

## Item Maps

New York State Grade 8 Intermediate-Level Science Test  
June 2002

Reference to *Intermediate-Level Science Core Curriculum Grades 5-8*  
Reference to Process Skills in core curriculum, pages 10-11

**(Note: core is based on *NYS Learning Standards for Mathematics, Science, and Technology*)**

NYS Learning Standards for Mathematics, Science, and Technology Standard/Area	NYS Learning Standards for Mathematics, Science, and Technology Key Idea	Performance Test Form A Item Number			June 2002 Written Test Item Number
		Station 1	Station 2	Station 3	
<b>Standard 1 Scientific Inquiry Key Idea 1</b> The central purpose of scientific inquiry is to develop explanations of natural phenomena in a continuing, creative process.	<b>1.1</b> Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations.	2 3			
	<b>1.2</b> Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.		8	4	65, 66
	<b>1.3</b> Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.		7 8	5 6	
	<b>1.4</b> 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		
<b>Standard 1 Scientific Inquiry Key Idea 2</b> 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.	<b>2.1</b> 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	
	<b>2.2</b> 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			
	<b>2.3</b> 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	
<b>Standard 1 Scientific Inquiry Key Idea 3</b> The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.	<b>3.1</b> 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		67, 70
	<b>3.2</b> 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	35, 45, 62, 63, 64, 68
	<b>3.3</b> Modify their personal understanding of phenomena based on evaluation of their hypothesis.			5	
<b>Standard 1 Mathematical Analysis</b>	1		3 8		46, 55, 56, 60
	2		4, 5, 6, 7		
	3				

NYS Learning Standards for Mathematics, Science, and Technology Standard/Area	<i>NYS Learning Standards for Mathematics, Science, and Technology</i> Key Idea	Performance Test Form A Item Number			June 2002 Written Test Item Number
		Station 1	Station 2	Station 3	
<b>Standard 1 Engineering Design</b>	1.1- 1.5				
<b>Standard 2 Information Systems</b>	1.1 - 1.5				
	2.1 - 2.3				
	3.1 - 3.3				
<b>Standard 4 Physical Setting</b>	1 Earth and celestial phenomena can be described by principles of relative motion and perspective.				30, 38
	2 Many of the phenomena that we observe on Earth involve interactions among components of air, water, and land.				24, 25, 26, 27, 31, 32, 33, 34, 41
	3 Matter is made up of particles whose properties determine the observable characteristics of matter and its reactivity.				28, 35, 37, 39, 54, 57, 70
	4 Energy exists in many forms, and when these forms change energy is conserved.				23, 29, 40, 42, 45, 54, 67, 68, 69
	5 Energy and matter interact through forces that result in changes in motion.				36, 44, 46, 55, 56, 58, 59, 60, 61
<b>Standard 4 Living Environment</b>	1 Living things are both similar to and different from each other and from nonliving things.				1, 2, 3, 4, 5, 6, 11, 51, 52
	2 Organisms inherit genetic information in a variety of ways that result in continuity of structure and function between parents and offspring.				7, 8, 48, 49, 50
	3 Individual organisms and species change over time.				9, 12, 14
	4 The continuity of life is sustained through reproduction and development.				10, 13, 15, 20, 47
	5 Organisms maintain a dynamic equilibrium that sustains life.				17, 18, 19, 21
	6 Plants and animals depend on each other and their physical environment.				11, 16, 17, 19, 53
	7 Human decisions and activities have had a profound impact on the physical and living environment.				22, 43, 53
<b>Standard 6-Common Themes</b>					

NYS Learning Standards for Mathematics, Science, and Technology Standard/Area	<i>NYS Learning Standards for Mathematics, Science, and Technology</i> Key Idea	Performance Test Form A Item Number			June 2002 Written Test Item Number
		Station 1	Station 2	Station 3	
St 6 – Systems Thinking	1.1 – 1.4				
St 6 – Models	2.1 – 2.3	1, 2, 3, 4	3, 8	4	23
St 6 – Magnitude and Scale	3.1 – 3.2				
St 6 – Equilibrium and Stability	4.1 - 4.2				
St 6 – Patterns of Change	5.1 - 5.2		3, 4, 5, 6, 7	6	
St 6 – Optimization	6.1 - 6.2				
Standard 7 Interdisciplinary PS	1.1 – 1.4				

