

FOR TEACHERS ONLY

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

PHYSICAL SETTING/EARTH SCIENCE

Friday, January 27, 2023 — 9:15 a.m. to 12:15 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.nysed.gov/state-assessment/high-school-regents-examinations> 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.nysed.gov/state-assessment/high-school-regents-examinations> on Friday, January 27, 2023. 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. Acceptable responses include, but are not limited to:

- evaporation/vaporization
- precipitation
- deposition/sedimentation
- crystallization

Note: Do *not* allow credit for evaporite or precipitate because they are not processes. They are types of sedimentary rock.

52 [1] Allow 1 credit for Silurian Period.

53 [1] Allow 1 credit for halite and an acceptable use. Acceptable uses include, but are not limited to:

- food additive/table salt
- melts ice
- food preservative/flavoring

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

- The Syracuse area experienced deforestation.
- pollution of water wells and groundwater
- The air was polluted by the burning of lumber.
- salt spills
- pollution from transporting salt
- mine collapse/sinkholes
- loss of animal habitat
- Lumber supplies dwindled.

55 [1] Allow 1 credit for 6/21 *or* June 21.

Note: Allow credit for A because the introduction states that letters represent specific dates.

56 [1] Allow 1 credit for either solar noon *or* noon *or* 12:00 p.m.

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

- the greater a planet’s distance from the Sun, the longer its period of revolution
- If a planet is farther from the Sun, it will take longer to revolve.
- Planets closer to the Sun orbit faster.
- direct relationship

58 [1] Allow 1 credit if *both* the terrestrial planet and the Jovian planet are correct. Acceptable responses include:

Terrestrial:

- Mercury
- Venus
- Earth
- Mars

Jovian:

- Jupiter
- Saturn
- Uranus
- Neptune

59 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- The Sun is at the center of the solar system.
- All solar system objects revolve around the Sun.

60 [1] Allow 1 credit for any value greater than 227.9 million km but less than 778.4 million km.

61 [1] Allow 1 credit for 3 times greater.

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

- Mariana Trench
- trench/ocean trench
- island arc/islands
- volcano
- faults/fault lines
- mountains

Note: Do *not* allow credit for earthquakes or tsunamis because these are geologic events not features.

63 [1] Allow 1 credit if *both* responses are correct.

Subducting plate: Pacific Plate *or* Pacific

Overriding plate: North American Plate *or* North American

64 [1] Allow 1 credit for East Pacific Ridge *or* East Pacific Rise.

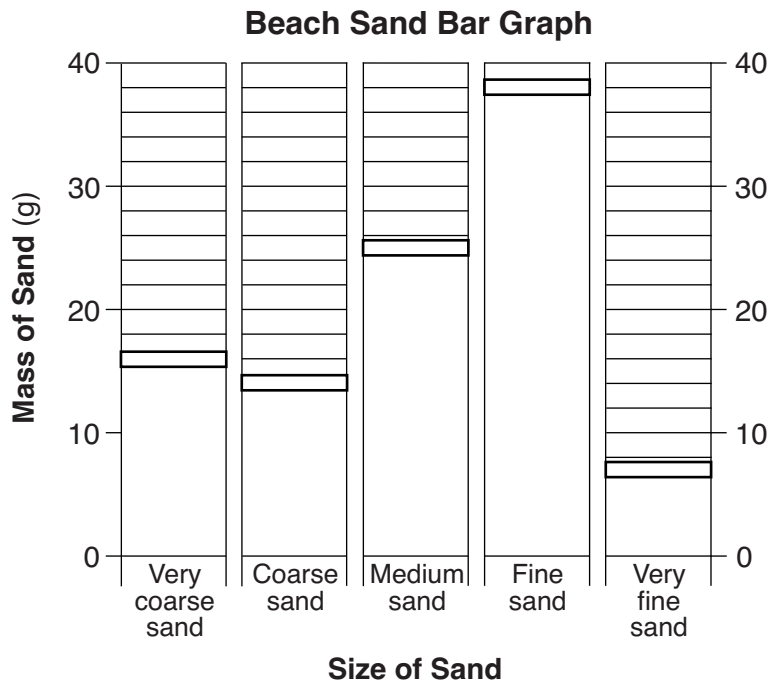
65 [1] Allow 1 credit for transform plate boundary *or* transform fault *or* transform.

Part C

Allow a maximum of 20 credits for this part.

