

FOR TEACHERS ONLY

The University of the State of New York
REGENTS HIGH SCHOOL EXAMINATION

PS-ES PHYSICAL SETTING/EARTH SCIENCE

Thursday, June 19, 2003 — 1:15 to 4:15 p.m., only

SCORING KEY AND RATING GUIDE

Directions to the Teacher:

Refer to the directions on page 3 before rating student papers.

Part A and Part B-1
Allow 1 credit for each correct response.

Part A			Part B-1	
1 2	13 3	25 2	36 1	44 3
2 2	14 2	26 2	37 3	45 3
3 4	15 3	27 3	38 4	46 1
4 3	16 4	28 3	39 2	47 2
5 1	17 1	29 1	40 3	48 4
6 2	18 3	30 2	41 1	49 2
7 2	19 1	31 4	42 3	50 2
8 4	20 1	32 4	43 4	
9 2	21 2	33 1		
10 1	22 3	34 3		
11 4	23 4	35 1		
12 3	24 1			

Directions to the Teacher

Follow the procedures below for scoring student answer papers for the Physical Setting/Earth Science examination. Additional information about scoring is provided in the publication *Information Booklet for Administering and Scoring Regents Examinations in the Sciences*.

Use only *red* ink or *red* pencil in rating Regents papers. Do *not* correct the student's work by making insertions or changes of any kind.

On the detachable answer sheet for Part A and Part B–1, indicate by means of a checkmark each incorrect or omitted answer. In the box provided at the end of each part, record the number of questions the student answered correctly for that part.

At least two science teachers must participate in the scoring of each student's responses to the Part B–2 and Part C open-ended questions. Each of these teachers should be responsible for scoring a selected number of the open-ended questions on each answer paper. No one teacher is to score all the open-ended questions on a student's answer paper.

Students' responses must be scored strictly according to the Scoring Key and Rating Guide. For open-ended questions, credit may be allowed for responses other than those given in the rating guide if the response is a scientifically accurate answer to the question and demonstrates adequate knowledge as indicated by the examples in the rating guide. In the student's answer booklet, record the number of credits earned for each answer in the box printed to the right of the answer lines or spaces for that question.

Fractional credit is *not* allowed. Only whole-number credit may be given to a response. Units need not be given when the wording of the questions allows such omissions.

Raters should enter the scores earned for Part A, Part B–1, Part B–2, and Part C on the appropriate lines in the box printed on the answer booklet and then should add these four scores and enter the total in the box labeled "Total Written Test Score." The student's score for the Earth Science Performance Test should be entered in the space provided. Then, the student's raw scores on the performance test and written test should be converted to a scaled score by using the conversion chart printed at the end of this Scoring Key and Rating Guide. The student's scaled score should be entered in the labeled box on the student's answer booklet. The scaled score is the student's final examination score.

All student answer papers that receive a scaled score of 60 through 64 **must** be scored a second time. For the second scoring, a different committee of teachers may score the student's paper or the original committee may score the paper, except that no teacher may score the same open-ended questions that he/she scored in the first rating of the paper. The school principal is responsible for assuring that the student's final examination score is based on a fair, accurate, and reliable scoring of the student's answer paper.

