

FOR TEACHERS ONLY

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

PHYSICAL SETTING/EARTH SCIENCE

Thursday, August 14, 2014 — 12:30 to 3:30 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 2	10 3	19 3	28 4
2 3	11 4	20 4	29 1
3 1	12 3	21 1	30 2
4 2	13 2	22 3	31 4
5 4	14 4	23 1	32 3
6 4	15 4	24 1	33 2
7 2	16 4	25 4	34 4
8 3	17 1	26 1	35 1
9 1	18 4	27 3	

Part B-1

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

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 Thursday, August 14, 2014. 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.

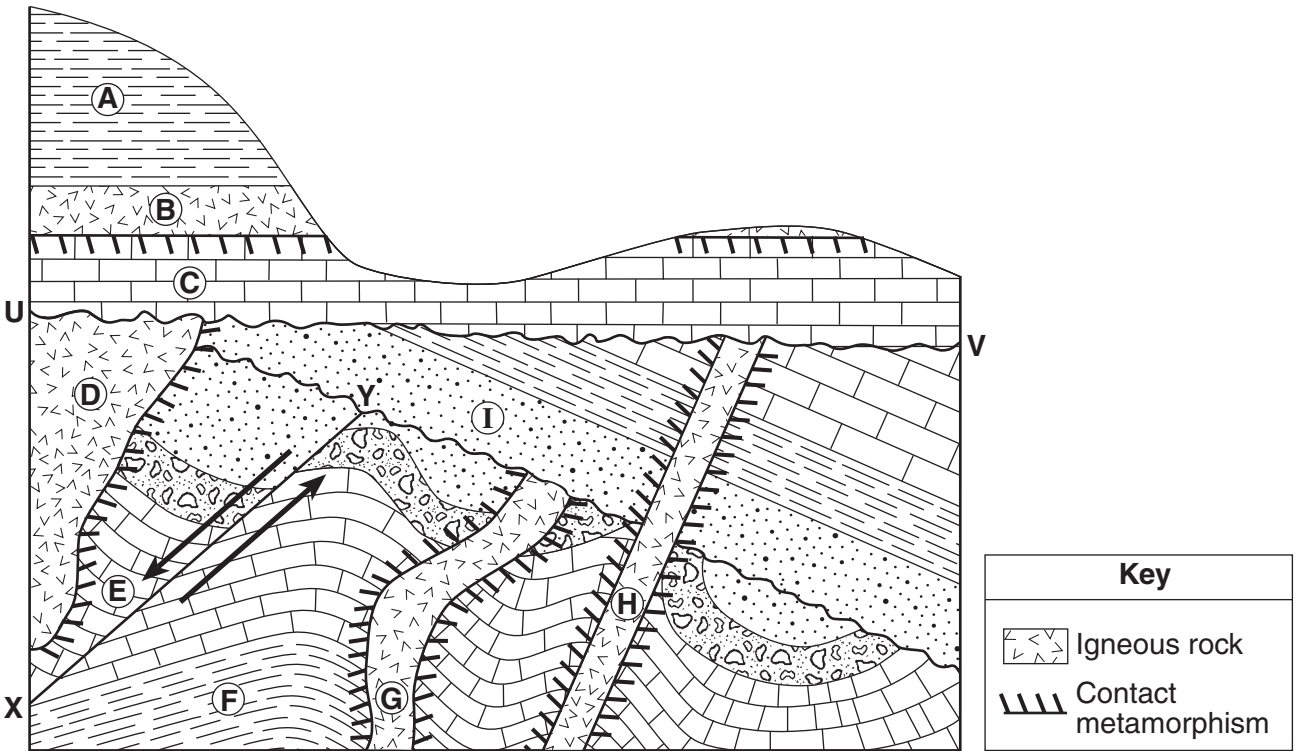
Because scale scores corresponding to raw scores in the conversion chart may change from one administration to another, it is crucial that, for each administration, the conversion chart provided for that administration be used to determine the student's final score.

Part B-2

Allow a maximum of 15 credits for this part.

- 51 [1] Allow 1 credit for one arrow pointing downward on the left side of line XY and one arrow pointing upward on the right side of line XY.

Example of a 1-credit response:



- 52 [1] Allow 1 credit for *F*.

- 53 [1] Allow 1 credit for marble *or* hornfels.

