

FOR TEACHERS ONLY

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

P.S.–E.S. PHYSICAL SETTING/EARTH SCIENCE

Friday, August 17, 2018 — 8:30 to 11:30 a.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 1 | 10 3 | 19 2 | 28 1 |
| 2 3 | 11 2 | 20 2 | 29 2 |
| 3 2 | 12 4 | 21 4 | 30 3 |
| 4 4 | 13 1 | 22 2 | 31 3 |
| 5 1 | 14 4 | 23 4 | 32 1 |
| 6 1 | 15 1 | 24 3 | 33 3 |
| 7 2 | 16 4 | 25 2 | 34 4 |
| 8 1 | 17 2 | 26 4 | 35 4 |
| 9 2 | 18 4 | 27 1 | |

Part B–1

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

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 Friday, August 17, 2018. 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.

To ensure the accuracy of overlays, select a printer setting such as *full*, *actual size*, or *100%* when printing this document. Do **not** select the *fit to page* setting.

51 [1] Allow 1 credit for any value from 23.4° to 23.5° or its mathematical equivalent.

Note: Do *not* allow credit for a number with a direction, such as 23.5° N, because N indicates a latitude, not an angle.

52 [1] Allow 1 credit for winter.

53 [1] Allow 1 credit for 12 h.

54 [1] Allow 1 credit for *Polaris* or North Star.

55 [1] Allow 1 credit for Period.

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

- dinosaurs
- ammonoids

Note: Do *not* allow credit for land plants alone because the question asks for animals.

57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- CaCO_3
- Ca, C, and O (All three elements must be present for credit.)
- $\text{CaMg}(\text{CO}_3)_2$

58 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The acid in water chemically reacts with the carbonates in the rocks.
- Limestone is chemically altered and changed into new materials.
- Slightly acidic groundwater chemically breaks down calcite and/or dolomite.
- Water flowing underground dissolves the limestone.

59 [1] Allow 1 credit for the sequence shown below:

Letters: H , K , E
 Oldest \longrightarrow Youngest

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

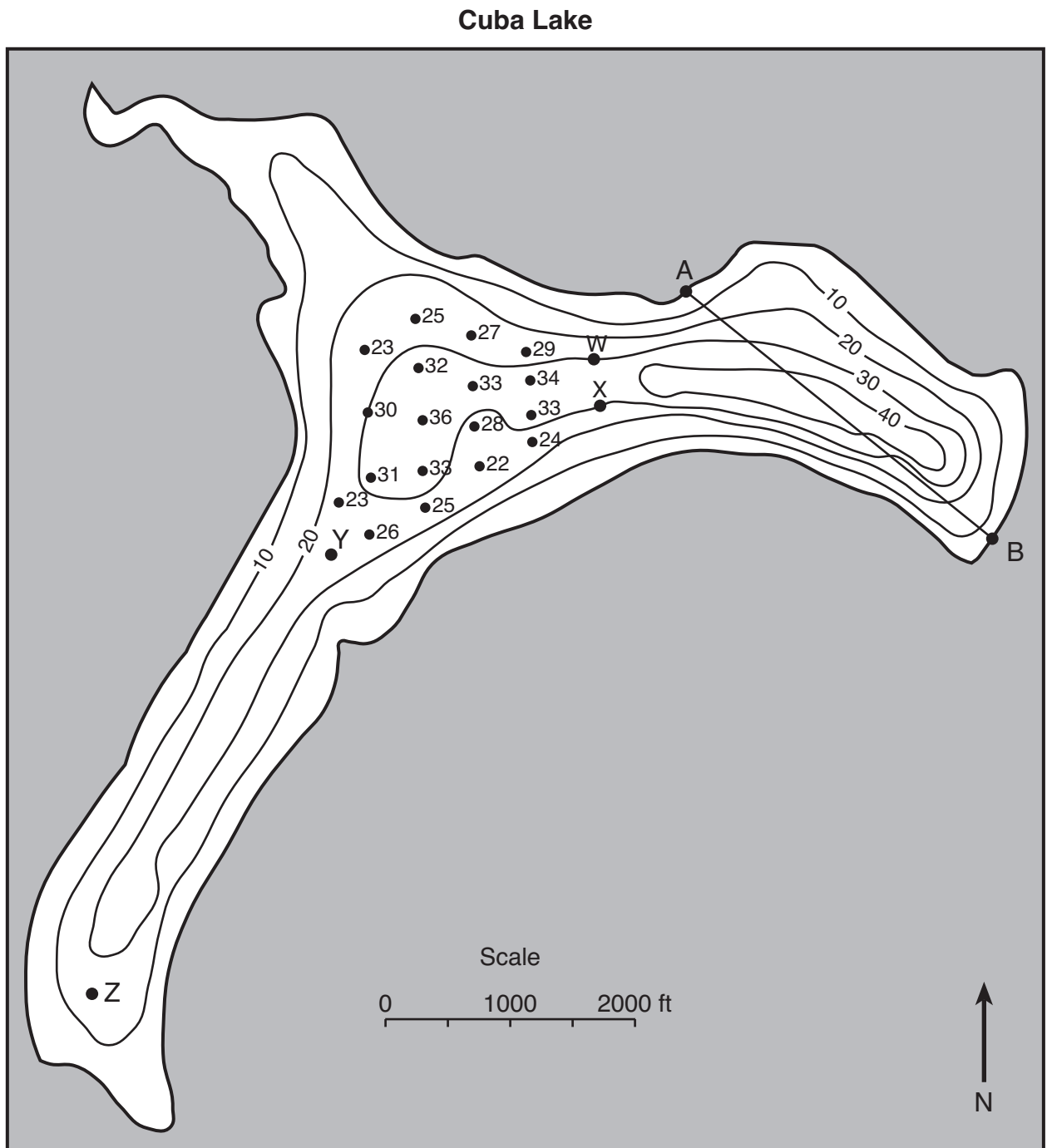
- uplift/emergence/tilting/folding
- erosion
- submergence/subsidence
- weathering
- deposition
- burial