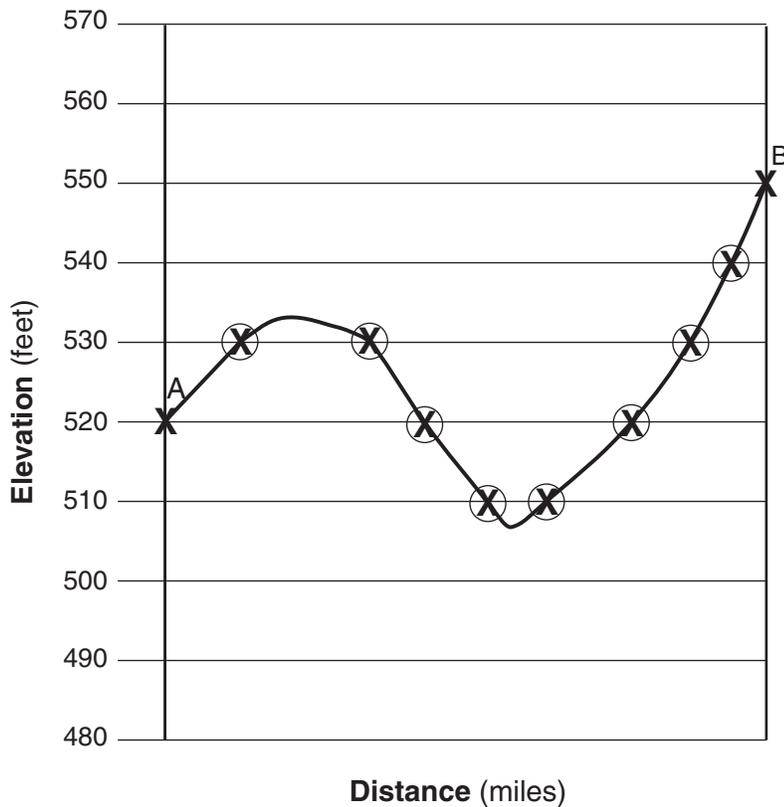
Because scaled scores corresponding to raw scores in the conversion chart may change from one examination to another, it is crucial that for each administration, the conversion chart provided in the scoring key for that administration be used to determine the student's final score. The chart in this scoring key is usable only for this administration of the examination.

Part B–2

Allow a total of 15 credits for this part. The student must answer all questions in this part.

- 51** [1] Allow 1 credit for **south southwest** or **SSW** or **south** or **S** or **southwest** or **SW**.
- 52** [2] Allow 1 credit for **6** or **6.0** (± 0.3).
and
Allow 1 credit for **feet/mile** or **ft/mi**.
- 53** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
Contour lines are closer together on the southern section of the hill.
The south side has the greatest change in elevation per mile.

54 [3] The correct profile is shown below.



- a** Allow 2 credits if seven or eight student-plotted **X**s are plotted correctly.
 Allow only 1 credit if only four to six student-plotted **X**s are plotted correctly.

Note: The center of each student-plotted **X** must fall within the **X** on the scoring grid.
 Allow credit even if the student uses a symbol other than **X**.

- b** Allow 1 credit if the student-plotted **X**s are properly connected with a smooth, curved line. The Aurora hilltop must be greater than 530 but less than 535. The low point of the profile must be less than 510 feet but greater than 500 feet.

55 [2] **a** Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

The stream velocity decreases.

The still water of the lake slows the stream current.

- b** Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

silt

clay

- 56 [2] An example of correctly drawn isotherms is shown below.



Allow 2 credits for correctly drawing all three required isotherms. If the student draws more than the three required isotherms, *all* must be correct to receive 2 credits.

Allow only 1 credit for correctly drawing only two required isotherms.

or

Allow only 1 credit for correctly drawing all three required isotherms, but any additional isotherms drawn are incorrect.

Note: Allow credit even if the isotherms extend to the border of the map.

- 57 [1] Allow 1 credit for any temperature value between the student-drawn isotherms adjacent to point A. Allow credit for the isotherm value only if the isotherm passes through point A.

- 58 [1] Allow 1 credit for **Saturn**.

- 59 [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

As the distance between them decreases, the orbital velocity increases.

It speeds up.

increases

- 60 [1] Allow 1 credit for any answer from 224.7 days to less than 365.26 days.

Part C

Allow a total of 20 credits for this part. The student must answer all questions in this part.

- 61** [2] Allow 2 credits, 1 credit for *each* of two correct responses. Acceptable responses include, but are not limited to, these examples:
- cementation
 - compaction
 - deposition
 - burial
 - pressure caused by overlying sediments
- 62** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- acid test
 - Limestone bubbles when acid is placed on it.
- 63** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- Tectonic plates are shifting in this region.
 - The ancient faults detected under Portland may still be active.
 - Soft sediment causes minor earthquakes to become major earthquakes.
 - Portland is located near a plate boundary.
- Note:** Do *not* allow credit for hot spot.
- 64** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:
- Soft sediment can amplify earthquake ground movement.
 - Buildings can be damaged by liquefaction within those sediments during the earthquakes.
 - Structures can collapse, tilt, or sink during an earthquake.

- 65** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Reinforce buildings to provide greater stability.

Make buildings more flexible.

Redesign or reconstruct highway overpasses.