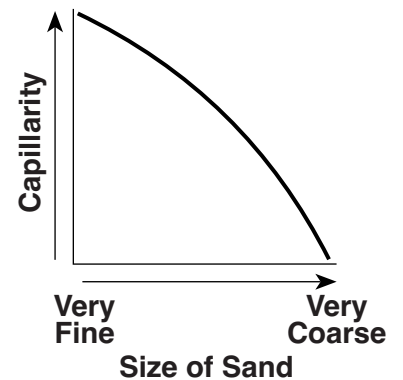
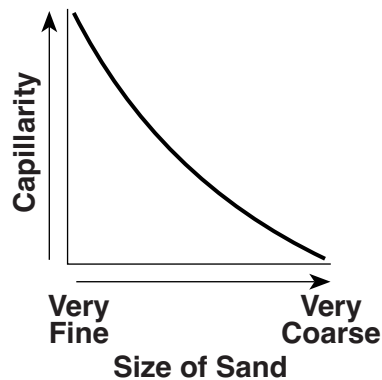
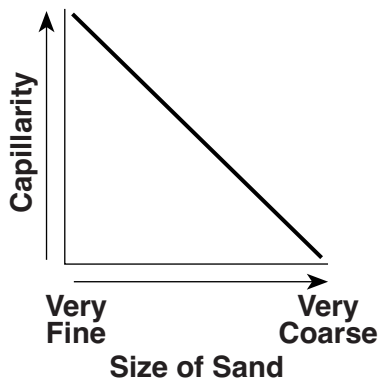
- 66 [1] Allow 1 credit if the tops of *all five* bars are within or touch the clear rectangular spaces shown below.

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



- 67 [1] Allow 1 credit for a line showing that, generally, as the size of sand increases, capillarity decreases.

Examples of 1-credit responses:



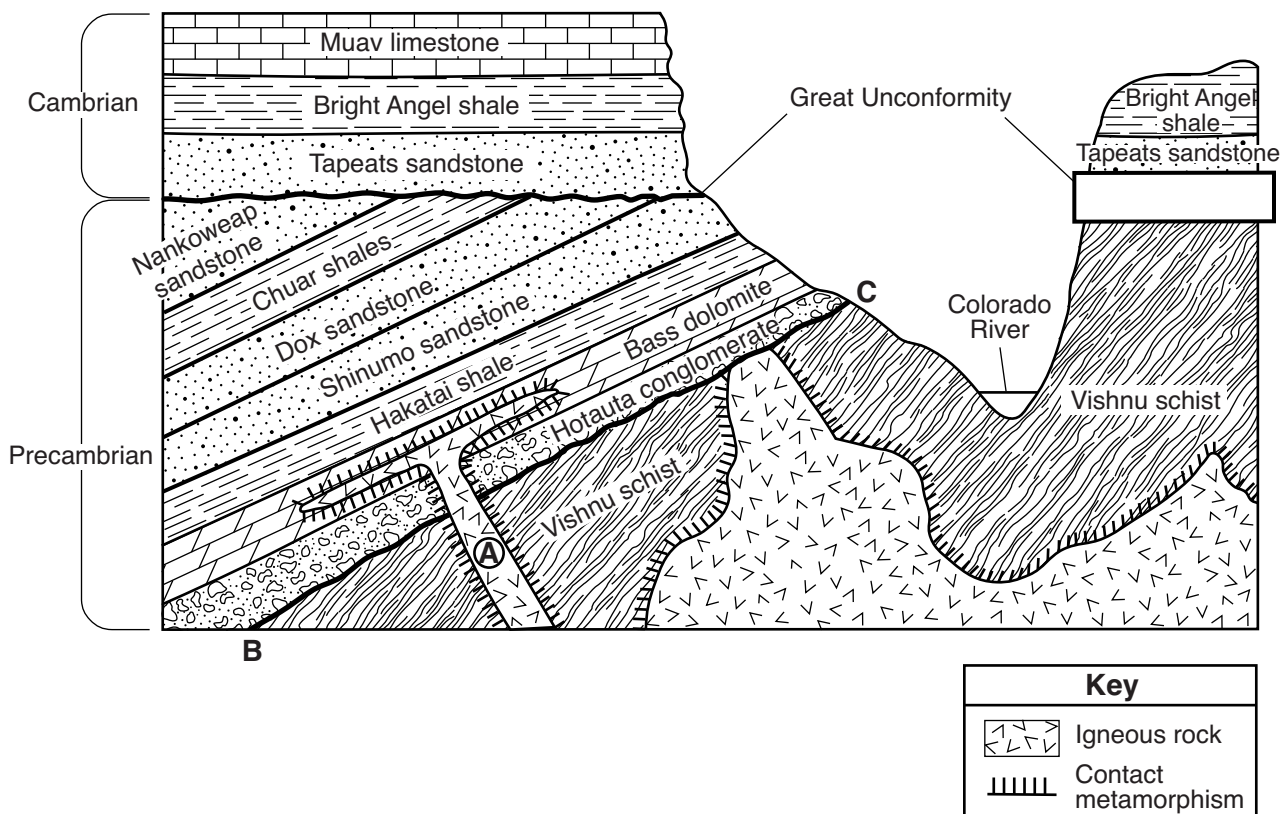
68 [1] Allow 1 credit for any value from 5 cm/s to 6 cm/s.