61 [1] Allow 1 credit for marble *or* hornfels.

- 62 [1] Allow 1 credit if the 30-foot isoline is drawn correctly. If additional isolines are drawn, all must be correct to receive credit.

Note: The isoline must touch points X, W, and the point for 30.

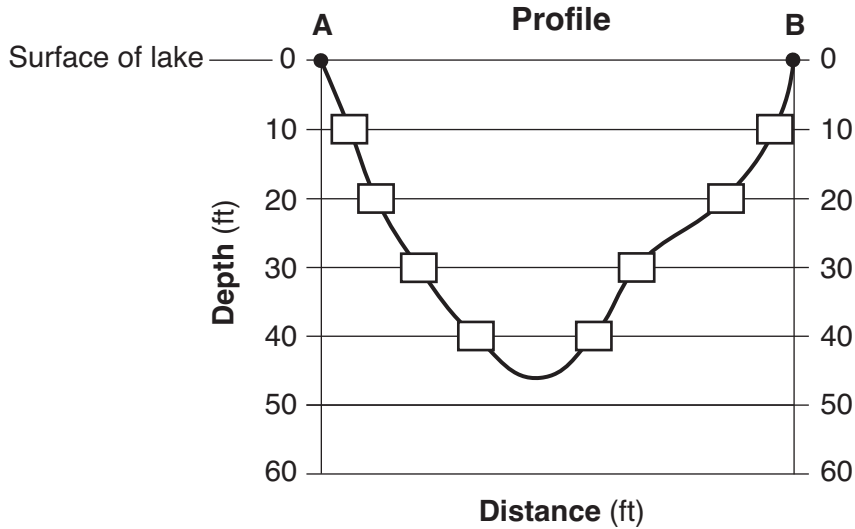
Example of a one-credit response:



- 63 [1] Allow 1 credit if *all eight* plots are within or touch the rectangles shown below and are correctly connected with a line from A to B that passes within or touches each rectangle. The line should extend below 40 feet, but remain above 50 feet.

Note: Allow credit if the line misses a plot, but is still within or touches the rectangle.

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



- 64 [1] Allow 1 credit if *both* responses for compass direction and distance are correct.

Compass direction:

- SW
- Southwest
- SSW

Distance:

- Any value from 3800 to 4200 ft.

- 65 [1] Allow 1 credit for Allegheny Plateau *or* Appalachian Plateau *or* Appalachian Uplands.

