THE UNIVERSITY OF THE STATE OF NEW YORK

GRADE 8

INTERMEDIATE-LEVEL TEST

SCIENCE

JUNE 2002

FOR TEACHERS ONLY

RATING GUIDE FOR WRITTEN TEST, PART II

CONVERSION TABLE

ITEM MAP

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. The conversion table that is needed to translate a student's raw scores on the written and performance tests to a final score is also provided.

Appendix B provides several charts that link the individual items on the test to the *Intermediate-Level Science Core Curriculum 5-8*. This core curriculum is based on the *New York State Learning Standards in Mathematics, Science, and Technology.*

Questions regarding this test should be directed to Diana Harding at (518) 474-5922 or Judy Pinsonnault at (518) 474-5900.

Note: Retain this guide for future use. Do not return it to SED with the performance test materials.

THE UNIVERSITY OF THE STATE OF NEW YORK
THE STATE EDUCATION DEPARTMENT
ALBANY, NEW YORK 12234

Detailed Directions for Rating the Written Test, Part II

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 sample responses for each point value. NOTE: These samples represent actual student responses that have been transcribed.

4. In many cases, **examples** of correct responses are provided. These are just some of the possible correct responses that may be provided by the student. They are examples only. Other responses that convey the same general meaning as those given in this guide should also receive credit. 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 table in Appendix A to convert the written and performance test raw scores to a final score for the student.

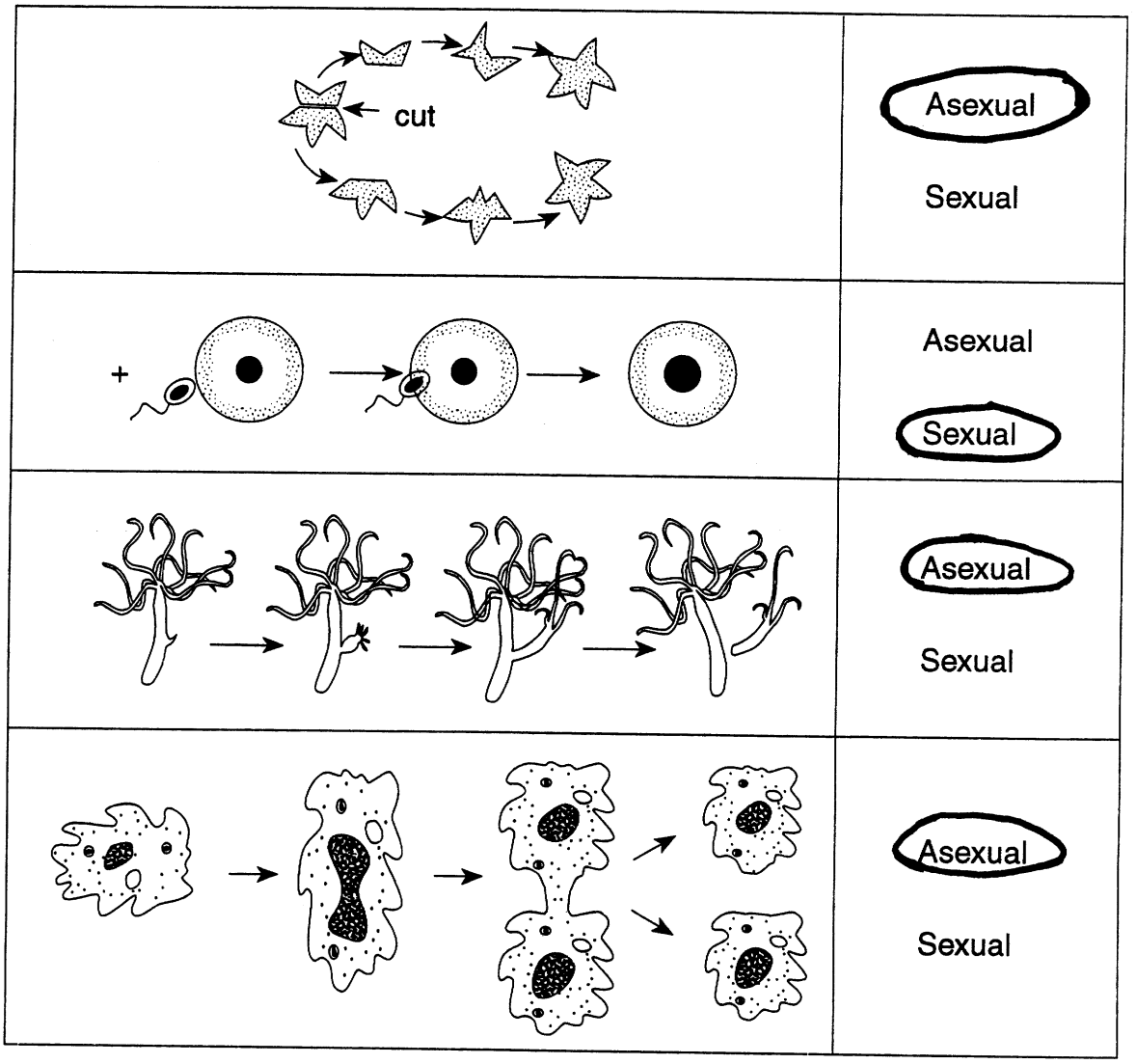
46 [4] *a* Allow 1 credit for **surface material** or **surface**.
b Allow 1 credit for **speed** or **skateboard speed**.
c Allow a maximum of 2 credits, 1 for each scientifically correct answer.