Rewrite or enforce strict building codes.

Restrict building in surface areas identified as more susceptible to earthquake damage.

- 66** [1] Allow 1 credit for **transform plate boundary** or **transform fault** or **transform**.

Note: Do *not* allow credit for faulting, fault, or hot spot.

- 67** [1] Allow 1 credit for **0.333** (± 0.026) or **.333** (± 0.026).

Note: Do *not* allow credit if units are included with the numerical answer.

- 68** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

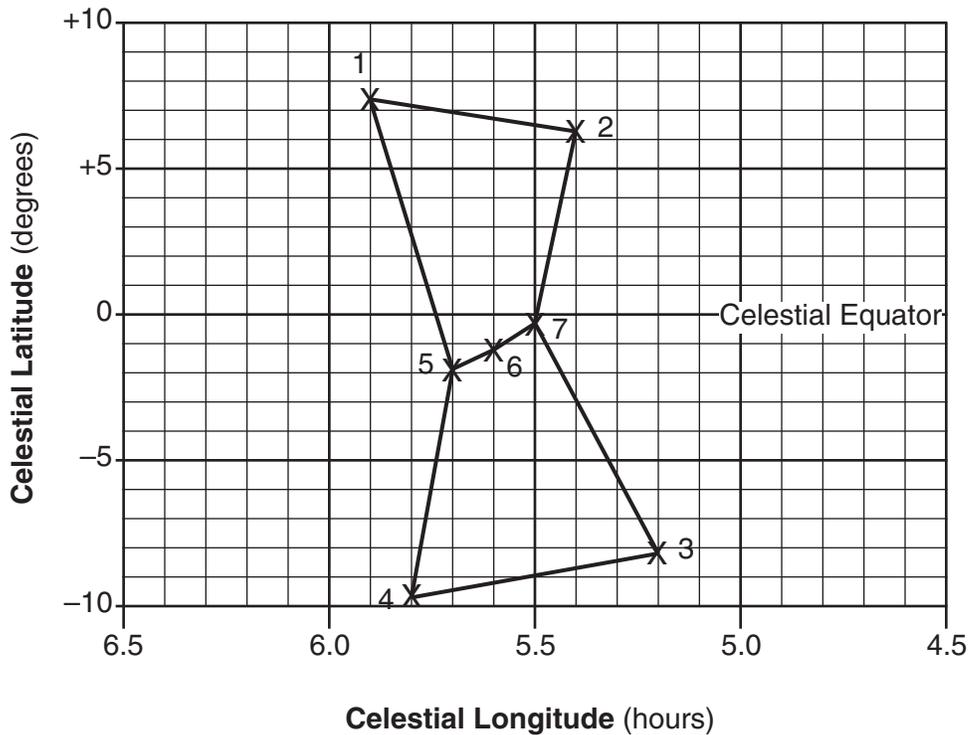
The given ellipse has a higher eccentricity than the orbit of Mars.

The orbit of Mars is more circular than the given ellipse.

or

Allow 1 credit for a correct response based on the student-determined eccentricity.

69 [3] The correctly plotted graph is shown below.



- a** Allow 2 credits if all six student-plotted **X**s are plotted and numbered correctly.
 Allow only 1 credit if only four or five student-plotted **X**s are plotted and numbered correctly.

or

Allow only 1 credit if all six student-plotted **X**s are plotted correctly but not numbered.

Note: Each **X** must be on the correct vertical line of celestial longitude and be within ± 0.5 of the correct celestial latitude.

Allow credit even if the student uses a symbol other than **X**.

- b** Allow 1 credit for connecting the **X**s in the order specified. Allow this credit even if the **X**s are located incorrectly.

or

Allow 1 credit if the student has drawn the apparent shape of Orion even if the **X**s are not numbered.

70 [1] Allow 1 credit for a correct response. Both temperature and luminosity must be included to receive credit. Acceptable responses include, but are not limited to, this example:

Betelgeuse is cooler and less luminous than *Rigel*.

71 [1] Allow 1 credit for **Milky Way** or **Milky Way Galaxy**.

