

# FOR TEACHERS ONLY

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

## PHYSICAL SETTING/EARTH SCIENCE

Thursday, June 20, 2019 — 1:15 to 4:15 p.m., only

### 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.

## 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*.

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 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. Do not attempt to correct the student’s work by making insertions or changes of any kind. 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 Thursday, June 20, 2019. 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.

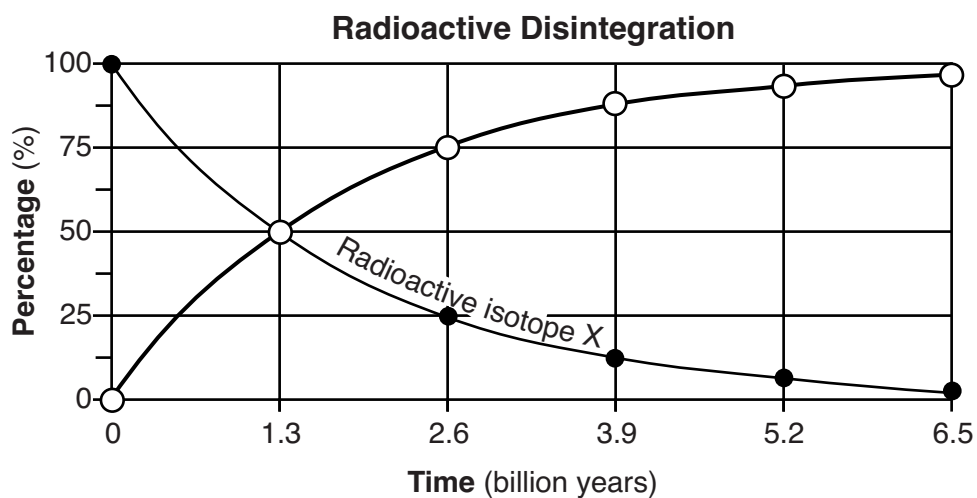
## Part B–2

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 if the centers of *all six* plots are within or touch the circles shown and are correctly connected with a line that passes within or touches each circle.

**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.



- 52 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- potassium–40
- $^{40}\text{K}$
- K–40

**Note:** Do *not* allow credit for potassium *or* K alone because potassium has more than one isotope.

- 53 [1] Allow 1 credit for 37.5 g.

54 [1] Allow 1 credit if *both* responses are correct. Acceptable responses include, but are not limited to:

Change in air pressure:

- slight decrease, then a steady increase
- generally increasing/rising
- lower to higher
- greater

Amount of cloud cover:

- It decreased.
- lower percent
- clear/0%
- There are fewer clouds.
- little cloud cover

55 [1] Allow 1 credit if *all four* weather variables are correct as shown below.

**Note:** Allow credit if the student places the correct units in the boxes as part of their response.

Do *not* allow credit for a barometric pressure of 010, as this is the format used on a station model, not the actual barometric pressure.

Air Temperature (°F)	Barometric Pressure (mb)	Wind Direction from the	Wind Speed (knots)
72	1001.0 <i>or</i> 1001	northwest <i>or</i> NW	15

56 [1] Allow 1 credit for 100%.

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

- anemometer
- wind meter
- wind sock
- wind gauge
- Doppler radar

58 [1] Allow 1 credit for the Sun.

59 [1] Allow 1 credit for Uranus.

60 [1] Allow 1 credit for 2031.

61 [1] Allow 1 credit for gravity *or* gravitation *or* gravitational pull.

62 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The length of the observer’s shadow will decrease from *A* to *C*, then increase from *C* to *D*.
- The shadow will get shorter, then longer.
- The shadow was longest at *A*, became shortest at *C*, then became longer at *D*.
- decreases then increases

63 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The altitude of *Polaris* is at  $23.5^\circ$  *or*  $23\frac{1}{2}^\circ$ .
- The noon Sun for June 21 is directly overhead.
- The highest Sun position is at  $90^\circ$  (zenith) on June 21.
- the angle/altitude of *Polaris*

**Note:** Do *not* allow credit for  $23\frac{1}{2}^\circ$  N or  $23.5^\circ$  North, because a compass direction should not be included with an altitude value.