Correct answers include:

— same skateboard
— same person
— same wheels
— air temperature
— level surface
— wind speed
— wind direction
— equal push
— equal distance
— same weather conditions
— placement of person on skateboard

47 [2] Allow 2 credits for four correct answers circled on the chart below.
Allow 1 credit for two or three correct answers circled on the chart below.
Allow 0 credit for zero or one correct answer circled on the chart below.

Example of a 2-credit answer:



(not drawn to scale)

48 [1] Allow 1 credit for **100%, 4/4,** or **all.**

49 [1] Allow 1 credit for **1/2, 2/4,** or **50%.**

50 [1] Allow 1 credit for a scientifically accurate response indicating that the presence of a capital T or the presence of the dominant trait in both parent plants results in both being tall.

Note: Accept "pure" and "hybrid" if used correctly.

51 [1] Allow 1 credit for a correct function of the human structure selected.

Correct answers include:
heart: pumps blood, circulates materials, regulates blood flow
blood vessels: transport blood, nutrients, oxygen, CO_2

52 [1] Allow 1 credit for a correct function of the plant structure selected.

Correct answers include:
stem: support, transport system
leaves: site of photosynthesis, gas exchange
roots: absorb water, minerals, and nutrients; provide support, storage

53 [2] Allow 2 credits if the student demonstrates an understanding of the relationship between photosynthesis and the presence of sugar.

Correct answers include:
—Photosynthesis was not able to take place in the section covered with paper; therefore, no sugar was stored in that section of the leaf.
—The part under the black spot could not get light and could not make food.
—The part that was not covered got light and went through photosynthesis. That is why sugar is in that part and not in the covered part.

Allow 1 credit if the answer is only partially correct, but does refer to photosynthesis.

Examples of 1-credit answers:
—Photosynthesis did not occur in the covered section of the leaf.
—The paper did not let the sunlight in, so that part died.
—The green part received light.

54 [4] *a* Allow 2 credits for an answer based on observable evidence:

Example of 2-credit answer:
—The ball can't fit through the ring.

Allow 1 credit for an answer based on inference.

Example of a 1-credit answer:
—The ball got larger/bigger/expanded.

b Allow 1 credit for a scientifically correct answer.

Correct answers include:
—The particles absorbed energy and moved faster/farther apart.
—Most matter expands when heated.

Incorrect answers include:
—The atoms/molecules expanded

c Allow 1 credit for a scientifically correct answer:

Correct answers include:
— The chemical properties remained the same.
— There was only a change in size.
— No new substance was produced.
— It is still a metal ball.

