

FOR TEACHERS ONLY

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

PHYSICAL SETTING/EARTH SCIENCE

Wednesday, January 28, 2015 — 1:15 to 4:15 p.m., only

SCORING KEY AND RATING GUIDE

Directions to the Teacher:

Refer to the directions on page 2 before rating student papers.

Updated information regarding the rating of this examination may be posted on the New York State Education Department's web site during the rating period. Check this web site at: <http://www.p12.nysed.gov/assessment/> and select the link "Scoring Information" for any recently posted information regarding this examination. This site should be checked before the rating process for this examination begins and several times throughout the Regents Examination period.

Part A and Part B-1

Allow 1 credit for each correct response.

Part A

1 4	10 3	19 3	28 2
2 1	11 1	20 1	29 3
3 4	12 1	21 4	30 2
4 4	13 4	22 3	31 1
5 3	14 4	23 2	32 2
6 1	15 2	24 2	33 4
7 2	16 3	25 3	34 1
8 2	17 2	26 1	35 3
9 1	18 4	27 4	

Part B-1

36 2	40 4	44 4	48 2
37 1	41 3	45 3	49 1
38 2	42 1	46 1	50 3
39 4	43 2	47 4	

Directions to the Teacher

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

Do not attempt to correct the student's work by making insertions or changes of any kind. If the student's responses for the multiple-choice questions are being hand scored prior to being scanned, the scorer must be careful not to make any marks on the answer sheet except to record the scores in the designated score boxes. Marks elsewhere on the answer sheet will interfere with the accuracy of the scanning.

Allow 1 credit for each correct response.

At least two science teachers must participate in the scoring of the Part B–2 and Part C open-ended questions on a student's paper. 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 more than approximately one-half of the open-ended questions on a student's answer paper. Teachers may not score their own students' answer papers.

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. On the student's separate answer sheet, for each question, record the number of credits earned and the teacher's assigned rater/scorer letter.

Fractional credit is *not* allowed. Only whole-number credit may be given for a response. If the student gives more than one answer to a question, only the first answer should be rated. Units need not be given when the wording of the questions allows such omissions.

For hand scoring, raters should enter the scores earned in the appropriate boxes printed on the separate answer sheet. Next, the rater should add these scores and enter the total in the space provided. The student's score for the Earth Science Performance Test should be recorded in the space provided. Then the student's raw scores on the written test and the performance test should be converted to a scale score by using the conversion chart that will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Wednesday, January 28, 2015. The student's scale score should be entered in the box labeled "Scale Score" on the student's answer sheet. The scale score is the student's final examination score.

Schools are not permitted to rescore any of the open-ended questions on this exam after each question has been rated once, regardless of the final exam score. Schools are required to ensure that the raw scores have been added correctly and that the resulting scale score has been determined accurately.

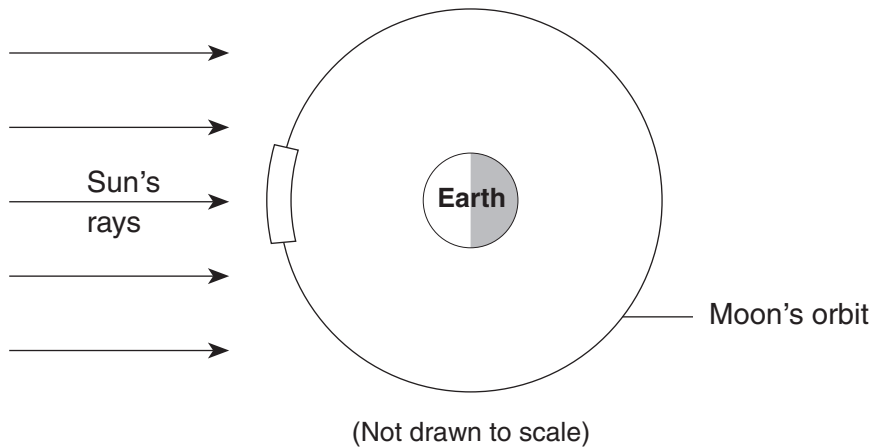
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

Part B-2

Allow a maximum of 15 credits for this part.

- 51 [1] Allow 1 credit if the center of the **X** is drawn within or touches the clear banded region shown below.

Note: Allow credit if a symbol other than an **X** is used.
It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



- 52 [1] Allow 1 credit if *both* numbers 1 and 5, only, are circled.