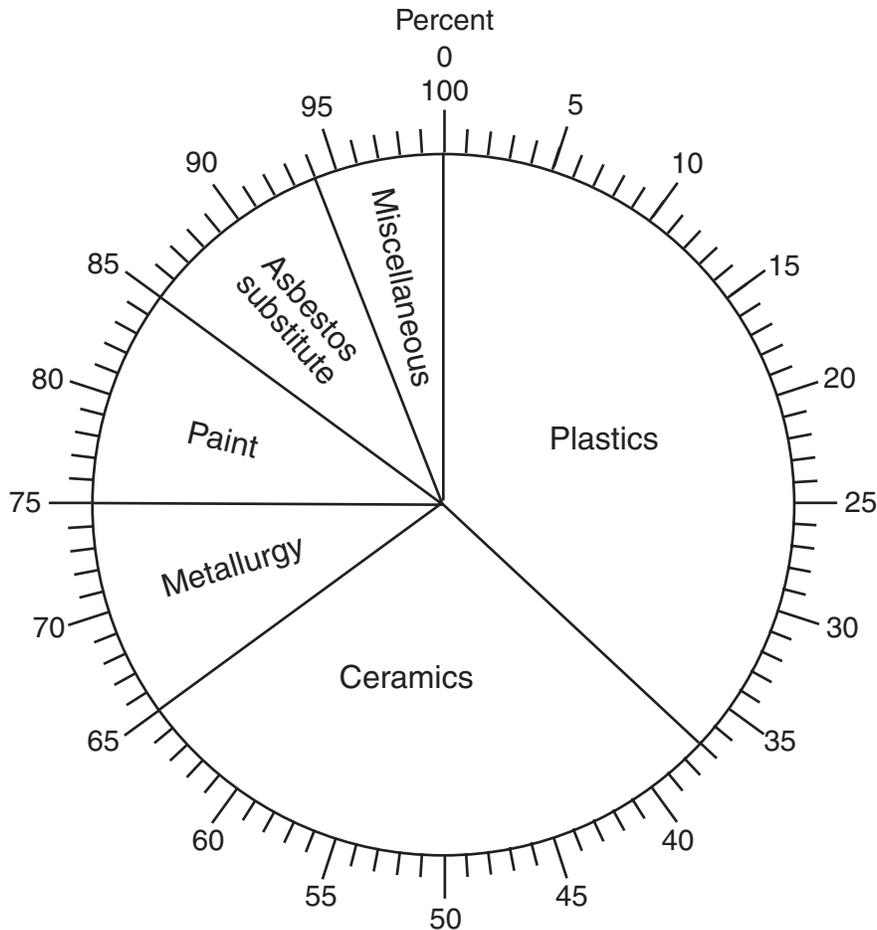
- 72 [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Earth revolves in its orbit.

Orion is only visible during the daytime in July.

The Sun is between Earth and Orion in July.

- 73 [2] An example of a correctly drawn graph is shown below.



Allow 2 credits if all four student-graphed sections are drawn and labeled correctly. Sections may be graphed in any order.

Allow only 1 credit if only two or three student-graphed sections are drawn and labeled correctly.

or

Allow only 1 credit if all four student-graphed sections are drawn correctly but are not labeled.

- 74 [2] **a** Allow 1 credit for **calcite** and **quartz**.
b Allow 1 credit for **heat** and **pressure**.

- 75** [1] Allow 1 credit for a correct response. Acceptable responses include, but are not limited to, these examples:

Proterozoic

Middle Proterozoic

Late Proterozoic

Precambrian

about 1000 million years

between 1600 and 1000 million years ago

Regents Examination in Physical Setting/Earth Science — June 2003

Chart for Determining the Final Examination Score

(Use for June 2003 examination only.)

To determine the student's final examination score, locate the student's total performance test score across the top of the chart and the student's total written test score down the side of the chart. The point where those two scores intersect is the student's final examination score. For example, a student receiving a total performance test score of 14 and a total written test score of 68 would receive a final examination score of 85.