69 [1] Allow 1 credit if the center of the **X** is within or touches the clear rectangular region shown below.

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

If more than one **X** is drawn, the centers of all **Xs** must be within or touch the clear rectangular region to receive credit.

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



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

- uplift/emergence
- weathering
- erosion
- submergence/sinking/subsidence
- deposition/sedimentation
- burial

- 71 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Rock unit *A* cuts across unconformity *BC*.
 - Rock unit *A* intrudes into both the Bass dolomite and the Hotauta conglomerate, which are younger than unconformity *BC*.
 - Rock *A* is an igneous intrusion that is younger than the bedrock that it intrudes.

- 72 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- metamorphism/regional metamorphism
 - recrystallization
 - heating
 - pressure/compression

Note: Do *not* allow credit for contact metamorphism because schist forms by regional metamorphism.

- 73 [1] Allow 1 credit for barometer *or* barograph.

- 74 [1] Allow 1 credit for stationary front.

- 75 [1] Allow 1 credit for mT. Allow credit for either uppercase *or* lowercase letters.

Note: Do *not* allow credit if air mass letters are reversed, such as Tm.

For students who used the Spanish edition, either exclusively or in conjunction with the English edition of the exam, allow credit for the correct two-letter air mass symbol as it appears in either the English or Spanish editions of the reference tables.

- 76 [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- NE
 - east
 - NNE
 - east northeast
 - from west to east

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

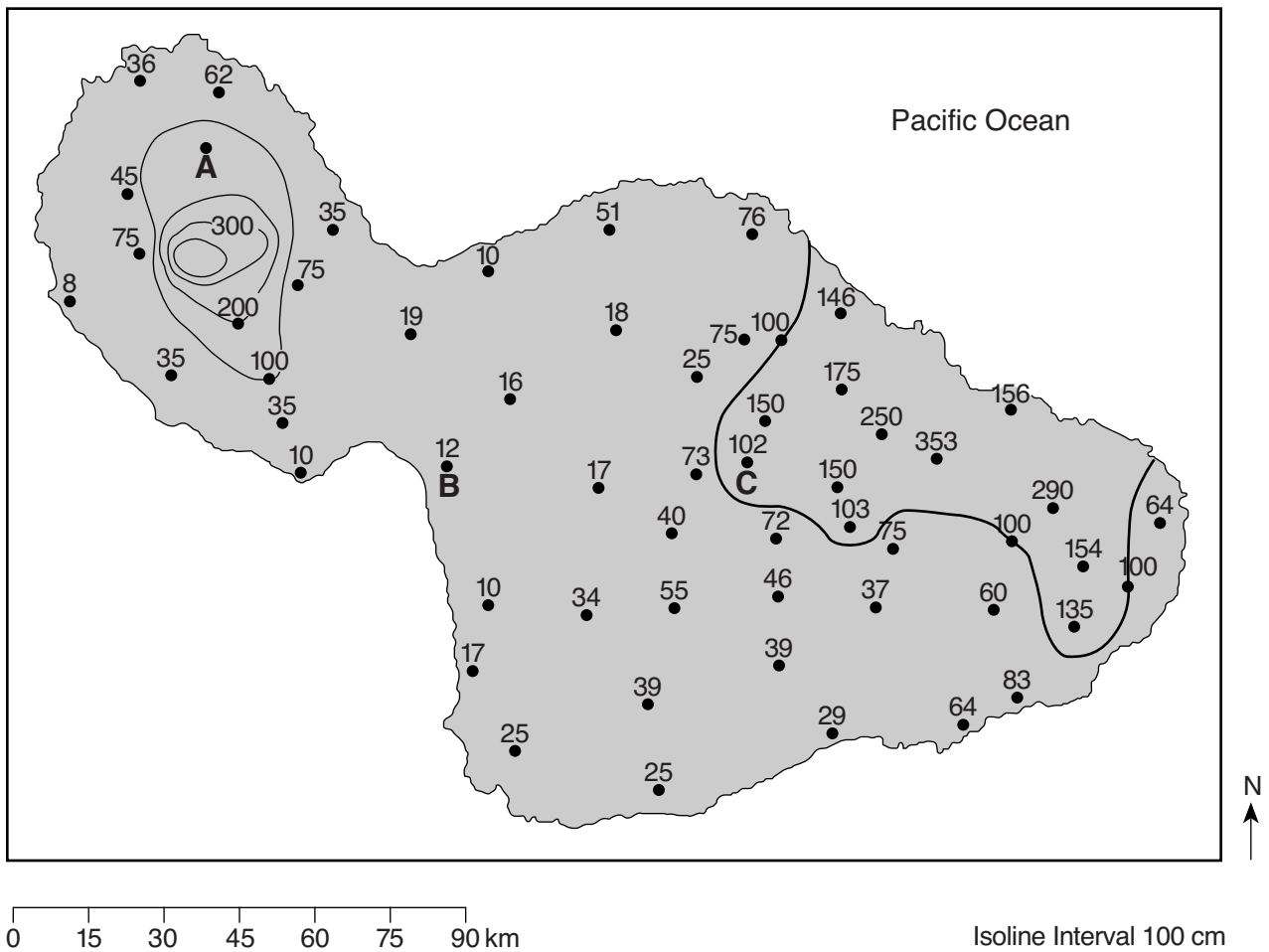
- clockwise and away from the center
- outward/diverging
- clockwise