Part C

Allow a maximum of 20 credits for this part.

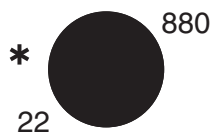
- 66** [1] Allow 1 credit for *both* the moon Hydra and a correct explanation. Acceptable responses include, but are not limited to:
- Hydra has the longest period of revolution.
 - As a moon's distance from Pluto increases, the time to make one revolution also increases.
 - Hydra travels the greatest distance in its orbit because it has the longest period of revolution.
- 67** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- elliptical
 - The orbits are eccentric.
 - The orbits are nearly, but not perfectly, circular.
 - oval
 - Pluto's orbit is elliptical, and the moons of Pluto have a more nearly circular orbit.
- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Pluto and its five moons revolve around the Sun.
 - All go around/orbit the Sun.
 - The gravitational attraction of the Sun influences the motion of Pluto and its moons.
 - Pluto revolves around the Sun, and its moons revolve around Pluto.
 - Pluto orbits the Sun.
- 69** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- counterclockwise and in toward the center
 - counterclockwise and spiraling toward the center
 - inward and counterclockwise
 - counterclockwise and converging

70 [1] Allow 1 credit for circling *both* more humid and warmer.

71 [1] Allow 1 credit for East Gulf.

72 [1] Allow 1 credit if *all four* weather conditions are correctly indicated, using the proper format. A 1-credit response is shown below.

* 880
22

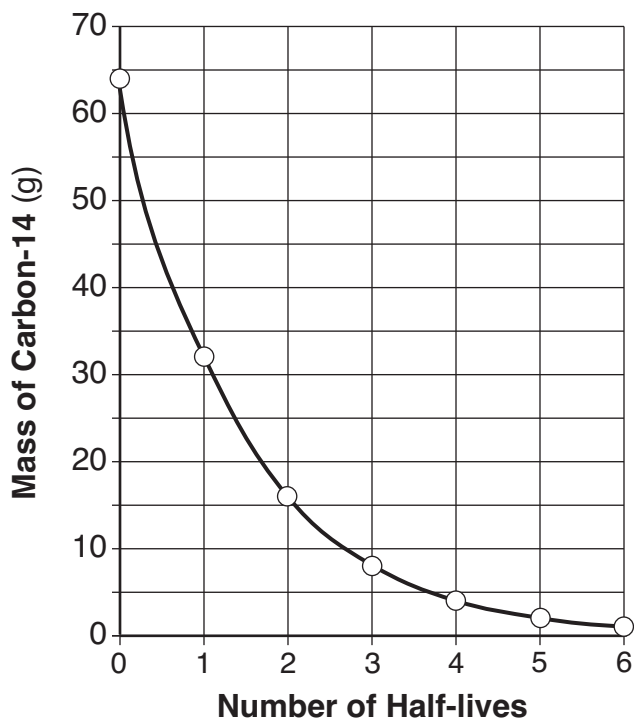


73 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- psychrometer/sling psychrometer
- dry-bulb thermometer/thermometer
- wet-bulb
- hygrometer

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

Note: 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:

- ^{14}N
- nitrogen-14
- N-14

Note: Do *not* allow credit for nitrogen alone because nitrogen has more than one isotope, and the stable disintegration product is needed.

76 [1] Allow 1 credit for 8 g.

77 [1] Allow 1 credit for a water depth range of 20-30 m and a soil depth range of 4-5 m.

78 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- As depth increases, temperature decreases.
- It gets colder, the greater the depth.
- inverse relationship/negative relationship
- The shallower the depth, the greater the average temperature for soil and water.

79 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Water has a higher specific heat.
- Water changes temperature more slowly.
- Land has a lower specific heat.
- It takes more energy to change the temperature of water than land.
- Land cools off more quickly than water.