Total Performance Test Score

		23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Total Written Test Score	85	100	99	98	97	97	97	97	96	96	95	95	94	94	93	92	92	91	90	89	89	88	87	86	85
	84	99	98	97	97	96	96	96	95	95	94	94	93	93	92	92	91	90	89	89	88	87	86	85	84
	83	99	98	97	97	96	96	96	95	95	94	94	93	93	92	92	91	90	89	89	88	87	86	85	84
	82	98	97	96	96	96	95	95	94	94	94	93	93	92	91	91	90	89	89	88	87	86	85	84	83
	81	97	96	95	95	95	94	94	94	93	93	92	92	91	90	90	89	88	88	87	86	85	84	83	82
	80	97	96	95	95	95	94	94	94	93	93	92	92	91	90	90	89	88	88	87	86	85	84	83	82
	79	97	96	94	94	94	93	93	93	92	92	91	91	90	90	89	88	88	87	86	85	84	83	83	82
	78	96	95	94	93	93	93	92	92	91	91	91	90	89	89	88	87	87	86	85	84	84	83	82	81
	77	96	95	94	93	93	93	92	92	91	91	91	90	89	89	88	87	87	86	85	84	84	83	82	81
	76	95	94	93	92	92	92	91	91	91	90	90	89	89	88	87	87	86	85	84	84	83	82	81	80
	75	94	93	92	92	91	91	91	90	90	89	89	88	88	87	86	86	85	84	84	83	83	82	81	80
	74	93	92	91	91	90	90	90	89	89	88	88	87	87	86	86	85	84	83	83	82	81	80	79	78
	73	93	92	91	91	90	90	90	89	89	88	88	87	87	86	86	85	84	83	83	82	81	80	79	78
	72	92	91	90	90	90	89	89	88	88	88	87	87	86	85	85	84	83	83	82	81	80	79	78	77
	71	92	90	89	89	89	88	88	88	87	87	86	86	85	85	84	83	83	82	81	80	79	78	77	77
	70	91	90	88	88	88	88	87	87	86	86	85	85	84	84	83	82	82	81	80	79	78	78	77	76
	69	91	90	88	88	88	88	87	87	86	86	85	85	84	84	83	82	82	81	80	79	78	78	77	76
	68	90	89	88	87	87	87	86	86	86	85	85	84	83	83	82	82	81	80	79	78	78	77	76	75
	67	89	88	87	86	86	86	85	85	85	84	84	83	83	82	81	81	80	79	78	78	77	76	75	74
	66	88	87	86	86	85	85	85	84	84	83	83	82	82	81	80	80	79	78	78	77	76	75	74	73
	65	87	86	85	85	84	84	83	83	83	82	82	81	81	80	80	79	78	78	77	76	75	74	73	72
	64	86	85	84	84	84	83	83	83	82	82	81	81	80	79	79	78	77	77	76	75	74	73	72	71
	63	86	85	83	83	83	82	82	82	81	81	80	80	79	79	78	77	77	76	75	74	73	72	72	71
	62	85	84	82	82	82	82	81	81	80	80	79	79	78	78	77	76	76	75	74	73	72	72	71	70
	61	85	84	82	82	82	82	81	81	80	80	79	79	78	78	77	76	76	75	74	73	72	72	71	70
	60	84	83	82	81	81	81	80	80	80	79	79	78	77	77	76	76	75	74	73	72	72	71	70	69
	59	83	82	81	80	80	80	80	79	79	78	78	77	77	76	75	75	74	73	72	72	71	70	69	68
	58	82	81	80	80	79	79	79	78	78	77	77	76	76	75	75	74	73	72	72	71	70	69	68	67
	57	81	80	79	79	79	78	78	77	77	77	76	76	75	74	74	73	72	72	71	70	69	68	67	66
	56	80	79	78	78	78	77	77	77	76	76	75	75	74	73	73	72	71	71	70	69	68	67	66	65
	55	80	79	77	77	77	76	76	76	75	75	74	74	73	73	72	71	71	70	69	68	67	66	66	65
	54	79	78	77	76	76	76	75	75	74	74	74	73	72	72	71	70	70	69	68	67	67	66	65	64
	53	78	77	76	75	75	75	74	74	74	73	73	72	72	71	70	70	69	68	67	67	66	65	64	63
	52	77	76	75	75	74	74	74	73	73	72	72	71	71	70	69	69	68	67	67	66	65	64	63	62
	51	76	75	74	74	73	73	73	72	72	71	71	70	70	69	69	68	67	66	66	65	64	63	62	61
	50	75	74	73	73	73	72	72	71	71	71	70	70	69	68	68	67	66	66	65	64	63	62	61	60
	49	74	73	71	71	71	71	70	70	69	69	68	68	67	67	66	65	65	64	63	62	61	61	60	59
	48	73	72	71	70	70	70	69	69	69	68	68	67	66	66	65	65	64	63	62	61	61	60	59	58
	47	72	71	70	69	69	69	68	68	68	67	67	66	66	65	64	64	63	62	61	61	60	59	58	57
	46	71	70	69	69	68	68	68	67	67	66	66	65	65	64	63	63	62	61	61	60	59	58	57	56
	45	70	69	68	68	67	67	67	66	66	65	65	64	64	63	63	62	61	61	60	59	58	57	56	55
	44	69	68	67	67	67	66	66	66	65	65	64	64	63	62	62	61	60	60	59	58	57	56	55	54
	43	69	68	66	66	66	65	65	65	64	64	63	63	62	62	61	60	60	59	58	57	56	55	55	54