Incorrect answers include:
—The atoms are not changed.

55 [1] Allow 1 credit for an answer that specifies a correct relationship.

Correct answers include:
—As the mass increases, the gravitational pull/force increases.
—a direct relationship

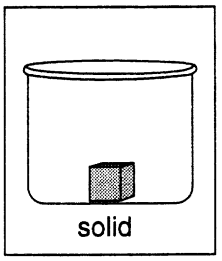
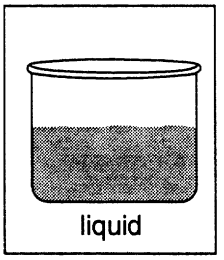
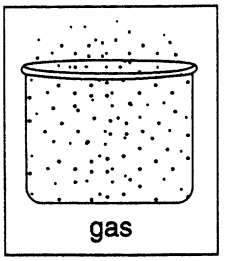
56 [1] Allow 1 credit for correctly identifying all three of these planets:
Mercury
Mars
Pluto

Note: Do *not* allow partial credit.

57 [3]

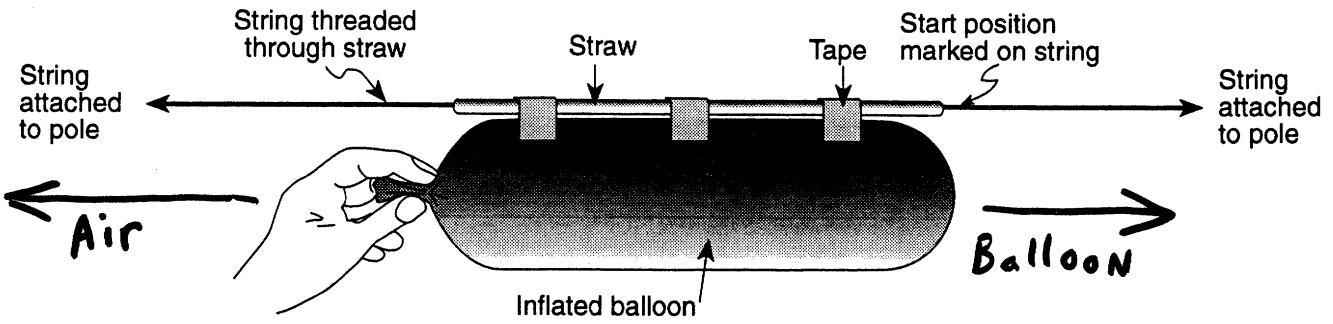
- Allow 1 credit if all three answers are correct in the row related to shape.
- Allow 1 credit all three answers are correct in the row related to volume.
- Allow 1 credit if all three answers are correct the in row related speed.

Example of a 3-credit answer:

			
Does this phase of matter have a definite shape? Write yes or no in each box.	Yes	No	No
Does this phase of matter have a definite volume? Write yes or no in each box.	Yes	Yes	No
How do these phases rank in order of the relative speed of their particles? Rank them 1, 2, 3, with 1 having the slowest particles and 3 have the fastest particles.	1	2	3

58 [2] Allow 2 credits for a diagram that shows both arrows drawn and labeled correctly.

Example of a 2-credit diagram:



Allow 1 credit for a diagram that shows 1 arrow correctly drawn and labeled.

or

Allow 1 credit for a diagram that shows both arrows drawn correctly but with no labels.

Note: Do *not* allow credit for one arrow with no label.

59 [1] Allow 1 credit for a scientifically correct answer that addresses accurate measurement of distance or time.

Correct answers include:
—The starting position is needed to determine the total distance traveled.
—The starting position is needed to see how much time it takes.
—so you can measure how far it went

Incorrect answers include:
—to have the same release point

60 [1] Allow 1 credit for a scientifically correct answer that indicates the balloon will not move as far or as fast.

Correct answers include:
—The balloon would not move as far.
—The balloon would not move as fast.
—The motion of the balloon would decrease.