64 [1] Allow 1 credit for 12 h.

65 [1] Allow 1 credit for Foucault pendulum *or* pendulum.

**Part C**

**Allow a maximum of 20 credits for this part.**

- 66 [1] Allow 1 credit for any value from 11 to 12 times larger.
- 67 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Jupiter is much larger than Mercury.
  - Larger objects appear brighter than small objects.
  - Jupiter reflects more light/has a greater albedo.
- 68 [1] Allow 1 credit for *two* correct terrestrial planets and a correct explanation. Acceptable responses include, but are not limited to:

Terrestrial planets: Mercury *or* Venus *or* Earth

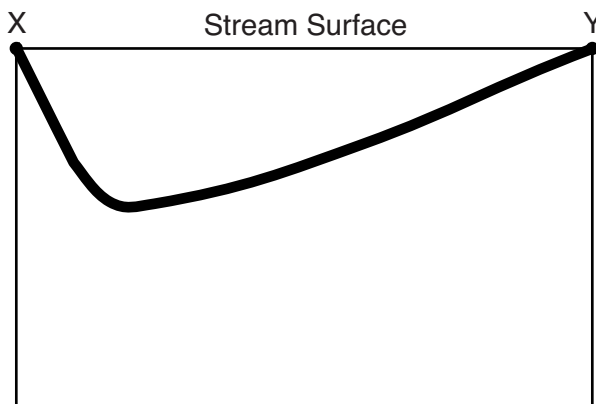
Explanations:

- Terrestrial planets are small and rocky.
- Their interior layers are not gaseous.
- Terrestrial planet densities are greater than Jovian planet densities.
- They are closer to the Sun.
- They have solid crusts.

**Note:** Do *not* accept Mars as the terrestrial planet because it is *not* shown in the models.

- 69 [1] Allow 1 credit for delta.
- 70 [1] Allow 1 credit if the student's line is drawn from point X to point Y and shows that the stream channel is deepest near side X.

**Example of a 1-credit response:**



**71** [1] Allow 1 credit for *two* correct responses. Acceptable responses include, but are not limited to:

Size:

- becomes smaller
- decrease

Shape:

- becomes more rounded
- less angular
- Sharp edges are worn down.

**Note:** Do *not* accept “smooth” for the shape of the sediments, because smooth does not describe a shape but a texture.

**72** [1] Allow 1 credit for any value from 0.18 cm to 2.5 cm.

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

- Land has a lower specific heat than water and therefore causes warmer summers and cooler winters for Hastings.
- Hastings is inland, where land surfaces heat up and cool down faster.
- Riverhead is near a large body of water that moderates its temperature.
- Land changes temperature faster than water.

**74** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Riverhead and Hastings are both close to the same latitude (approximately 41° N).
- Both locations are approximately the same distance north of the equator.
- at the same latitude

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

- prevailing southwesterlies *or* westerlies
- SW Winds

**76** [1] Allow 1 credit for Gulf Stream Current.

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

- compaction
- cementation
- lithification
- deposition/sedimentation
- burial
- dewatering
- evaporation of water
- precipitation from seawater
- weathering
- erosion
- uplift

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

- Rock unit *A* cuts across (cross-cutting) rock unit *B*.
- There is contact metamorphism in rock unit *B*.
- Rock unit *A* intrudes into rock unit *B*.
- Parts of *A* extend above *B*.

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

- The rock at *C* has a fine texture because the lava cooled quickly.
- Rock *C* crystallized/solidified on Earth's surface.
- Extrusive igneous rock doesn't have time to grow large crystals.
- The environment of formation is extrusive/volcanic.