Note: Allow credit if a student indicates numbers 1 and 5 by using a symbol other than a circle.

- 53 [1] Allow 1 credit for May 21 *or* May 22.

- 54 [1] Allow 1 credit for the sequence shown below:

Letters W , X , Y , V , Z
Oldest $\xrightarrow{\hspace{10em}}$ Youngest

- 55 [1] Allow 1 credit for quartzite *or* hornfels.

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

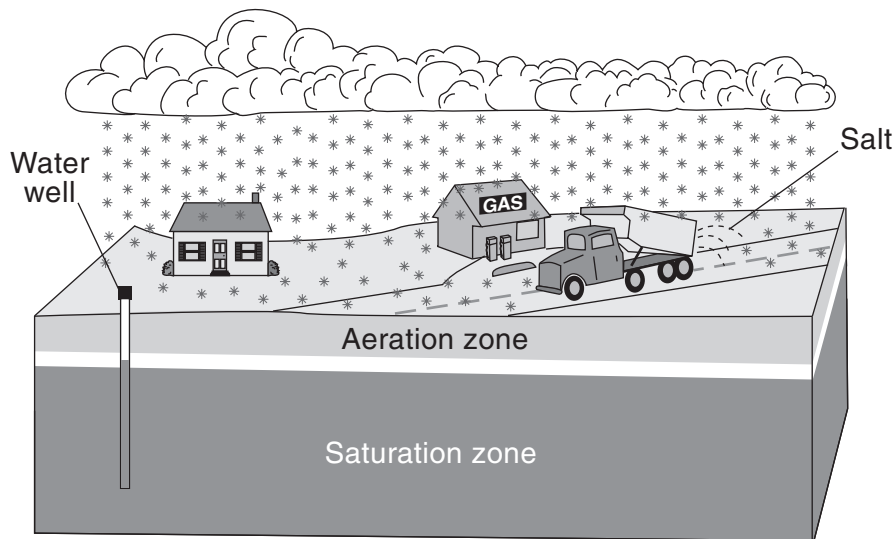
- The grain size of rock layer C is smaller.
- Smaller sediment is deposited in deeper water.
- Shale is made of clay-sized particles/clay.
- Rock layer A contains larger sediments.

- 57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Rock layers A through D are tilted/slanted.
 - The sedimentary rock layers are not horizontal.
 - Sedimentary rocks that formed under water have been uplifted above sea level.
 - An intrusion/extrusion has occurred.
 - An unconformity/erosional surface has been buried by igneous rock.

58 [1] Allow 1 credit for calcite *or* CaCO_3 *or* calcium carbonate.

59 [1] Allow 1 credit if the center of the **X** is within or touches the clear area that separates the Saturation zone from the Aeration zone.

Note: Allow credit if a symbol other than an **X** is used.
It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