61 [2]

- Allow 1 credit for indicating that the balloon will eventually stop.
- Allow 1 credit for a scientifically correct explanation.

Correct answers include:
—The balloon would stop because the friction with the string becomes greater than the outward force exerted by the air.
—The balloon stops because of the forces acting on it.
—The balloon stops because the forces become balanced.
—It will stop because there is no more air left.

62 [2]

- Allow 1 credit for a scientifically correct answer.

Correct answers include:
—The average yearly temperature has been increasing.
—The temperature has been going up.
—The temperature has been getting higher.

- Allow 1 credit for a scientifically correct reason.

Correct answers include:
—global warming
—increased use of fossil fuels
—increase in population
—greenhouse effect
—increasing traffic
—depletion of the ozone layer
—the effect of El Ninõ

63 [1] Allow 1 credit for **56.3** or any answer in the range **56.2 – 56.4**.

64 [1] Allow 1 credit for **1945-1955**.

65 [1] Allow 1 credit for any acceptable scientific hypothesis based on the data provided. The hypothesis must refer to water and plant growth.

Correct answers include:
—If seeds are given the right amount of water, they will grow the fastest.
—The amount of water seeds are given affects how they grow.
—A certain amount of water is needed for proper plant growth.

Note: Do *not* accept responses that simply state the purpose of the experiment.

66 [2]
- Allow 1 credit for a correct variable.
- Allow 1 credit for a correct reason.

Correct answers include:

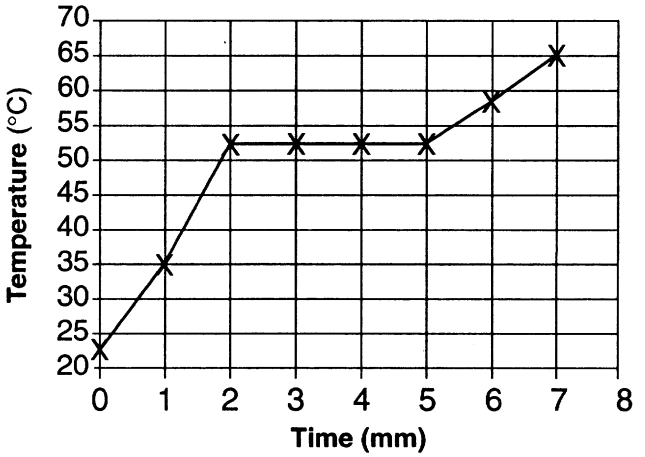
Variable to be Held Constant	Explanation
Amount of soil:	—The seeds might take longer to sprout if planted deeper. —There will be more nutrients available if there is more soil.
Type of soil:	—Nutrients can vary with soil type. —Absorption of water can vary with soil type.
Amount of light:	Light can affect growth rate.
Depth of seed:	plant could appear faster if closer to surface
Type of water:	more nutrients in tap water than in distilled water
Type of container:	A larger surface area can allow more light/heat to enter.
Number of seeds:	Competition for nutrients will be different if the number is different.
Type of seeds:	germination rate could vary
Age of seeds:	germination rate could vary
Variety of variables:	because you can only change one variable in a good experiment so the results will be reliable/valid

67 [3] *a* Allow 2 credits if all points are plotted correctly, ±2 °.
Allow 1 credit if five to seven points are plotted correctly, ±2 °.
Allow 0 credits if fewer than five points are plotted correctly, ±2 °.

b Allow 1 credit if the student draws a line that correctly connects the Xs plotted on the student's graph.

Note: If there is an accurate line drawn with no visible points plotted, allow 2 credits

Example of a 3-credit graph:



Note: If the student draws a bar graph, allow 1 or 2 credits based on the correct value at the top of each bar.

68 [1] Allow 1 credit for **53°C**.

69 [1] Allow 1 credit for **absorbed**.

70 [1] Allow 1 credit for a scientifically accurate title.

