St 6 KI 2.2	
72	4	LE	7.2a	7.1b, 7.1c; St 6 KI 2.2	
73	4	LE	2.1d	4.1b; St 6 KI 2.2	

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

Station	item #	pts	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