80 [1] Allow 1 credit if *both* responses are correct. Acceptable responses include:

Location *X*:

- marble
- hornfels

Location *Y*:

- quartzite
- hornfels

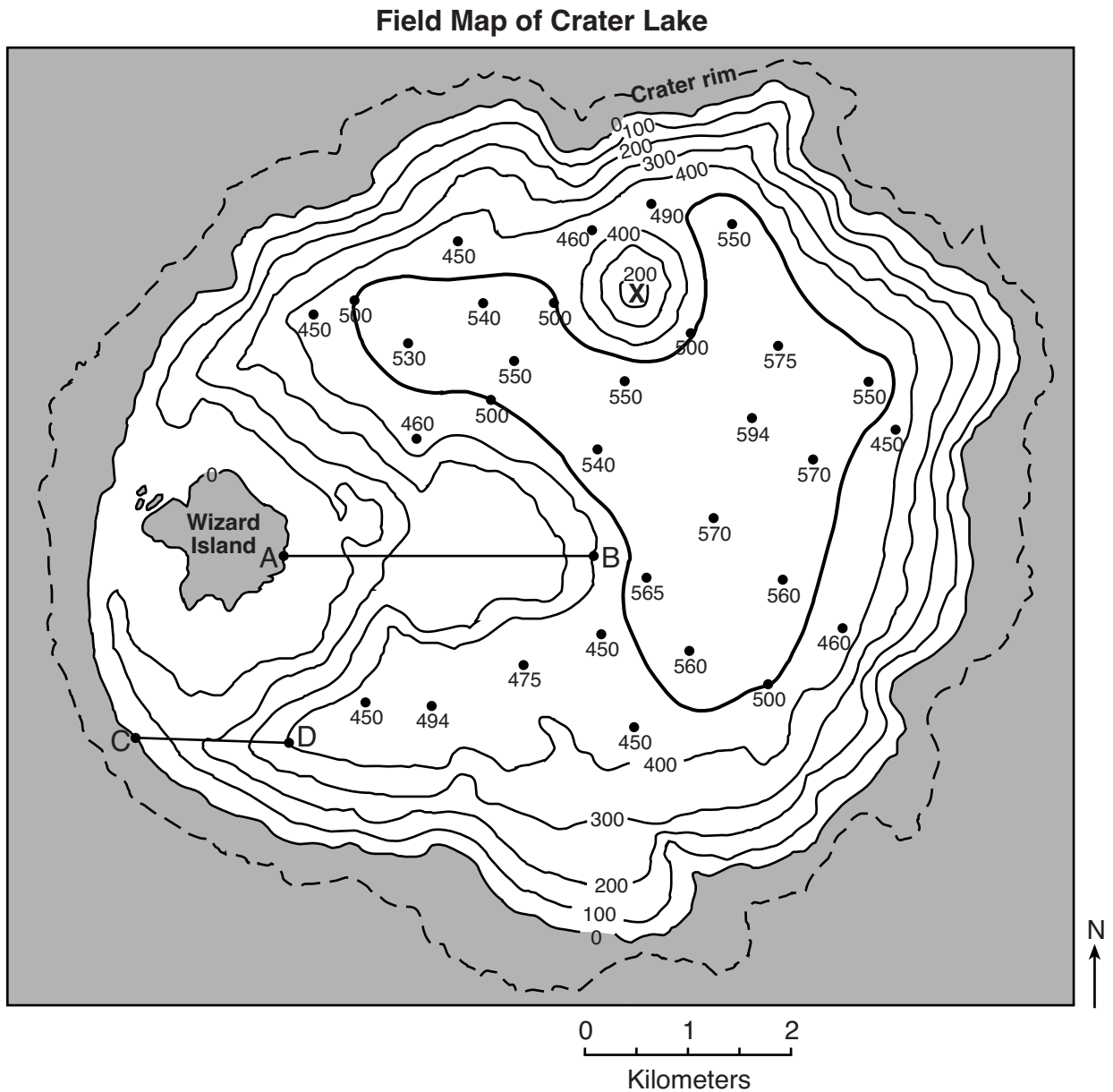
**Note:** Do *not* allow credit if hornfels is used for *both* locations *X* and *Y*.



- 81 [1] Allow 1 credit if the 500-meter depth isoline is correctly drawn. If additional isolines are drawn, all isolines must be correct to receive credit.