Correct answers include:
—Change in Temperature of a Substance Over Time
—Temperature versus Time
—Time vs. Temperature
—Change in Temperature as a Substance is Heated
—Changing a Solid to a Liquid
—Phase Change
—Time Needed to go From a Solid to a Liquid
—Heating Curve of a Substance
—Solid to Liquid
—Time and Temperature
—Heating of a Substance

Appendix A

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

Performance Levels Chart

Conversion Table for Determining a Student's Final Test Score

Note: Use for June 2002 test only.

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 table is presented on the four pages following the performance levels chart. Be sure to use the correct portion of the table. To determine the student's final test score, locate the student's raw score for the performance test across the top of the table and the student's raw score for the written test down the left side of the table. The point where those two scores intersect is the student's final test score. For example, a student receiving a performance test raw score of 32 and a written test raw score of 66 would receive a final test score of 80.

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.

Performance Test Raw Score

Written Test Raw Score	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
86	100	99	99	99	98	98	98	97	97	97	97	97	96	96	96	96	96	96	96	96	95	95	95	95	95
85	99	99	98	98	98	97	97	97	96	96	96	96	96	95	95	95	95	95	95	95	95	94	94	94	94
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81	96	95	95	94	94	94	94	93	93	93	93	92	92	92	92	92	92	91	91	91	91	91	91	91	91
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45	69	68	68	67	67	67	66	66	66	66	65	65	65	65	65	65	64	64	64	64	64	64	64	64	64
44	68	67	67	66	66	66	65	65	65	65	64	64	64	64	64	64	64	63	63	63	63	63	63	63	63

Performance Test Raw Score

Written Test Raw Score	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26
43	67	66	66	66	65	65	65	64	64	64	64	63	63	63	63	63	63	63	62	62	62	62	62	62	62
42	66	66	65	65	64	64	64	63	63	63	63	63	62	62	62	62	62	62	62	62	61	61	61	61	61
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22	46	45	45	44	44	44	43	43	43	43	42	42	42	42	42	42	41	41	41	41	41	41	41	41	41
21	45	44	44	43	43	43	43	42	42	42	42	41	41	41	41	41	41	40	40	40	40	40	40	40	40
20	43	43	42	42	41	41	41	41	40	40	40	40	39	39	39	39	39	39	39	39	38	38	38	38	38
19	42	42	41	41	41	40	40	40	39	39	39	39	39	38	38	38	38	38	38	38	38	38	37	37	37
18	41	40	40	39	39	39	38	38	38	37	37	37	37	37	37	36	36	36	36	36	36	36	36	36	35
17	40	39	39	38	38	38	37	37	37	37	36	36	36	36	36	36	35	35	35	35	35	35	35	35	35
16	39	38	38	38	37	37	37	36	36	36	36	35	35	35	35	35	35	35	34	34	34	34	34	34	34
15	37	37	36	36	35	35	35	35	34	34	34	34	34	33	33	33	33	33	33	33	32	32	32	32	32
14	35	35	35	34	34	33	33	33	33	32	32	32	32	32	32	31	31	31	31	31	31	31	31	30	30
13	35	34	34	33	33	33	32	32	32	32	31	31	31	31	31	31	30	30	30	30	30	30	30	30	30
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11	32	32	31	31	30	30	30	29	29	29	29	29	28	28	28	28	28	28	28	28	27	27	27	27	27
10	30	30	29	29	29	28	28	28	28	27	27	27	27	27	26	26	26	26	26	26	26	26	26	25	25
9	29	28	28	27	27	27	26	26	26	26	25	25	25	25	25	25	24	24	24	24	24	24	24	24	24
8	28	27	27	26	26	26	26	25	25	25	25	24	24	24	24	24	24	23	23	23	23	23	23	23	23
7	26	26	25	25	24	24	24	24	23	23	23	23	22	22	22	22	22	22	22	22	21	21	21	21	21
6	24	24	23	23	23	22	22	22	22	21	21	21	21	21	20	20	20	20	20	20	20	20	20	19	19
5	23	22	22	21	21	21	20	20	20	20	19	19	19	19	19	19	18	18	18	18	18	18	18	18	18
4	22	21	21	21	20	20	20	19	19	19	19	18	18	18	18	18	18	18	17	17	17	17	17	17	17
3	20	20	19	19	18	18	18	18	17	17	17	17	17	16	16	16	16	16	16	16	16	15	15	15	15
2	18	18	18	17	17	16	16	16	16	15	15	15	15	15	15	14	14	14	14	14	14	14	14	13	13
1	17	16	16	15	15	15	14	14	14	14	13	13	13	13	13	13	13	12	12	12	12	12	12	12	12
0	15	15	14	14	13	13	13	12	12	12	12	12	11	11	11	11	11	11	11	11	10	10	10	10	10

