

FOR TEACHERS ONLY

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

PHYSICAL SETTING/EARTH SCIENCE

Friday, June 16, 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: <https://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: <https://www.nysed.gov/state-assessment/high-school-regents-examinations> on Friday, June 16, 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 for delta.

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

- As distance from the shoreline increases, the average diameter of the particles decreases.
- As distance increases, size decreases.
- Particle size decreases as you travel farther off shore.
- Larger particles are closer to the shoreline.
- an inverse relationship
- negative correlation

53 [1] Allow 1 credit if *both* processes are correct. Acceptable responses include, but are not limited to:

Dominant process along the outside of curve:

- erosion
- removal of sediment from the stream bank

Dominant process along the inside of curve:

- deposition
- sedimentation
- depositing of rock fragments

Note: Allow credit for “weathering and erosion” as the dominant process along the outside of the curve, *but do not* allow credit for “weathering” because weathering alone does *not* cause the river to change its path.

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

- Sharp corners break off or wear off when they hit obstacles.
- Particles chip off the rock as it tumbles, bounces, and rolls along the bed of the river.
- Particles collide with other rock fragments and break off sharp edges.

Note: Do *not* allow credit for “water erosion” or “water rounding,” alone because water alone does *not* produce rounding.

55 [1] Allow 1 credit for divergent/diverging plate boundary.

56 [1] Allow 1 credit for identifying plate X as the Nubian Plate *and* plate Y as the Somalian Plate.

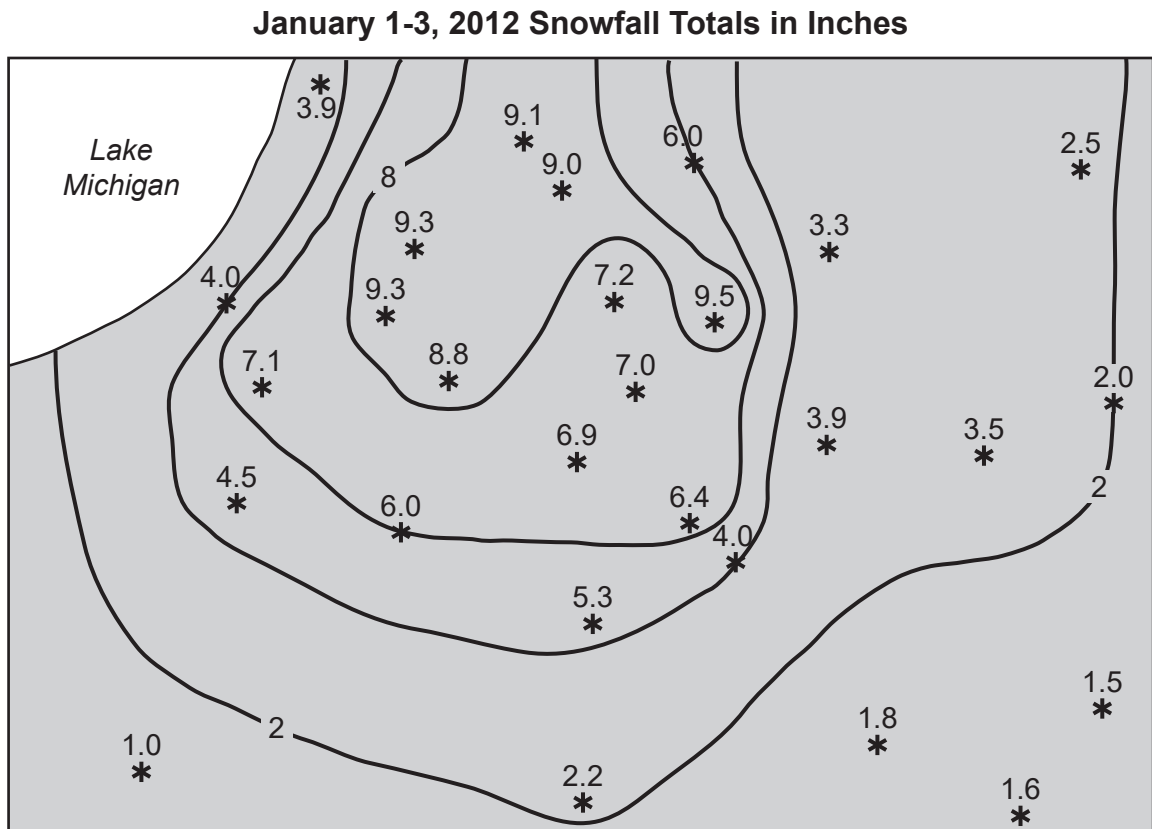
57 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- earthquakes
- faulting