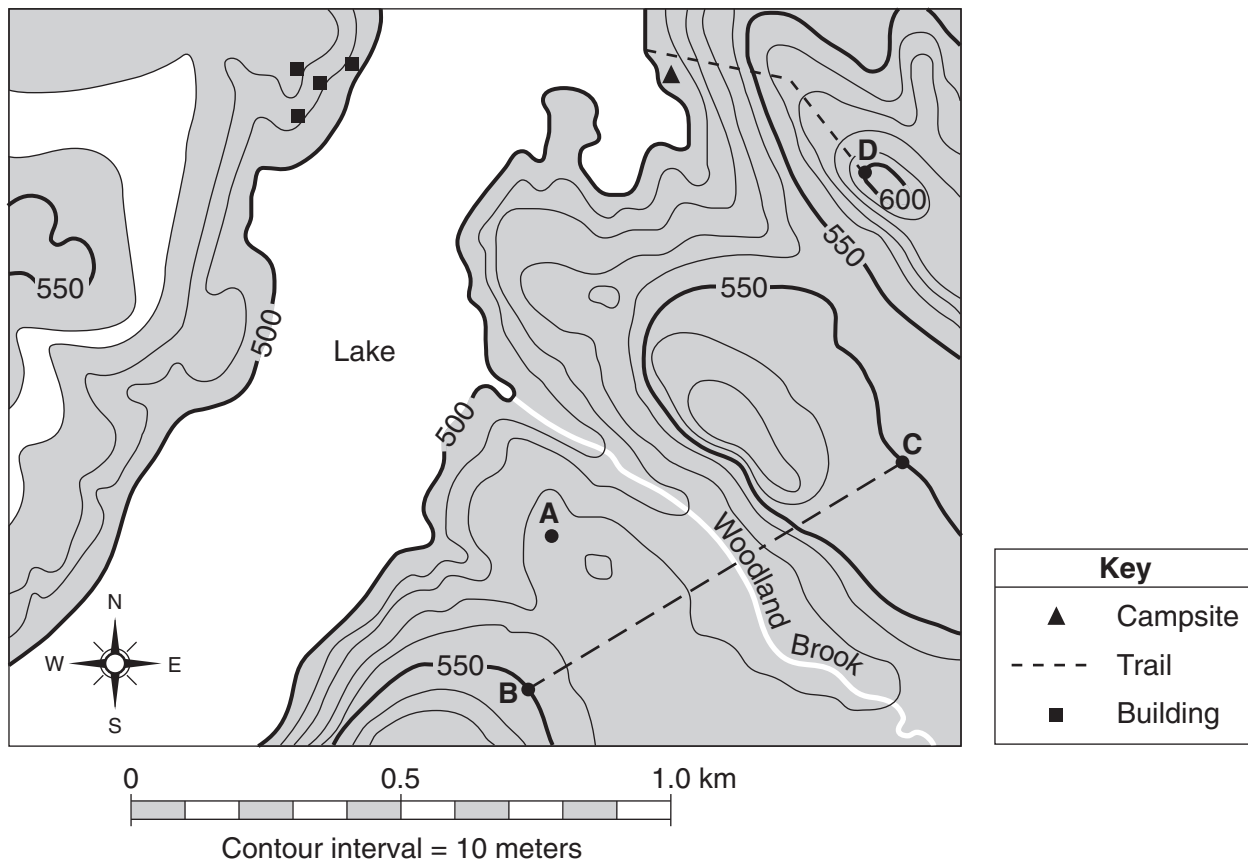
- 54 [1] Allow 1 credit for any value greater than 420 million years ago but less than 454 million years ago.

- 55** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- plowing large areas of the plains
 - poor farming practices
 - Farmers loosened the soil.
 - Farmers removed vegetation that had held the soil in place/deforested the land.
 - farming
- 56** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- They became more rounded.
 - They became smaller in size/thinner/finer.
 - The outside surface became scratched/frosted/pitted.
 - Sand grains become smoother.
- 57** [1] Allow 1 credit for troposphere.
- 58** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The velocity of the wind could carry only small/less dense/flatter particles.
 - Sand is heavier and not likely to be carried that far.
 - The velocity of the wind was not great enough to carry sand particles.
 - Smaller particles are eroded more easily.
 - Silt and clay are smaller-sized particles.