Performance Test Raw Score

Written Test Raw Score	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
86	95	95	95	94	94	94	94	94	94	93	93	93	92	92	92	91	91	90	90	89	89	88	87	87	86	85
85	94	94	94	94	93	93	93	93	93	92	92	92	92	91	91	90	90	89	89	88	88	87	86	86	85	84
84	93	93	93	93	93	92	92	92	92	92	91	91	91	90	90	90	89	89	88	88	87	86	86	85	84	83
83	92	92	92	92	92	92	91	91	91	91	90	90	90	89	89	89	88	88	87	87	86	85	85	84	83	82
82	91	91	91	91	91	91	91	90	90	90	90	89	89	89	88	88	87	87	86	86	85	85	84	83	82	82
81	91	91	90	90	90	90	90	90	89	89	89	88	88	88	87	87	87	86	86	85	84	84	83	82	82	81
80	90	90	90	89	89	89	89	89	88	88	88	88	87	87	87	86	86	85	85	84	84	83	82	82	81	80
79	90	90	90	89	89	89	89	89	88	88	88	88	87	87	87	86	86	85	85	84	84	83	82	82	81	80
78	89	89	89	89	88	88	88	88	88	87	87	87	86	86	86	85	85	84	84	83	83	82	81	81	80	79
77	88	88	88	88	88	87	87	87	87	86	86	86	86	85	85	84	84	84	83	82	82	81	81	80	79	78
76	87	87	87	87	87	86	86	86	86	86	85	85	85	84	84	84	83	83	82	82	81	80	80	79	78	77
75	86	86	86	86	86	86	85	85	85	85	85	84	84	84	83	83	82	82	81	81	80	80	79	78	77	77
74	86	85	85	85	85	85	85	84	84	84	84	83	83	83	82	82	81	81	80	80	79	79	78	77	76	76
73	85	85	84	84	84	84	84	84	83	83	83	83	82	82	81	81	81	80	80	79	78	78	77	76	76	75
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69	82	82	82	82	82	81	81	81	81	81	80	80	80	79	79	79	78	78	77	77	76	75	75	74	73	72
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65	79	79	78	78	78	78	78	78	77	77	77	77	76	76	76	75	75	74	74	73	73	72	71	70	70	69
64	78	78	78	77	77	77	77	77	77	76	76	76	75	75	75	74	74	73	73	72	72	71	70	70	69	68
63	78	78	78	77	77	77	77	77	77	76	76	76	75	75	75	74	74	73	73	72	72	71	70	70	69	68
62	77	77	77	77	76	76	76	76	76	75	75	75	75	74	74	73	73	72	72	71	71	70	69	69	68	67
61	76	76	76	76	76	75	75	75	75	75	74	74	74	73	73	73	72	72	71	71	70	69	69	68	67	66
60	75	75	75	75	75	75	74	74	74	74	73	73	73	72	72	72	71	71	70	70	69	68	68	67	66	65
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58	74	74	73	73	73	73	73	73	72	72	72	71	71	71	70	70	70	69	69	68	67	67	66	65	65	64
57	73	73	73	72	72	72	72	72	71	71	71	71	70	70	70	69	69	68	68	67	67	66	65	65	64	63
56	72	72	72	72	71	71	71	71	71	70	70	70	69	69	69	68	68	67	67	66	66	65	64	64	63	62
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54	70	70	70	70	70	69	69	69	69	69	68	68	68	67	67	67	66	66	65	65	64	63	63	62	61	60
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49	67	67	67	66	66	66	66	66	65	65	65	65	64	64	64	63	63	62	62	61	61	60	59	59	58	57
48	66	66	66	66	65	65	65	65	65	64	64	64	63	63	63	62	62	61	61	60	60	59	58	58	57	56
47	65	65	65	65	65	64	64	64	64	64	63	63	63	62	62	62	61	61	60	60	59	58	58	57	56	55
46	64	64	64	64	64	64	63	63	63	63	62	62	62	61	61	61	60	60	59	59	58	57	57	56	55	54
45	63	63	63	63	63	63	63	62	62	62	62	61	61	61	60	60	59	59	58	58	57	57	56	55	54	54
44	63	62	62	62	62	62	62	61	61	61	61	60	60	60	59	59	59	58	58	57	56	56	55	54	54	53