58 [1] Allow 1 credit for correctly drawing *both* the 4- and 6-inch isolines. Both must extend to the top edge of the map to receive credit. If other isolines are drawn, all lines must be correct to receive credit.

Note: The 4-inch isoline must pass through or touch the two 4.0-inch snow symbols and the 6-inch isoline must pass through or touch the *two* 6.0-inch snow symbols to receive credit.

Example of a 1-credit response:



59 [1] Allow 1 credit for cA or cP. Allow credit for either uppercase or lowercase letters.

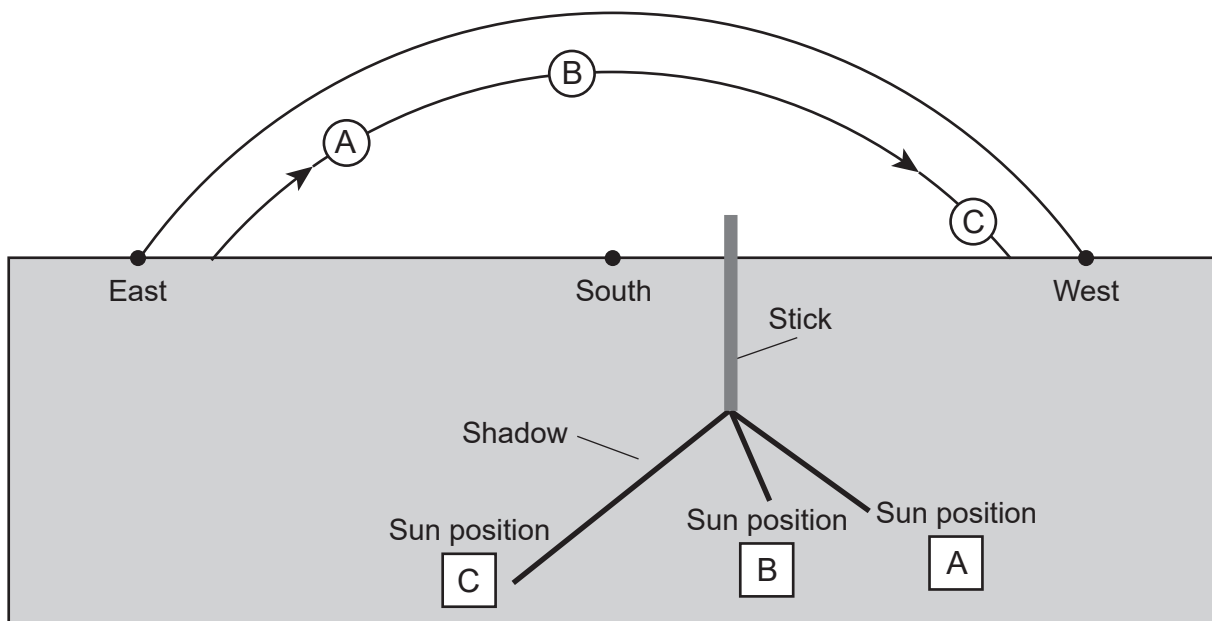
Note: Do *not* allow credit if air-mass letters are reversed, such as Pc. For students who used the Spanish edition, either exclusively or in conjunction with the English edition of the exam, allow credit for the correct two-letter air-mass symbol as it appears in either the English or Spanish *2011 Edition Reference Table for Physical Setting: Earth Science*.