**Intermediate-Level Science Core Curriculum Grades 5-8  
Process Skills Based On Standard 4 (see pages 10-11)**

	Process Skills	Performance Test Form A			June 2002 Written Test Item Number
		Station 1	Station 2	Station 3	
<b>General Skills</b>	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		62, 64, 68
	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	36, 54b, 58, 60, 61
	9. use indicators and interpret results				
<b>Living Environment Skills</b>	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				48, 49, 50
	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				16, 17, 18, 19
	8. identify pulse points and pulse rates				
	9. identify structure and function relationships in organisms				
<b>Physical Setting Skills</b>	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				
	5. use a magnetic compass to find cardinal directions				
	6. measure the angular elevation of an object, using appropriate instruments				
	7. generate and interpret field maps including topographic and weather maps				
	8. predict the characteristics of an air mass based on the origin of the air mass				
	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 Test – June 2002**  
**Reference to Core Curriculum for Individual Test Questions**

<b>Item #</b>	<b>MST Learning Standard</b>	<b>Area within Standard 4 (PS or LE)</b>	<b>Major Understanding</b>	<b>Other Standards or Understandings</b>	<b>Process Skills Based on Standard 4 (p 10-11)</b>
1	4	LE	1.1b		
2	4	LE	1.1h		
3	4	LE	1.2c		
4	4	LE	1.2e	1.2a	
5	4	LE	1.2g		
6	4	LE	1.2d		
7	4	LE	2.1a		
8	4	LE	2.1e		
9	4	LE	3 Intro		
10	4	LE	4.1c	4.2a	
11	4	LE	6.2b	1.2d	
12	4	LE	3.2b		
13	4	LE	4.4d		
14	4	LE	3.1a		
15	4	LE	4.4a		
16	4	LE	6.1b		LE 7
17	4	LE	5.1d	6.2a	LE 7
18	4	LE	5.1e		LE 7
19	4	LE	5.1e	6.1b	LE 7
20	4	LE	4.3d		
21	4	LE	5.2b		
22	4	LE	7.2d		
23	6		2.2	PS 4.4b	
24	4	PS	2.2g		
25	4	PS	2.1d		
26	4	PS	2.1j		
27	4	PS	2.2e		
28	4	PS	3.2a		
29	4	PS	4.4b		
30	4	PS	1.1g		
31	4	PS	2.2b		
32	4	PS	2.2d		
33	4	PS	2.2g		
34	4	PS	2.2k		
35	1		S 3.2h	PS 3.1a,b	
36	4	PS	5.1d	5.1c	GS 8
37	4	PS	3.3f		
38	4	PS	1.1i		

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39	4	PS	3.1a		
40	4	PS	4.1d	4.5b	
41	4	PS	2.2c		
42	4	PS	4.5a		
43	4	LE	7.1e	7.2d	
44	4	PS	5.1a	5.1c	
45	4	PS	4.1b	4.1c; S1 3.2h	
46	1		M1.1b	PS 5.1c	
47	4	LE	4.1a	4.1b	
48	4	LE	2.2c		LE 5
49	4	LE	2.2c		LE 5
50	4	LE	2.2b		LE 5
51	4	LE	1.2f		
52	4	LE	1.1f		
53	4	LE	6.2a	7.1a, 7.2a	
54	4	PS	4.2d	3.2a, 3.2c	GS 8
55	4	PS	5.2a	S1M 1.1b	
56	4	PS	5.2a	S1M 1.1b	
57	4	PS	3.1c-f		
58	4	PS	5.1e	5.1c; 5.1b	GS 8
59	4	PS	5.1a	5.1b,5.1c,5.1e	
60	4	PS	5.1d	S1M 1.1b	GS 8
61	4	PS	5.2d	5.1c	GS 8
62	1		S3.2e	3.2h	GS 4
63	1		S3.2h		
64	1		S3.2h		GS 4
65	1		S1.2a		
66	1		S1.2a		
67	1		S3.1a	PS 4.2c	
68	4	PS	4.2c	St 1 S3.2h	GS 4
69	4	PS	4.2c		
70	4	PS	3.3 intro	St 1 S3.1b	