Performance Test Raw Score

Written Test Raw Score	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
43	62	62	61	61	61	61	61	61	60	60	60	60	59	59	59	58	58	57	57	56	56	55	54	53	53	52
42	61	61	61	60	60	60	60	60	60	59	59	59	58	58	58	57	57	56	56	55	55	54	53	53	52	51
41	60	60	60	60	59	59	59	59	59	58	58	58	58	57	57	56	56	55	55	54	54	53	52	52	51	50
40	59	59	59	59	59	58	58	58	58	58	57	57	57	56	56	56	55	55	54	54	53	52	52	51	50	49
39	58	58	58	58	58	58	57	57	57	57	56	56	56	55	55	55	54	54	53	53	52	51	51	50	49	48
38	57	57	57	57	57	57	57	56	56	56	56	55	55	55	54	54	53	53	52	52	51	51	50	49	48	48
37	57	57	56	56	56	56	56	56	55	55	55	54	54	54	53	53	53	52	52	51	50	50	49	48	48	47
36	55	55	55	55	54	54	54	54	54	53	53	53	52	52	52	51	51	50	50	49	49	48	47	47	46	45
35	54	54	54	54	54	53	53	53	53	52	52	52	52	51	51	50	50	50	49	48	48	47	47	46	45	44
34	53	53	53	53	53	52	52	52	52	52	51	51	51	50	50	50	49	49	48	48	47	46	46	45	44	43
33	52	52	52	52	52	52	51	51	51	51	51	50	50	50	49	49	48	48	47	47	46	46	45	44	43	43
32	52	51	51	51	51	51	51	50	50	50	50	49	49	49	48	48	47	47	46	46	45	45	44	43	42	42
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29	48	48	48	48	48	47	47	47	47	47	46	46	46	45	45	45	44	44	43	43	42	41	41	40	39	38
28	47	47	47	47	47	47	46	46	46	46	45	45	45	44	44	44	43	43	42	42	41	40	40	39	38	37
27	46	46	46	46	46	46	46	45	45	45	45	44	44	44	43	43	42	42	41	41	40	40	39	38	37	37
26	45	45	44	44	44	44	44	44	43	43	43	43	42	42	42	41	41	40	40	39	39	38	37	36	36	35
25	44	44	44	43	43	43	43	43	43	42	42	42	41	41	41	40	40	39	39	38	38	37	36	36	35	34
24	43	43	43	43	42	42	42	42	42	41	41	41	41	40	40	39	39	38	38	37	37	36	35	35	34	33
23	41	41	41	41	41	41	40	40	40	40	39	39	39	38	38	38	37	37	36	36	35	34	34	33	32	31
22	40	40	40	40	40	40	40	39	39	39	39	38	38	38	37	37	36	36	35	35	34	34	33	32	31	31
21	40	40	39	39	39	39	39	39	38	38	38	37	37	37	36	36	36	35	35	34	33	33	32	31	31	30
20	38	38	38	38	37	37	37	37	37	36	36	36	35	35	35	34	34	33	33	32	32	31	30	30	29	28
19	37	37	37	37	37	36	36	36	36	35	35	35	35	34	34	33	33	33	32	31	31	30	30	29	28	27
18	35	35	35	35	35	35	34	34	34	34	34	33	33	33	32	32	31	31	30	30	29	29	28	27	26	26
17	35	34	34	34	34	34	34	33	33	33	33	32	32	32	31	31	30	30	29	29	28	28	27	26	25	25
16	34	34	33	33	33	33	33	33	32	32	32	32	31	31	30	30	30	29	29	28	27	27	26	25	25	24
15	32	32	32	32	31	31	31	31	31	30	30	30	29	29	29	28	28	27	27	26	26	25	24	24	23	22
14	30	30	30	30	30	30	29	29	29	29	28	28	28	27	27	27	26	26	25	25	24	23	23	22	21	20
13	29	29	29	29	29	29	29	28	28	28	28	27	27	27	26	26	25	25	24	24	23	23	22	21	20	20
12	28	28	27	27	27	27	27	27	26	26	26	26	25	25	25	24	24	23	23	22	22	21	20	19	19	18
11	27	27	27	26	26	26	26	26	26	25	25	25	24	24	24	23	23	22	22	21	21	20	19	19	18	17
10	25	25	25	25	25	24	24	24	24	24	23	23	23	22	22	22	21	21	20	20	19	18	18	17	16	15