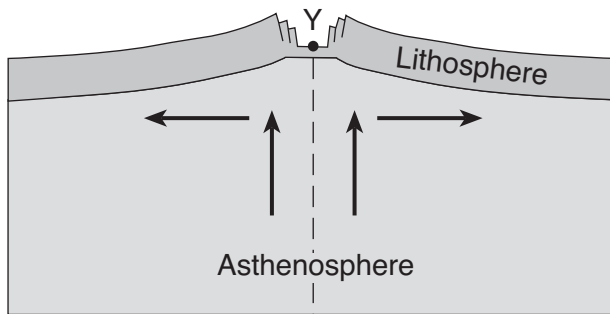
80 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- transform boundary
- transform fault
- strike-slip fault

81 [1] Allow 1 credit for African Plate and Antarctic Plate.

- 82 [1] Allow 1 credit for *four* arrowheads/arrows that indicate rising currents and a divergent movement in the asthenosphere.

Example of a 1-credit response:



(Not drawn to scale)

Note: If additional arrowheads or arrows are drawn, all must be correct to receive credit.

If a student draws his/her own arrows, all arrows must indicate a correct rising and diverging movement.

- 83 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- As the thickness of a glacier increases, the rate of movement increases.
 - Thicker glaciers move faster.
 - direct relationship
- 84 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- U-shaped
 - wide valley with steep sides
- 85 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- unsorted
 - mixed piles
 - not layered

Regents Examination in Physical Setting/Earth Science

August 2018

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

The Chart for Determining the Final Examination Score for the August 2018 Regents Examination in Physical Setting/Earth Science will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Friday, August 17, 2018. 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

| August 2018 Physical Setting/Earth Science | | | |
|---|--|--|--|
| Question Numbers | | | |
| Key Ideas/Performance Indicators | Part A | Part B | Part C |
| Standard 1 | | | |
| Math Key Idea 1 | 30 | 63 | 74, 76 |
| Math Key Idea 2 | 20 | 43, 45, 47 | 66, 77, 78, 83 |
| Math Key Idea 3 | | 62 | |
| Science Inquiry Key Idea 1 | 5, 8, 33, 34 | 46, 58, 59, 60 | 66, 68, 79, 84, 85 |
| Science Inquiry Key Idea 2 | | 59 | |
| Science Inquiry Key Idea 3 | 2, 3, 7, 10, 11, 15, 17, 18, 19, 20, 21, 23, 24, 25, 26, 28, 30, 35 | 37, 39, 42, 44, 50, 55, 56, 57, 61, 65 | 72, 75, 76, 80, 81, 82 |
| Engineering Design Key Idea 1 | | | |
| Standard 2 | | | |
| Key Idea 1 | | | |
| Key Idea 2 | | | |
| Key Idea 3 | | | |
| Standard 6 | | | |
| Key Idea 1 | 8 | 41 | 67, 68, 85 |
| Key Idea 2 | 1, 4, 13, 14, 21, 24, 27, 28, 29, 31, 32, 33, 34, 35 | 36, 37, 38, 40, 42, 43, 45, 47, 48, 49, 51, 52, 53, 54, 59, 60, 61, 62, 63, 65 | 69, 70, 71, 72, 73, 74, 80, 81, 82 |
| Key Idea 3 | | 64 | |
| Key Idea 4 | | | |
| Key Idea 5 | 6 | 41, 45, 47, 53, 59 | 78 |
| Key Idea 6 | | | |
| Standard 7 | | | |
| Key Idea 1 | 12 | | |
| Key Idea 2 | | | |
| Standard 4 | | | |
| Key Idea 1 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 17, 18, 19, 21, 29, 30 | 39, 40, 41, 45, 46, 47, 51, 52, 53, 54, 55, 56, 59, 65 | 66, 67, 68, 74, 75, 76 |
| Key Idea 2 | 10, 11, 12, 13, 14, 15, 16, 20, 22, 24, 27, 31, 32, 33, 34 | 36, 37, 38, 42, 43, 44, 48, 49, 50, 58, 60, 62, 63, 64, 65 | 69, 70, 71, 72, 73, 77, 78, 79, 80, 81, 82, 83, 84, 85 |
| Key Idea 3 | 23, 25, 26, 28, 35 | 57, 61 | |
| Reference Tables | | | |
| ESRT 2011 Edition (Revised) | 2, 3, 7, 10, 11, 15, 17, 18, 19, 20, 21, 23, 24, 25, 26, 28, 30, 34, 35 | 37, 42, 44, 50, 55, 56, 57, 61, 65 | 72, 75, 76, 80, 81, 82 |