- 59 [1] Allow 1 credit if the center of an **X** is located in the white area between the 530 m and 540 m contour lines on the west side of the lake as shown below.

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

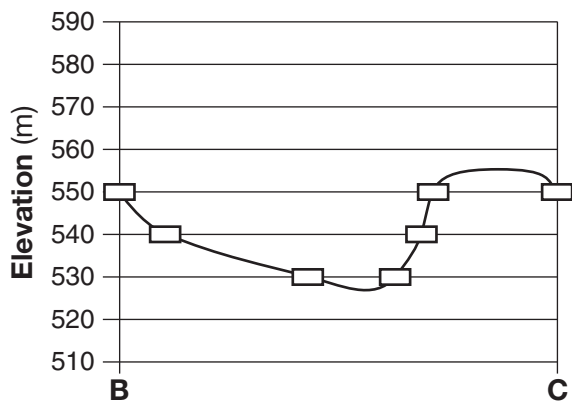
Do *not* allow credit if the center of the **X** touches the 530 or the 540 contour line.



- 60 [1] Allow 1 credit if the centers of *all seven* student plots are within or touching the rectangles shown below and are correctly connected with a line passing within or touching the rectangles. The line must show the lowest elevation between 520 m and 530 m, and the highest elevation between 550 m and 560 m.

Note: Allow credit if the line does not pass through the student plots but is still within or touching the rectangles.

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



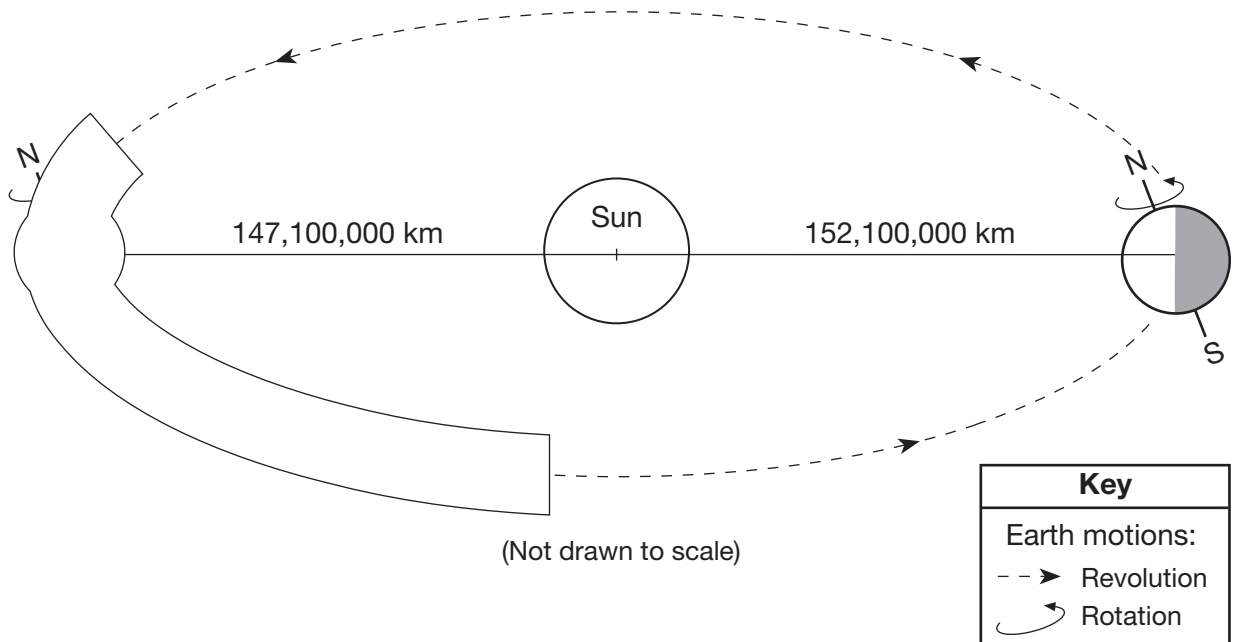
- 61** [1] Allow 1 credit if *both* “into the lake” is circled and the “contour-line evidence” is correct. Acceptable evidence includes, but is not limited to:
- The contour lines bend away from the lake where they cross the stream.
 - The lines do not go straight across, but curve to the southeast when they cross Woodland Brook.
 - The contour lines that cross Woodland Brook show the lowest elevation where the brook enters the lake.
 - law of the Vs/Contour lines make a V shape that points uphill where they cross a stream.
 - A river flows from a higher elevation to a lower elevation.