Regents Examination in Physical Setting/Earth Science — June 2003
Chart for Determining the Final Examination Score
(Use for June 2003 examination only.)

Total Performance Test Score

		23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
Total Written Test Score	42	68	67	65	65	65	65	64	64	63	63	62	62	61	61	60	59	59	58	57	56	55	55	54	53	
	41	66	65	64	63	63	63	63	62	62	61	61	60	60	59	58	58	57	56	55	55	54	53	52	51	
	40	65	64	63	63	62	62	62	61	61	60	60	59	59	58	58	57	56	55	55	54	53	52	51	50	
	39	64	63	62	62	62	61	61	60	60	60	59	59	58	57	57	56	55	55	54	53	52	51	50	49	
	38	63	62	61	61	61	60	60	60	60	59	59	58	58	57	56	56	55	54	54	53	52	51	50	49	48
	37	62	61	60	59	59	59	58	58	57	57	57	56	55	55	54	53	53	52	51	50	50	49	48	47	
	36	61	60	59	58	58	58	57	57	57	56	56	55	55	54	53	53	52	51	50	50	49	48	47	46	
	35	60	59	58	58	57	57	57	56	56	55	55	54	54	53	52	52	51	50	50	49	48	47	46	45	
	34	59	58	57	57	56	56	56	55	55	54	54	53	53	52	52	51	50	49	49	48	47	46	45	44	
	33	58	56	55	55	55	54	54	54	53	53	52	52	51	51	50	49	49	48	47	46	45	44	43	43	
	32	57	56	54	54	54	54	53	53	52	52	51	51	50	50	49	48	48	47	46	45	44	44	43	42	
	31	56	55	54	53	53	53	52	52	52	51	51	50	49	49	48	48	47	46	45	44	44	43	42	41	
	30	54	53	52	52	51	51	51	50	50	49	49	48	48	47	46	46	45	44	44	43	42	41	40	39	
	29	53	52	51	51	50	50	50	49	49	48	48	47	47	46	46	45	44	44	43	42	41	40	39	38	
	28	52	51	50	50	50	49	49	49	48	48	47	47	46	45	45	44	43	43	42	41	40	39	38	37	
	27	51	50	48	48	48	48	47	47	46	46	45	45	44	44	43	42	42	41	40	39	38	38	37	36	
	26	50	49	48	47	47	47	46	46	46	45	45	44	43	43	42	42	41	40	39	38	38	37	36	35	
	25	49	48	47	46	46	46	46	45	45	44	44	43	43	42	41	41	40	39	38	38	37	36	35	34	
	24	47	46	45	45	45	44	44	43	43	43	42	42	41	40	40	39	38	38	37	36	35	34	33	32	
	23	46	45	44	44	44	43	43	43	42	42	41	41	40	39	39	38	37	37	36	35	34	33	32	31	
	22	45	44	43	42	42	42	41	41	40	40	40	39	38	38	37	36	36	35	34	33	33	32	31	30	
	21	44	43	42	41	41	41	40	40	40	39	39	38	38	37	36	36	35	34	33	33	32	31	30	29	
	20	42	41	40	40	39	39	38	38	38	37	37	36	36	35	35	34	33	32	32	31	30	29	28	27	
	19	41	40	39	39	39	38	38	37	37	37	36	36	35	34	34	33	32	31	30	29	29	28	27	26	
18	40	39	37	37	37	37	36	36	35	35	34	34	33	33	32	31	31	30	29	28	27	27	26	25		
17	39	38	37	36	36	36	35	35	35	34	34	33	32	32	31	31	30	29	28	27	27	26	25	24		
16	37	36	35	35	34	34	34	33	33	32	32	31	31	30	29	29	28	27	27	26	25	24	23	22		
15	36	35	34	34	33	33	33	32	32	31	31	30	30	29	29	28	27	27	26	25	24	23	22	21		
14	35	34	32	32	32	31	31	31	30	30	29	29	28	28	27	26	26	25	24	23	22	21	21	20		
13	34	33	31	31	31	31	30	30	29	29	28	28	27	27	26	25	25	24	23	22	21	21	20	19		
12	32	31	30	29	29	29	28	28	27	27	26	26	25	24	24	23	22	21	21	20	19	18	17	17		
11	30	29	28	28	28	27	26	26	26	25	25	24	23	23	22	21	20	19	18	17	16	15	14	15		
10	29	28	27	27	27	26	26	26	25	25	24	24	23	22	22	21	20	20	19	18	17	16	15	14		
9	28	27	26	25	25	25	24	24	23	23	23	22	21	21	20	19	19	18	17	16	16	15	14	13		
8	27	26	25	24	24	24	23	23	23	22	22	21	21	20	19	19	18	17	16	16	15	14	13	12		
7	25	24	23	23	22	22	22	21	21	20	20	19	19	18	18	17	16	15	15	14	13	12	11	10		
6	24	22	21	21	21	20	20	20	19	19	18	18	17	17	16	15	15	14	13	12	11	10	9	9		
5	23	22	20	20	20	20	19	19	18	18	17	17	16	16	15	14	14	13	12	11	10	10	9	8		
4	21	20	19	18	18	18	17	17	17	16	16	15	15	14	13	13	12	11	10	10	9	8	7	6		
3	19	18	17	17	16	16	16	15	15	14	14	13	13	12	12	11	10	10	9	8	7	6	5	4		
2	18	17	15	15	15	14	14	14	13	13	12	12	11	11	10	9	9	8	7	6	5	4	4	3		
1	17	16	14	14	14	14	13	13	12	12	11	11	10	10	9	8	8	7	6	5	4	4	3	2		
0	15	14	13	12	12	12	12	11	11	10	10	9	9	8	7	7	6	5	4	4	3	2	1	0		