9	23	23	23	23	23	23	23	22	22	22	22	21	21	21	20	20	19	19	18	18	17	17	16	15	14	14
8	23	23	22	22	22	22	22	22	21	21	21	20	20	20	19	19	19	18	18	17	16	16	15	14	14	13
7	21	21	21	21	20	20	20	20	20	19	19	19	18	18	18	17	17	16	16	15	15	14	13	13	12	11
6	19	19	19	19	19	18	18	18	18	18	17	17	17	16	16	16	15	15	14	14	13	12	12	11	10	9
5	18	17	17	17	17	17	17	16	16	16	16	15	15	15	14	14	13	13	12	12	11	11	10	9	8	8
4	17	17	16	16	16	16	16	16	15	15	15	15	14	14	13	13	13	12	12	11	10	10	9	8	8	7
3	15	15	15	15	14	14	14	14	14	13	13	13	12	12	12	11	11	10	10	9	9	8	7	7	6	5
2	13	13	13	13	13	13	12	12	12	12	11	11	11	10	10	10	9	9	8	8	7	6	6	5	4	3
1	12	11	11	11	11	11	11	10	10	10	10	9	9	9	8	8	8	7	7	6	5	5	4	3	3	2
0	10	10	10	9	9	9	9	9	9	8	8	8	7	7	7	6	6	5	5	4	4	3	2	2	1	0

Appendix B

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	
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	65, 66
	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		67, 70
	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	35, 45, 62, 63, 64, 68
	3.3 Modify their personal understanding of phenomena based on evaluation of their hypothesis.			5	
Standard 1 Mathematical Analysis	1		3 8		46, 55, 56, 60
	2		4, 5, 6, 7		
	3				

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	
Standard 1 Engineering Design	1.1- 1.5				
Standard 2 Information Systems	1.1 - 1.5				
	2.1 - 2.3				
	3.1 - 3.3				
Standard 4 Physical Setting	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 tip 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
Standard 4 Living Environment	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, 28, 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
Standard 6- Common Themes					

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	
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	
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		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				
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				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				
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				
	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

Item #	MST Learning Standard	Area within Standard 4 (PS or LE)	Major Understanding	Other Standards or Understandings	Process Skills Based on Standard 4 (p 10-11)
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		

Grade 8 Intermediate-Level Science Test – June 2002
Reference to Core Curriculum for Individual Test Questions

Item #	MST Learning Standard	Area within Standard 4 (PS or LE)	Major Understanding	Other Standards or Understandings	Process Skills Based on Standard 4 (p 10-11)
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	