**Note:** The isoline must touch *all five* points for the 500-meter depth.

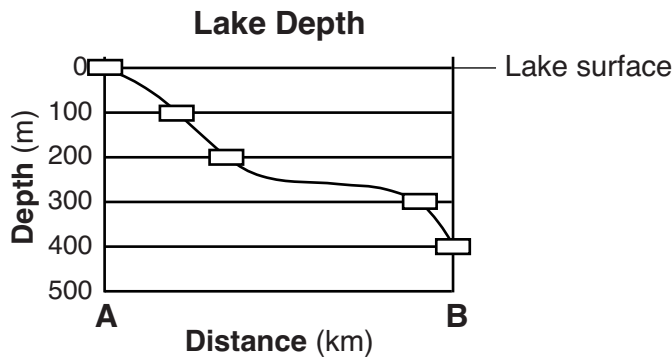
**Example of a 1-credit response:**



[www.craterlakeinstitute.com](http://www.craterlakeinstitute.com)

- 82 [1] Allow 1 credit if *all five* plots are located within or touch the rectangles shown and are correctly connected with a line that passes within or touches each rectangle.

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



- 83 [1] Allow 1 credit for any value from 250 to 286 m/km *or* -250 to -286 m/km.
- 84 [1] Allow 1 credit for any value greater than 100 meters but less than 200 meters.
- 85 [1] Allow 1 credit if *all three* percentages are within the ranges shown below.
- Plagioclase feldspar: any value from 54% to 60%
  - Biotite: any value from 13% to 19%
  - Amphibole: any value from 24% to 30%

## Regents Examination in Physical Setting/Earth Science

June 2019

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

**The *Chart for Determining the Final Examination Score for the June 2019 Regents Examination in Physical Setting/Earth Science* will be posted on the Department's web site at: <http://www.p12.nysed.gov/assessment/> on Thursday, June 20, 2019. 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

<b>June 2019 Physical Setting/Earth Science</b>			
<b>Question Numbers</b>			
Key Ideas/Performance Indicators	Part A	Part B	Part C
<b>Standard 1</b>			
Math Key Idea 1	11	53, 60	83
Math Key Idea 2	26	36, 37, 51	
Math Key Idea 3			66, 81
Science Inquiry Key Idea 1	9, 32	43, 49, 57, 58, 61, 62, 63, 64, 65	67, 71, 73, 74, 76, 77, 79
Science Inquiry Key Idea 2			71
Science Inquiry Key Idea 3	4, 5, 7, 8, 10, 11, 13, 14, 19, 21, 25, 26, 27, 30, 33, 34, 35	40, 45, 46, 47, 50, 52, 53, 55, 56, 59, 63	66, 67, 68, 72, 75, 77, 79, 80, 83, 85
Engineering Design Key Idea 1			
<b>Standard 2</b>			
Key Idea 1			
Key Idea 2			
Key Idea 3			
<b>Standard 6</b>			
Key Idea 1	15, 29		70
Key Idea 2	1, 2, 3, 4, 7, 12, 14, 15, 16, 19, 21, 22, 23, 27, 28, 29, 32	38, 39, 40, 41, 42, 43, 44, 45, 46, 50, 52, 55, 56, 62, 63, 64	66, 67, 68, 69, 73, 74, 75, 76, 77, 78, 81, 82, 83, 84, 85
Key Idea 3		59	84
Key Idea 4			80
Key Idea 5	19	36, 37, 51, 54, 62	71, 75, 77, 79, 80
Key Idea 6			
<b>Standard 7</b>			
Key Idea 1			
Key Idea 2		48	
<b>Standard 4</b>			
Key Idea 1	1, 2, 3, 4, 5, 6, 7, 9, 11, 12, 13, 19, 21, 22, 32	36, 37, 38, 39, 40, 41, 47, 51, 52, 53, 58, 59, 60, 61, 62, 63, 64, 65	66, 67, 68, 78
Key Idea 2	8, 10, 14, 15, 16, 17, 18, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31	42, 43, 44, 45, 46, 48, 49, 54, 55, 56, 57	69, 70, 71, 72, 73, 74, 75, 76, 81, 82, 83, 84
Key Idea 3	33, 34, 35	50	77, 79, 80, 85
<b>Reference Tables</b>			
ESRT 2011 Edition (Revised)	4, 5, 7, 8, 10, 11, 13, 14, 19, 21, 25, 26, 27, 30, 33, 34, 35	40, 45, 46, 47, 50, 52, 53, 55, 56, 59, 63	66, 67, 68, 72, 75, 76, 77, 79, 80, 83, 85