Note: Allow credit if “into the lake” is not circled, but is included in the student’s evidence.

- 62** [1] Allow 1 credit for any value from 185 m/km to 215 m/km.

- 63** [1] Allow 1 credit if the center of the **X** is within or touching 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 sheet be used to ensure reliability in rating.



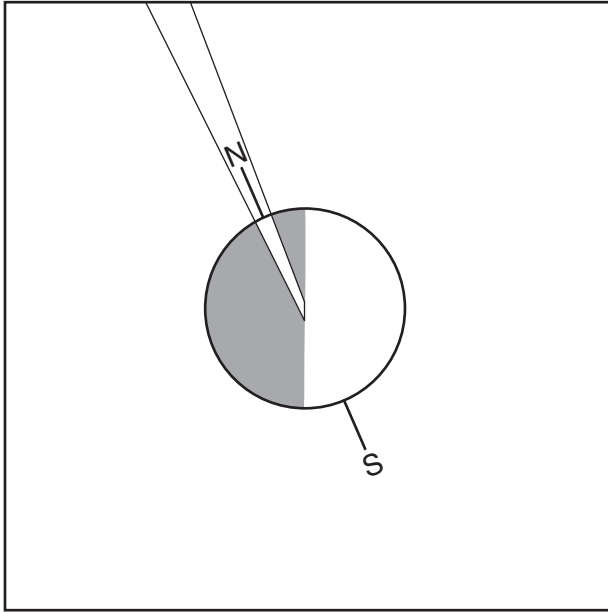
64 [1] Allow 1 credit for any value from 23.4° to 23.5° .

Note: Allow credit if the student indicates a fraction, such as $23\frac{1}{2}$.

65 [1] Allow 1 credit for an arrow that is aligned with Earth's axis and is within the cone-shaped area 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.

Allow credit even if the arrow does not start exactly at the North Pole.