60 [1] Allow 1 credit if *all three letters* are correct as shown below.

61 [1] Allow 1 credit for a Sun path that begins at east and ends at west and is higher than the October 21 path.

Note: If arrows are added to the student-drawn Sun path, the arrows must point in the correct direction.

Example of a 2-credit response for questions 60 and 61:



62 [1] Allow 1 credit for letter *B* and acceptable evidence. Acceptable responses include, but are not limited to:

- The Sun is closest to its highest position in its apparent path.
- The Sun is nearly over due south nearly halfway into its path.
- The Sun at position *B* casts the shortest shadow.
- Positions *A* and *C* are closer to the horizon than *B*.
- Position *B* is the highest altitude of the three given positions.
- *B* has the shortest shadow of the three.

63 [1] Allow 1 credit for a correctly completed data table as shown below.

Steps in the Lives of Sun-like Stars

Step	Description	Stage of Star Development
1	Large gas cloud	Nebula
2	Surface temperature: 3000 K Luminosity: 10 x Sun	Protostar
3	Surface temperature: 5500 K Luminosity: 1 x Sun	Main Sequence
4	Surface temperature: 3000 K Luminosity: 2000 x Sun	Giant
5	Surface temperature: 13,000 K Luminosity: 0.001 x Sun	White Dwarf

64 [1] Allow 1 credit for gravity *or* gravitational force.

65 [1] Allow 1 credit for hydrogen *or* H.

Part C

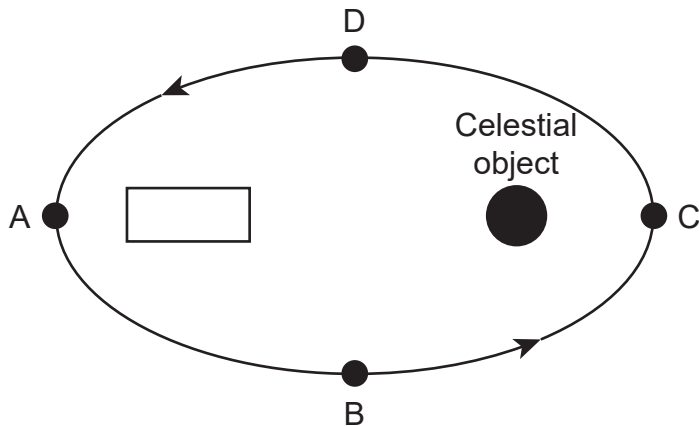
Allow a maximum of 20 credits for this part.

- 66** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- Due to the tilt of Earth’s axis, the direct rays move northward.
 - The Sun’s direct rays move north of the equator.
 - Earth’s axis is tilted.
- 67** [1] Allow 1 credit if *both* latitude are acceptable.
- Latitude farthest north:
- Allow credit for any value from 25° N to 30° N.
- Latitude farthest south:
- Allow credit for any value from 20° S to 25° S.
- 68** [1] Allow 1 credit. Acceptable responses include, but are not limited to:
- The air is warmer and less dense, causing it to lift.
 - Lower air pressure causes winds to converge and to rise.
 - ITCZ is a band of low air pressure.
 - Moist air is less dense.

69 [1] Allow 1 credit if the center of an **X** is within or touches the clear rectangle 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.



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

- The orbit would become less elliptical.
- nearly circular/more circular

Note: Do *not* allow credit for “decreasing eccentricity” because eccentricity describes a numerical value, not a shape.