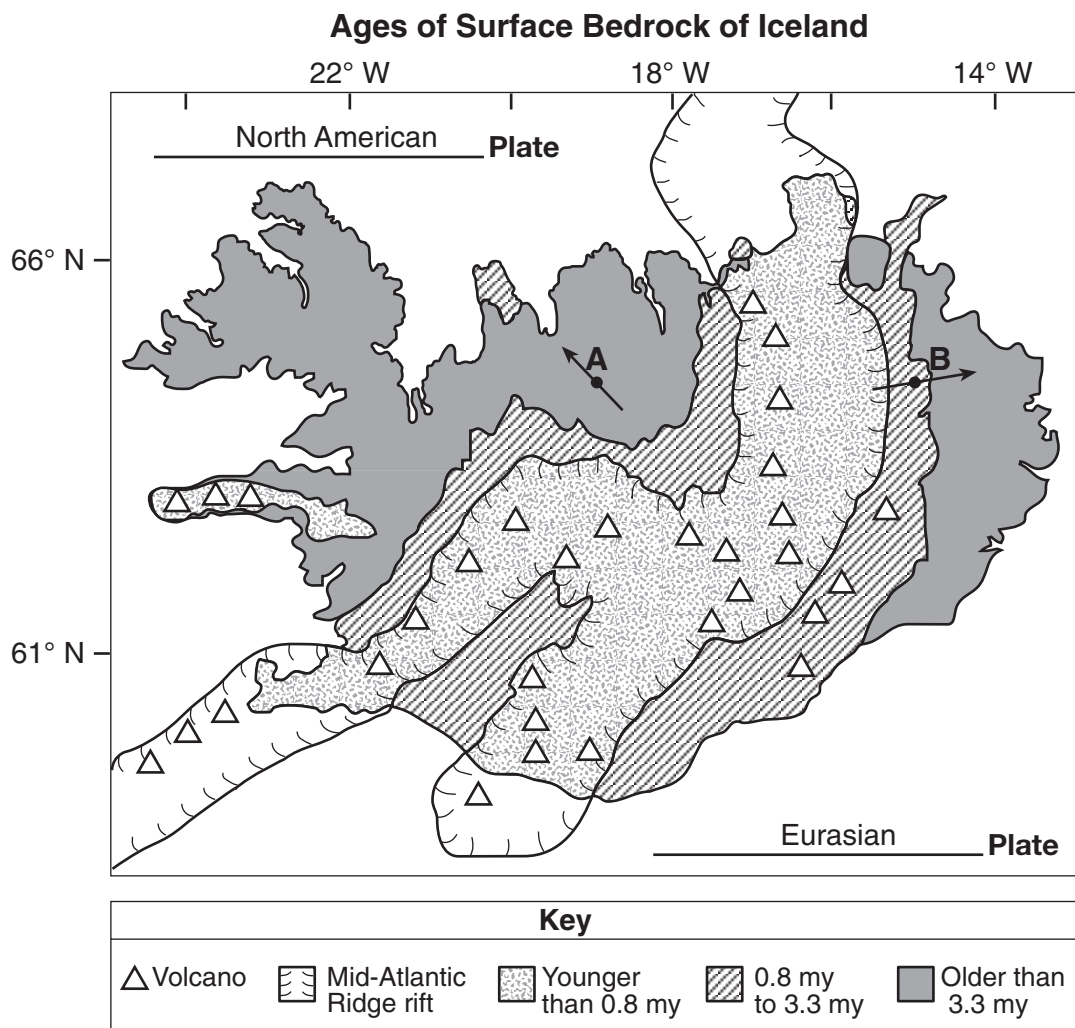
(Not drawn to scale)

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

- 61 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Ice has filled the pore spaces
 - The ice has produced impermeable soil.
 - The ground is frozen.
- 62 [1] Allow 1 credit for North American Plate to the west of the ridge and Eurasian Plate to the east of the ridge as shown below.
- 63 [1] Allow 1 credit if the *two* student-drawn arrows point away from the Mid-Atlantic Ridge rift to indicate a divergent plate boundary.

Note: Allow credit even if the arrows do *not* go through points A and B.

Example of a 2-credit response for questions 62 and 63:



64 [1] Allow 1 credit for vesicular basalt *or* scoria.

Note: Do *not* allow credit for “basalt” alone, because some basalts do not have a vesicular texture.

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

- Iceland is over a mantle hot spot.
- A mantle plume rises in the region.
- Iceland Hot Spot

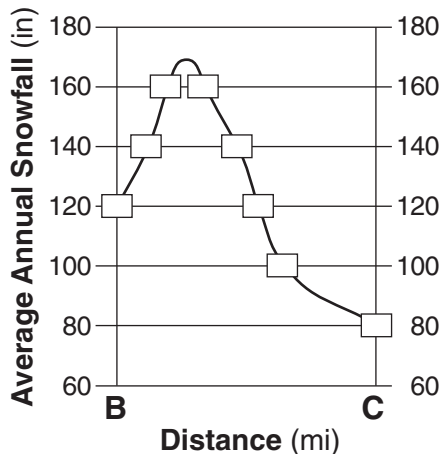
Note: Do *not* allow credit for “diverging plate,” “convection currents,” or “rising magma” because they occur mostly along the rest of the Mid-Atlantic Ridge rift.

Part C

66 [1] Allow 1 credit for any value greater than 100 in but less than 120 in.

67 [1] Allow 1 credit if the centers of *all eight* student plots are within or touch the rectangles shown below and are correctly connected with a line that passes within or touches the rectangles. The line of greatest snowfall must extend above 160 in but remain below 180 in.

Note: Allow credit if the student-drawn line does *not* pass through the student plots, but is still within or touches the rectangles. It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



68 [1] Allow 1 credit for Niagara River *or* St. Lawrence River.