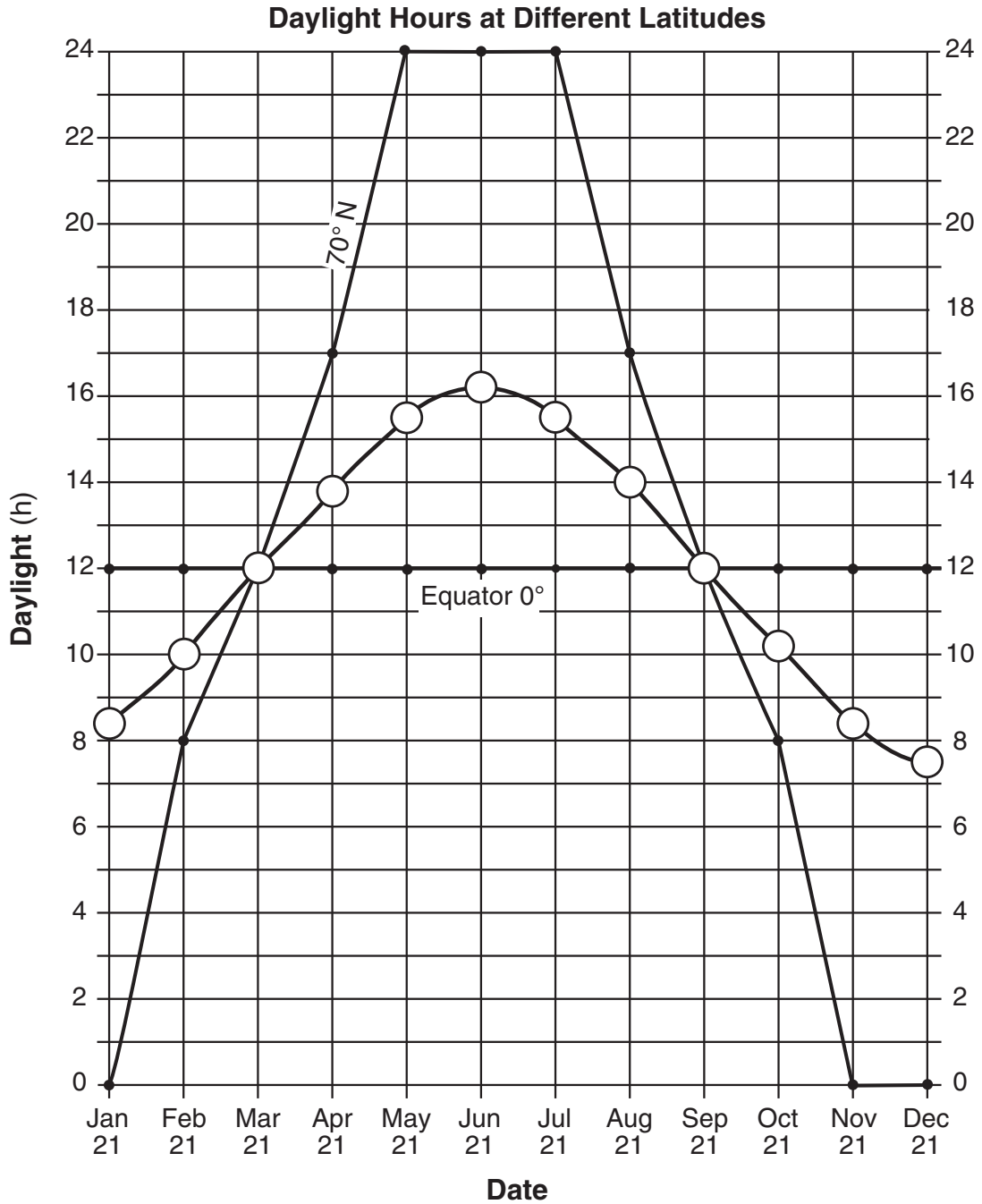


Part C

66 [1] Allow 1 credit if the centers of *all 12* student plots are within or touching the circles shown below and a correctly drawn line passes within or touches each circle.

Note: Allow credit if the student line does not pass through the student plots but is still within or touching the circles.

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. Acceptable responses include, but are not limited to:
- These dates represent the first days of spring and fall.
 - The Sun rises due east and sets due west at all latitudes.
 - The Sun’s direct rays are at the equator at solar noon on these dates.
 - March 21 and September 21 are equinoxes.
 - There are 12 hours of daylight and 12 hours of darkness on an equinox at all latitudes.
 - Earth’s axis is not tilted toward the Sun or away from the Sun at that time.

68 [1] Allow 1 credit for 0 h.

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

Color: — black

— dark

Texture: — rough

— bumpy

— uneven

— jagged

— coarse

70 [1] Allow 1 credit for a value of 0.5 C°/h.

Note: Do *not* allow credit for negative values or for any fraction other than $\frac{1}{2}$.

71 [1] Allow 1 credit if *both* responses are acceptable. Acceptable responses include, but are not limited to:

— carbon dioxide/CO₂

— methane/CH₄

— water vapor/H₂O

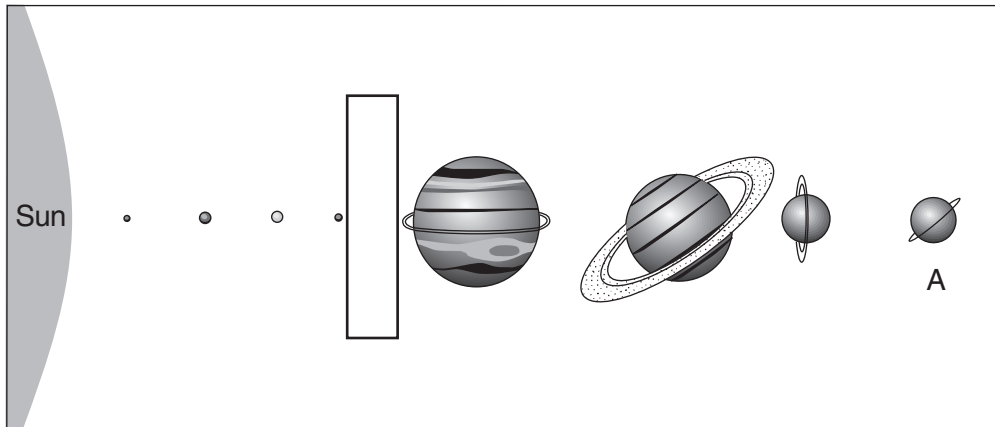
— chlorofluorocarbons/CFCs

— nitrous oxide/N₂O

— ozone/O₃

72 [1] Allow 1 credit if the center of the **X** is drawn in or touches the box shown below.