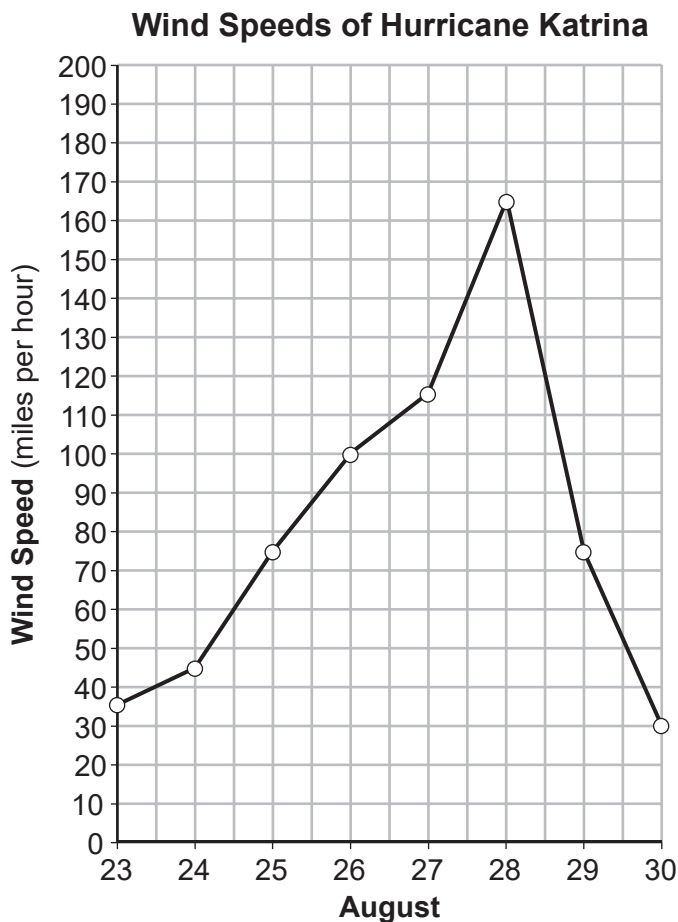
71 [1] Allow 1 credit for position *C* and a correct explanation. Acceptable responses include, but are not limited to:

- The gravitational pull is greatest at *C* because the satellite is closest to the celestial object.
- It is closest to the object being orbited.
- It is closest to the celestial object.
- As distance between objects decreases, gravity increases.

72 [1] Allow 1 credit if the centers of *all eight* 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 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.



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

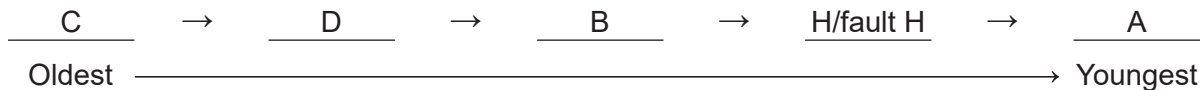
- Hurricanes weaken over land, causing wind speed to drop suddenly.
- The decrease in wind speed suggests that the hurricane made landfall.
- The barometric pressure increased on the 29th.
- When wind speed dropped, the hurricane weakened.

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

- As barometric pressure decreases, wind speed increases.
- The wind speed is faster when barometric pressure is lower.
- There is an inverse relationship.
- negative correlation

75 [1] Allow 1 credit for A.

76 [1] Allow 1 credit for the correct order.



77 [1] Allow 1 credit for *both* letter D and bituminous coal as the rock unit.

Note: Do *not* allow credit for “coal” alone because this term is too general; there is also anthracite coal.

78 [1] Allow 1 credit for *Cryptolithus* as the trilobite fossil *and* *Valcouroceras* as the nautiloid fossil.