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

- The slope is less steep.
- gentle slope
- The land is nearly flat.

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

- increase in stream discharge/velocity
- precipitation
- snowmelt
- higher/steeper slope
- uplift of the mountains or plateau
- cutting down into softer bedrock layers
- deforestation

- 71** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The stream velocity varied over time, producing layered deposits.
 - Sediments deposited in water are sorted by size and density.
 - Large particles settle faster.
 - The smallest particles were dropped last.
 - Sediments were deposited by a stream.
 - Sediments are sorted.

- 72** [1] Allow 1 credit for *two* acceptable responses. Acceptable responses include, but are not limited to:
- compaction/compression/pressure
 - cementation
 - burial
 - deposition/deposition of more sediment on top
 - dewatering

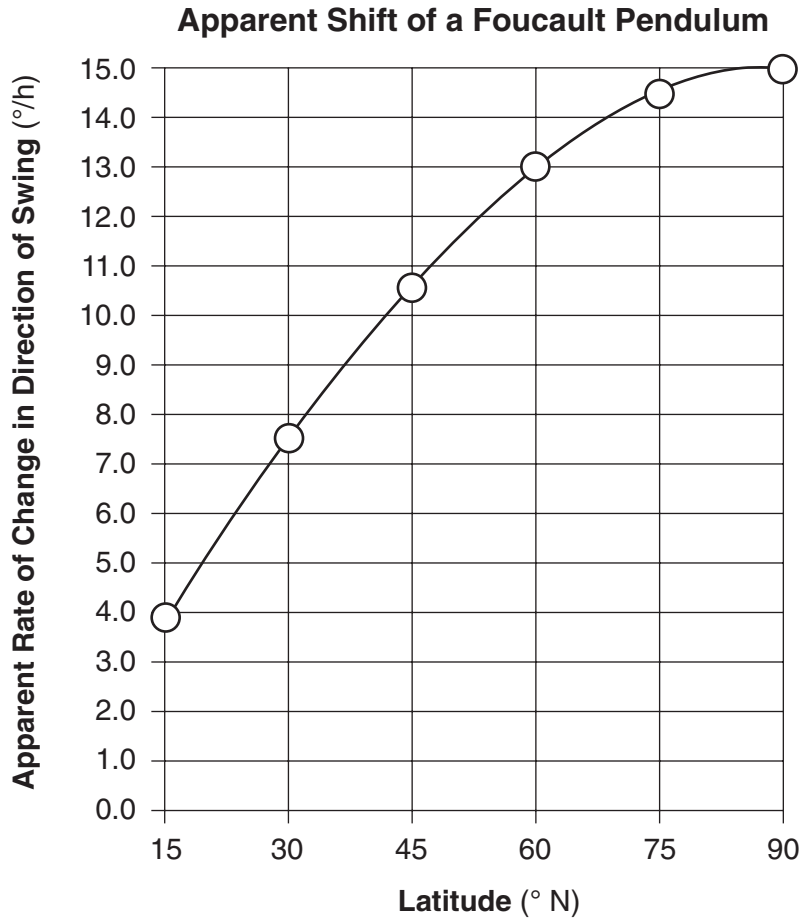
Note: Do *not* allow credit for “weathering and erosion” because weathering and erosion do not change the already accumulated sediments into sedimentary rock.

- 73** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Buildings could be damaged or destroyed by flooding.
 - The river’s course changes due to erosion and deposition.
 - It’s on the floodplain.
 - The ground might be unstable.
 - The ground can become saturated/a swamp.
 - The meanders change positions over time.

74 [1] Allow 1 credit if the centers of *all six* plots are within or touch the circles shown and the plots are correctly connected with a line that passes within or touches the circles.

Note: Allow credit if the student-drawn line does *not* pass through the student plots, but is still within or touches the circles.

It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



75 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

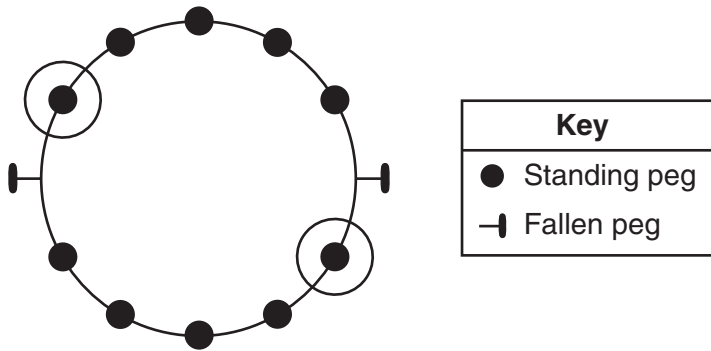
- As latitude increases, the apparent hourly change in the direction of a pendulum's swing increases.
- Pendulums located farther north have a greater shift.
- a direct relationship
- The rate is slower closer to the equator/faster closer to the poles.