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



(Not drawn to scale)

73 [1] Allow 1 credit for 16 with the correct units. Acceptable units include, but are not limited to:

- h
- hrs
- hours

74 [1] Allow 1 credit for a value equivalent to 4600 million years ago.

Note: If the student crosses out million years ago, allow credit if an equivalent value is expressed in other units (e.g. 4.6 billion years ago).

75 [1] Allow 1 credit for any value from 115 to 115.003305 times larger.

Note: Do *not* allow credit if a unit is included (e.g. 115 km).

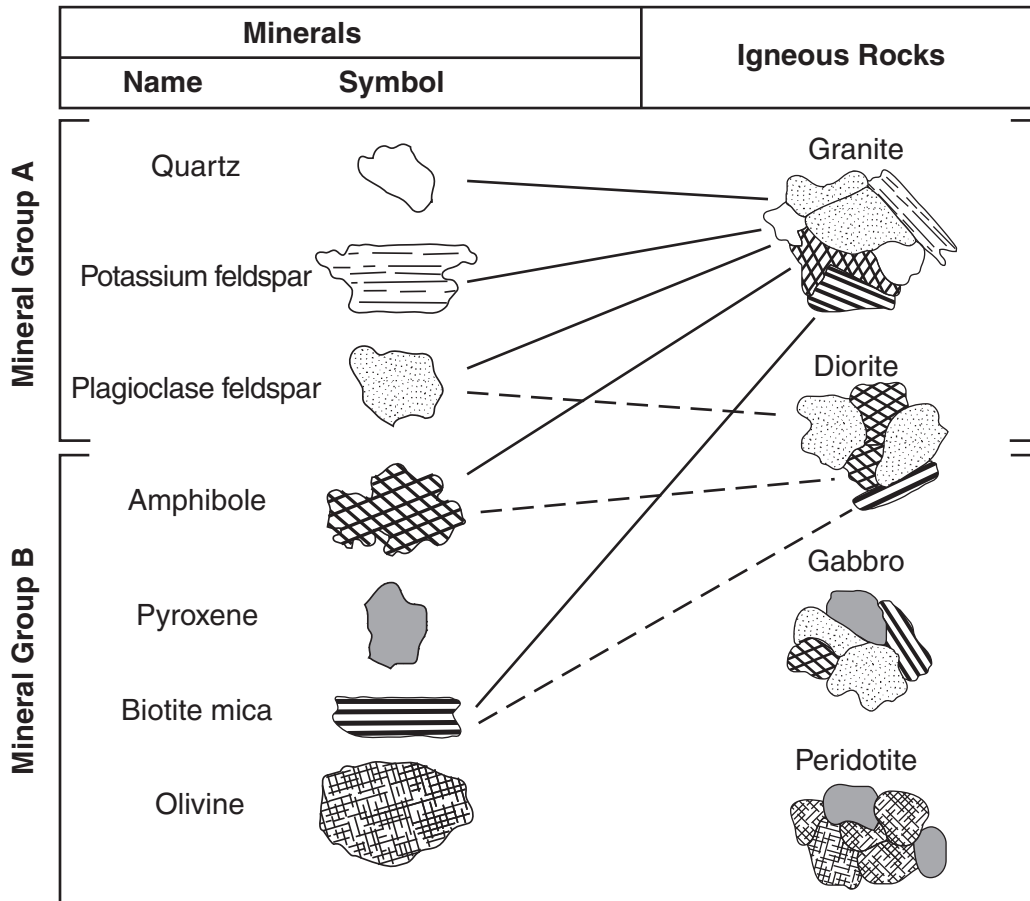
76 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- fusion
- nuclear fusion
- conversion of hydrogen to helium/H to He

77 [1] Allow 1 credit if *all five* lines are drawn from granite to the minerals quartz, potassium feldspar, plagioclase feldspar, amphibole, and biotite mica.