Map to Core Curriculum

June 2003 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1	21,22	52	67,69,73
Math Key Idea 2	28,34	37,38,53,58,59	68
Math Key Idea 3	7	53,57	
Sci. Inq. Key Idea 1		36,48,50	72
Sci. Inq. Key Idea 2			62
Sci. Inq. Key Idea 3	4,7,10,11,15, 25,29,30,31,32, 33,34	37,38,48,58	61,66,70,74,75
Eng. Des. Key Idea 1			65
Standard 2			
Key Idea 1	19		
Key Idea 2			
Key Idea 3	24		
Standard 6			
Key Idea 1		50,55	
Key Idea 2	5,6,12,13,17, 20,27	39,40,41,42,43, 44,45,46,47,50, 51,52,54,56,57	69,73
Key Idea 3		51,52,53,54,55, 60	68
Key Idea 4		59	
Key Idea 5	14	43,59	63,64,72
Key Idea 6			65
Standard 7			
Key Idea 1			65
Key Idea 2	24		63,64,65
Standard 4			
Performance Indicator 1	1,2,4,5,10,11, 12,15,16,35	39,40,41,42,43, 47,48,49,50,58, 59,60	67,68,69,70,71, 72,75
Performance Indicator 2	3,6,7,8,9,13,14, 17,18,19,20,21, 22,23,24,26,27, 28,31,34	36,37,38,41,44, 45,46,51,52,53, 54,55,56,57	61,63,64,65,66
Performance Indicator 3	25,29,30,32,33	48	61,62,73,74
Reference Tables			
ESRT 2001 edition	4,7,9,10,11,13, 15,22,25,28,29, 30,31,32,33,34	37,38,45,46,48, 52,55,58,60	61,62,66,67,68, 70,74,75