76 [1] Allow 1 credit for any value greater than 7.5°/h but less than 10.6°/h.

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

- 90° N/North Pole
- 90° S/South Pole
- either pole

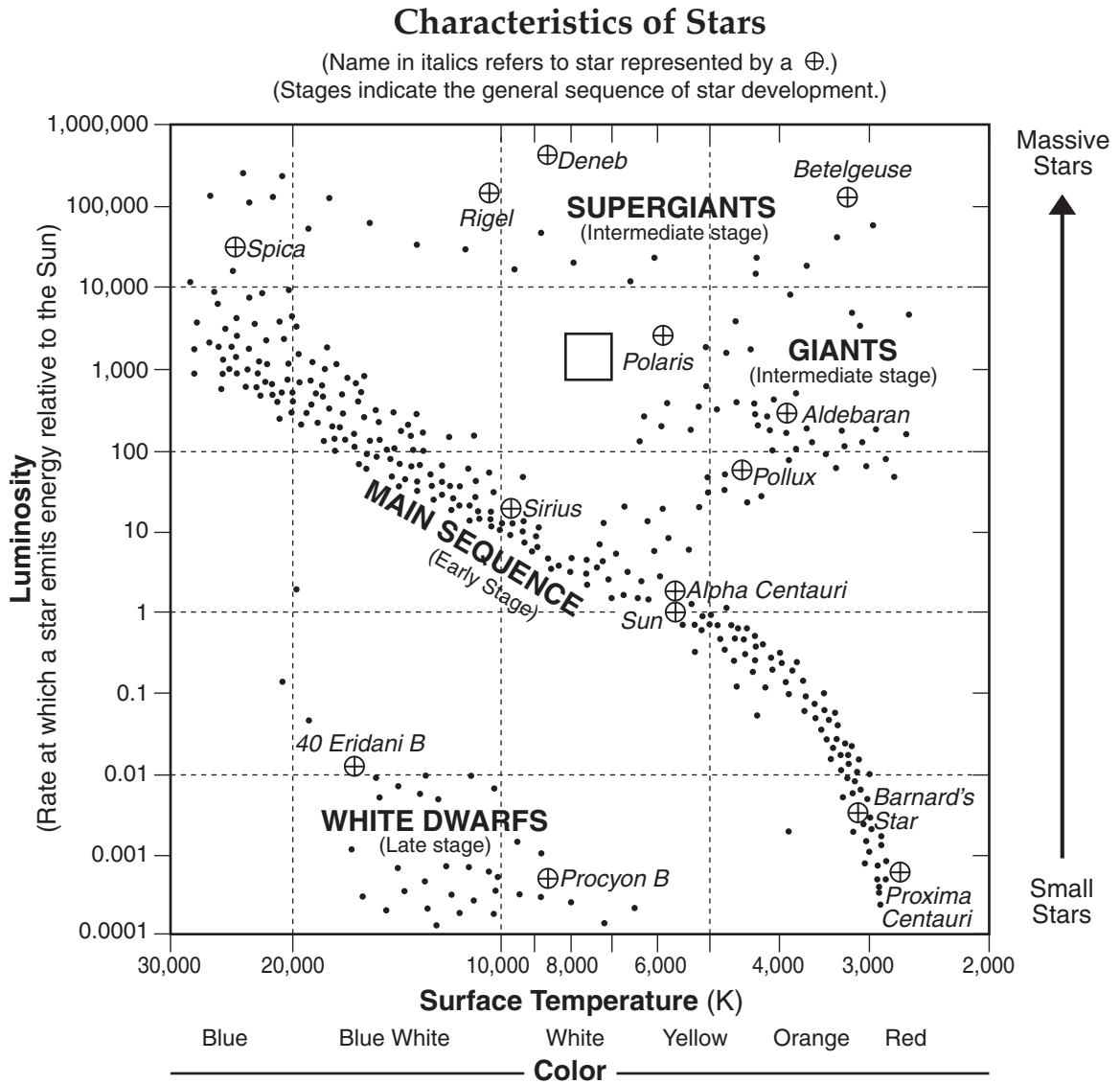
78 [1] Allow 1 credit if *both* pegs indicated below are the only pegs circled.