Note: If extra lines are drawn between the minerals and the rocks, all lines must be correct in order to receive credit.

Example of a 1-credit response:



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

Group A:

- lighter colored
- more felsic
- lower density
- lacks magnesium/Mg/iron/Fe
- rich in silicon/Si/aluminum/Al

79 [1] Allow 1 credit for quartz *or* pyroxene.

- 80** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The particles are layered.
 - The sedimentary rock may have fossils.
 - There are no intergrown crystals.
 - The sedimentary rock may have rounded or angular fragments.
 - The grains are cemented together.
 - The rock contains different sediments.
 - Sedimentary rock contains fragments.

- 81** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The warm waters that give the hurricane its energy are located in this tropical region of the ocean.
 - Warm ocean waters between 10° N and 20° N fuel hurricanes.
 - Warm and/or humid atmospheric conditions exist between 10° N and 20° N.
 - a maritime tropical air mass
 - low air pressure
 - rising air currents
 - low wind shear

- 82** [1] Allow 1 credit for *two* acceptable responses. Acceptable responses include, but are not limited to:
- learn about hurricane risks for area
 - learn safe emergency evacuation routes/shelter locations
 - obtain/check emergency equipment (radio, flashlight, first-aid kit)
 - have enough water and nonperishable food
 - make sure to have materials to secure home (plywood, shatter-resistant glass, hurricane shutters/straps, sandbags)
 - update insurance

Note: Do *not* allow credit for any action that implies an imminent hurricane.

- 83** [1] Allow 1 credit for San Andreas Fault *and* an acceptable plate tectonic boundary. Acceptable boundaries include, but are not limited to:
- transform boundary/transforming
 - Plates slide horizontally past each other.
- 84** [1] Allow 1 credit if *both* responses are correct.
- Perceived shaking: violent
- Observed damage: heavy
- 85** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Santa Rosa was farther from the 1989 earthquake epicenter.
 - Earthquake waves lose energy as they travel outward from the epicenter.
 - As distance from the epicenter increases, intensity decreases.
 - Salinas was closer to the origin of the earthquake.

Note: All responses must correctly refer to the earthquake epicenter or earthquake origin in order to receive credit.

Regents Examination in Physical Setting/Earth Science

August 2014

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

The Chart for Determining the Final Examination Score for the August 2014 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, August 14, 2014. 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 2014 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1		62	70, 75
Math Key Idea 2	2	49, 59	66
Math Key Idea 3			72
Science Inquiry Key Idea 1	15, 18	37, 41, 51, 53, 54, 56, 58	67, 69, 71, 76, 77, 81
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	3, 8, 9, 11, 12, 13, 14, 16, 17, 19, 20, 21, 22, 23, 31, 35	36, 38, 43, 44, 45, 46, 48, 53, 55, 57, 58, 62	70, 72, 73, 74, 75, 78, 79, 80, 83, 85
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1	4, 7, 25, 27, 29	55, 58, 63	78, 80, 81
Key Idea 2	6, 14, 19, 22, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35	38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 50, 52, 53, 54, 60, 61, 63, 64, 65	77, 78, 79, 80, 83, 84, 85
Key Idea 3		36	84
Key Idea 4			
Key Idea 5	4, 7, 15, 19, 27, 29	40, 51, 54, 56	68
Key Idea 6			
Standard 7			
Key Idea 1			
Key Idea 2			82
Standard 4			
Key Idea 1	1, 2, 4, 5, 6, 7, 17, 18, 19, 27, 28, 29, 30	36, 37, 43, 44, 46, 49, 50, 51, 52, 54, 63, 64, 65	67, 72, 73, 74, 75, 76
Key Idea 2	3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 20, 21, 22, 24, 25, 26, 31, 32, 33, 34, 35	38, 39, 40, 41, 42, 47, 48, 55, 56, 57, 58, 59, 60, 61, 62	66, 68, 69, 70, 71, 81, 82, 83, 84, 85
Key Idea 3	23	45, 53	77, 78, 79, 80
Reference Tables			
ESRT 2011 Edition (Revised)	2, 3, 8, 9, 11, 12, 13, 14, 16, 17, 19, 20, 21, 22	36, 38, 43, 44, 45, 46, 48, 53, 57, 58, 62	72, 73, 74, 75, 77, 78, 79, 80, 83