78 [1] Allow 1 credit for a correctly drawn 100-cm isoline. The isoline must extend to the edges of the island. If additional isolines are drawn, or if isolines extend into the ocean, all isolines must be correct to receive credit.

Note: The 100-centimeter isoline must pass through all three 100-cm points.

Example of a 1-credit response:

Average Yearly Rainfall Map for Maui



79 [1] Allow 1 credit for any value greater than 100 cm but less than 200 cm.

80 [1] Allow 1 credit for any value from 1.4 cm/km to 1.6 cm/km.

Note: Allow credit if the student indicates a correct fraction such as $1\frac{1}{2}$.

Do not allow credit for $\frac{90}{60}$ or $\frac{3}{2}$ because these are not complete calculations.

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

- Location *X* is on the windward side of the mountain.
- Location *Y* is in the rainfall shadow/leeward side of Mt. Haleakala.
- The prevailing winds bring moisture from the ocean to Location *X*.

Note: Do *not* allow credit for “*X* is closer to the ocean” because *Y* is approximately the same distance to the ocean.

82 [1] Allow 1 credit for any value from 270 d to 278 d.

83 [1] Allow 1 credit for any value from 23.4° N to 23.5° N. The acceptable units and compass direction must be indicated.

Note: Allow credit if the student indicates a fraction such as $23\frac{1}{2}^{\circ}$ N or uses minutes such as 23°30' N.

84 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- gravity
- gravitational attraction
- gravitational force
- the Sun’s gravitational pull

85 [1] Allow 1 credit if *both* descriptions are acceptable. Acceptable responses include, but are not limited to:

Relative summer temperatures:

- warmer/hotter
- higher in temperature

Relative winter temperatures:

- cooler/colder
- lower in temperature

Regents Examination in Physical Setting/Earth Science

January 2023

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

The *Chart for Determining the Final Examination Score for the January 2023 Regents Examination in Physical Setting/Earth Science* will be posted on the Department's web site at: <http://www.nysed.gov/state-assessment/high-school-regents-examinations> on Friday, January 27, 2023. 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.nysed.gov/state-assessment/teacher-feedback-state-assessments>.
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 2023 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1	4		66, 80, 82
Math Key Idea 2	24, 27	42, 57, 60	67
Math Key Idea 3		61	79
Science Inquiry Key Idea 1	1, 3	39, 59	70, 73, 81, 85
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	3, 4, 5, 6, 7, 8, 16, 18, 20, 21, 23, 24, 25, 28, 35, 37	40, 42, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 57, 58, 60, 61, 62, 63, 64, 65	68, 69, 72, 74, 75, 80, 82
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1	31	43	84
Key Idea 2	12, 13, 14, 15, 29, 30, 31, 32, 33	41, 44, 45, 47, 55, 58, 59, 62, 63, 64, 65	66, 69, 71, 74, 75, 76, 78, 79, 81, 82, 83
Key Idea 3			
Key Idea 4			
Key Idea 5	18	36, 38, 56, 61	76, 77, 84, 85
Key Idea 6			
Standard 7			
Key Idea 1		54	
Key Idea 2			
Standard 4			
Key Idea 1	1, 2, 3, 4, 5, 12, 13, 14, 16, 19, 20, 21, 22, 25, 27, 28	36, 37, 38, 39, 40, 43, 52, 56, 57, 58, 59, 60, 61	67, 69, 70, 71, 82, 83, 84, 85
Key Idea 2	6, 7, 8, 9, 10, 11, 15, 17, 18, 23, 24, 26, 29, 30, 31, 32, 33	41, 42, 44, 45, 46, 47, 55, 62, 63, 64, 65	66, 68, 73, 74, 75, 76, 77, 78, 79, 80, 81
Key Idea 3	34, 35	48, 49, 50, 51, 53, 54	72
Reference Tables			
ESRT 2011 Edition (Revised)	3, 4, 5, 6, 7, 8, 16, 18, 20, 21, 23, 24, 25, 28, 35, 37	40, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 57, 58, 60, 61, 62, 63, 64, 65	68, 72, 74, 75, 80, 82