Note: Allow credit if a symbol other than a circle is used.

79 [1] Allow 1 credit if the center of the **X** is placed within or touches the box shown below.

Note: Allow credit if a symbol other than an **X** is used.
It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



80 [1] Allow 1 credit for *two* acceptable responses. Acceptable responses include, but are not limited to:

- *Spica*
- *Sirius*
- *Alpha Centauri*
- *Barnard's Star*
- *Proxima Centauri*

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

- more massive/larger/giant sized/supergiant
- *Spica* emits energy at a greater rate than *Barnard's Star*.
- hotter/greater surface temperature
- *Spica* is a blue-colored star.

82 [1] Allow 1 credit if *both* the relative surface temperature change and the relative luminosity change are acceptable. Acceptable responses include, but are not limited to:

Relative surface temperature:

- *Aldebaran's* surface temperature will increase.
- It will get hotter.

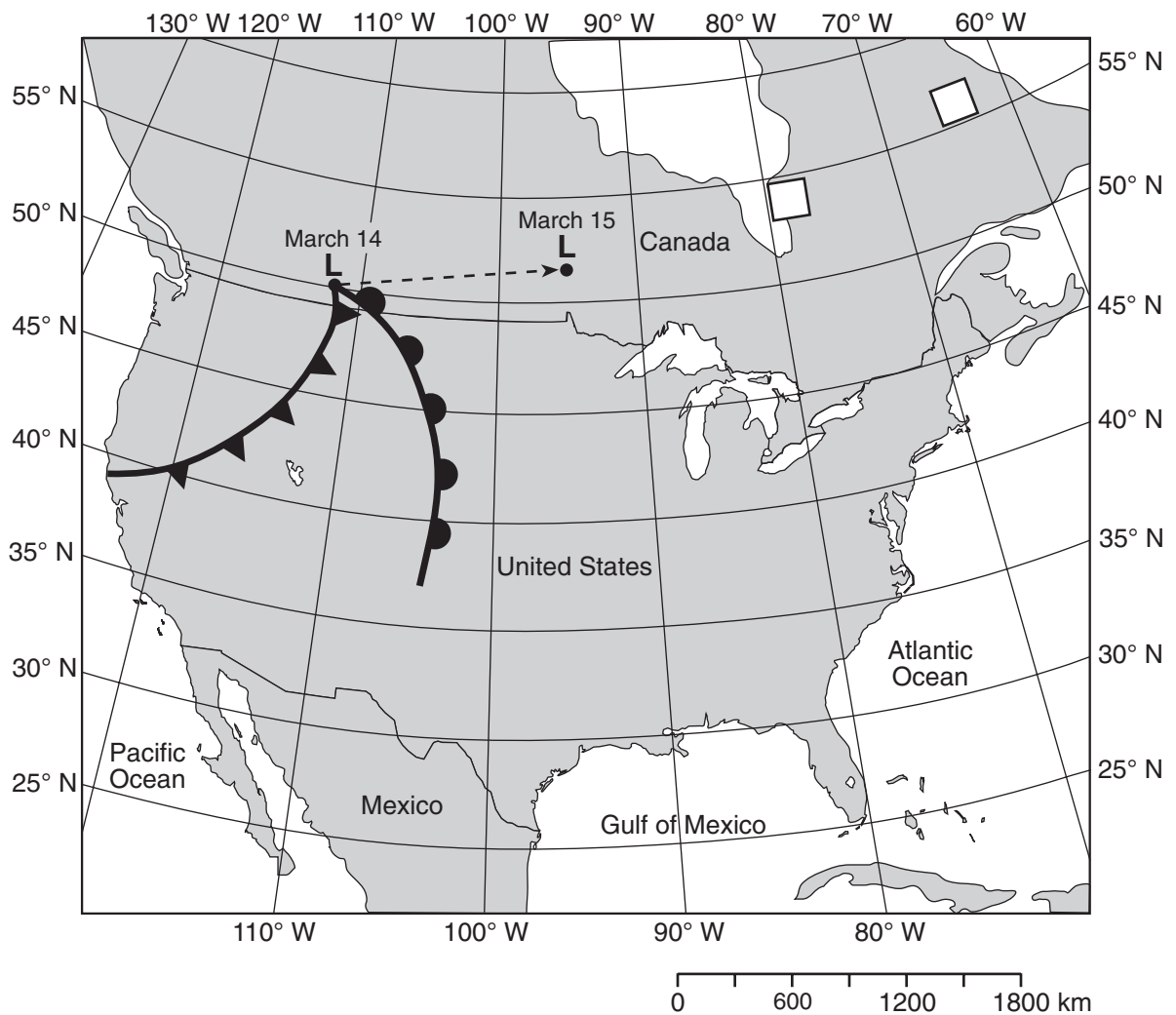
Relative luminosity:

- Its luminosity will be reduced.
- Luminosity will decrease.

83 [1] Allow 1 credit if the centers of the *two* **X**s fall within or touch the two empty boxes shown below.

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

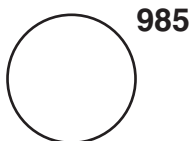
It is recommended that an overlay of the same scale as the student answer booklet be used to ensure reliability in rating.



84 [1] Allow 1 credit for any value from 45 km/h to 55 km/h.

85 [1] Allow 1 credit for 985 placed in its proper location.

Example of a 1-credit response:



Note: If other weather variables are included on the station model, only the barometric pressure is to be scored.

Regents Examination in Physical Setting/Earth Science

January 2015

Chart for Converting Total Test Raw Scores to Final Examination Scores (Scale Scores)

The Chart for Determining the Final Examination Score for the January 2015 Regents Examination in Physical Setting/Earth Science will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Wednesday, January 28, 2015. Conversion charts provided for previous administrations of the Regents Examination in Physical Setting/Earth Science must NOT be used to determine students' final scores for this administration.

Online Submission of Teacher Evaluations of the Test to the Department

Suggestions and feedback from teachers provide an important contribution to the test development process. The Department provides an online evaluation form for State assessments. It contains spaces for teachers to respond to several specific questions and to make suggestions. Instructions for completing the evaluation form are as follows:

1. Go to <http://www.forms2.nysed.gov/emsc/osa/exameval/reexameval.cfm>.
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.

Map to Core Curriculum

January 2015 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		36	74, 76, 79, 83, 84
Math Key Idea 2	12, 14, 31	45	75
Math Key Idea 3			
Science Inquiry Key Idea 1	23, 25, 33, 34	36, 37, 39, 40, 44, 61	71
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 21, 22, 24, 27, 29, 31	36, 41, 45, 48, 49, 50, 55, 56, 58, 62, 63, 64, 65	68, 72, 76, 79, 80, 81, 82, 84, 85
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1	34, 35	41, 42, 43, 60, 65	68, 69, 70, 71, 78
Key Idea 2	2, 9, 10, 11, 13, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35	36, 38, 39, 40, 43, 46, 47, 48, 51, 52, 53, 54, 55, 56, 57, 58, 59, 62, 63	66, 67, 68, 74, 75, 76, 78, 79, 80, 81, 83, 85
Key Idea 3	27		
Key Idea 4		37	
Key Idea 5	29, 33	39, 40, 42, 43, 47, 51, 52, 53	77, 78, 82
Key Idea 6			
Standard 7			
Key Idea 1			
Key Idea 2			73
Standard 4			
Key Idea 1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 25, 26, 27, 28, 29, 31	36, 37, 38, 39, 40, 48, 49, 50, 51, 52, 53, 54, 59, 61	74, 75, 76, 77, 78, 79, 80, 81, 82, 83
Key Idea 2	11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 23, 30, 32, 33, 34	40, 41, 42, 43, 44, 45, 46, 47, 56, 57, 60, 62, 63, 65	66, 67, 68, 69, 70, 71, 73, 84, 85
Key Idea 3	16, 22, 24, 35	55, 58, 64	72
Reference Tables			
ESRT 2011 Edition (Revised)	5, 6, 8, 9, 12, 13, 14, 15, 16, 17, 21, 22, 24, 27, 29, 31	36, 41, 45, 48, 49, 50, 55, 56, 58, 62, 63, 64, 65	68, 72, 76, 79, 80, 81, 82, 84, 85