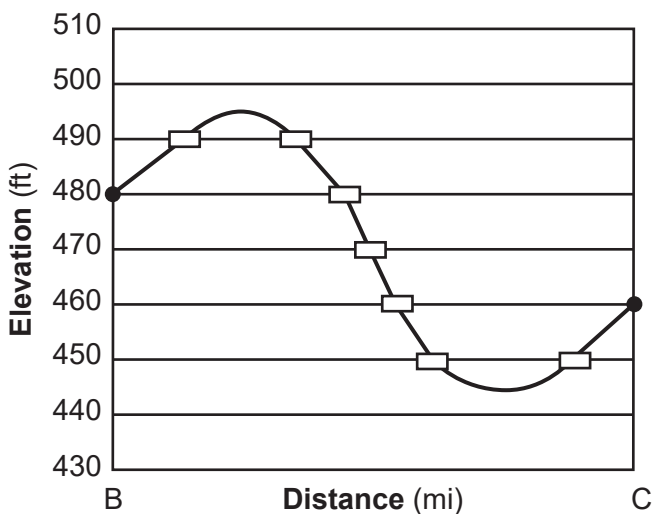
79 [1] Allow 1 credit for any value from 18.5 to 21.8 feet/mile.

80 [1] Allow 1 credit for any value greater than 470 feet, but less than 480 feet.

81 [1] Allow 1 credit if the centers of *all seven* plots are within or touch the rectangles shown and are correctly connected with a line that passes within or touches each rectangle. The high point of the line must extend above 490 feet, but below 500 feet. The low point must extend below 450 feet, but above 440 feet.

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 if the line misses a plot, but is still within or touches the rectangle.



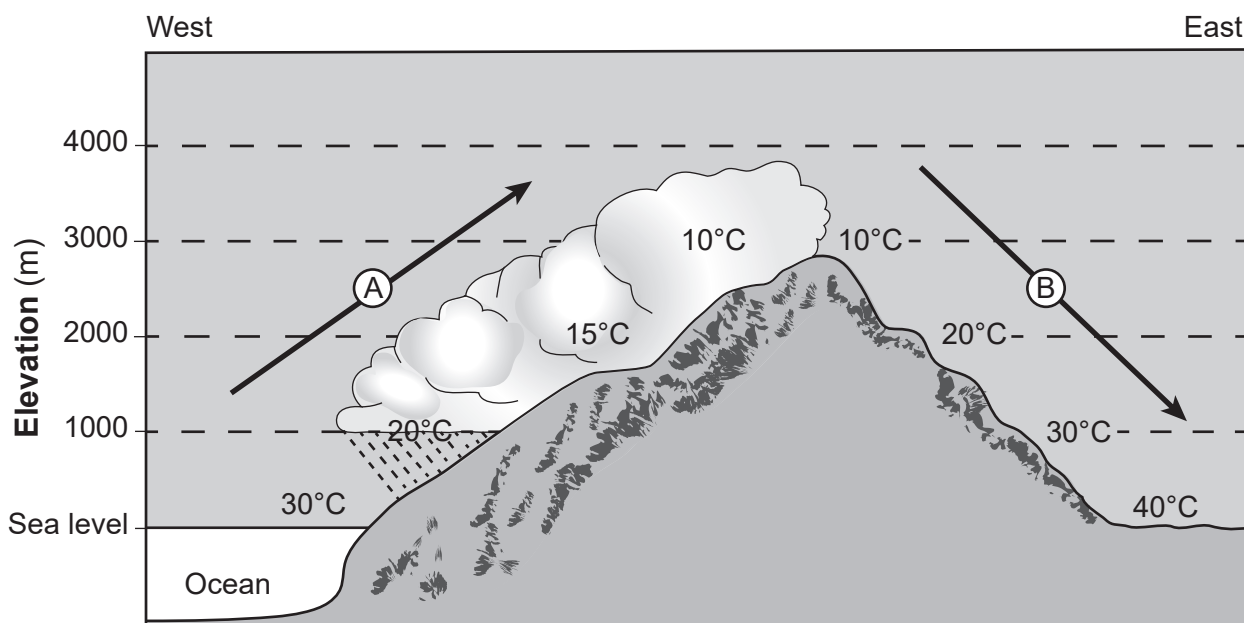
82 [1] Allow 1 credit for southeast/SE *and* correct evidence. Acceptable responses include, but is not limited to:

- Contour lines show elevation is decreasing in the south (southeast) portion of the map.
- Contour lines bend to point upstream when they cross Lyman stream.
- Streams flow out of the open end of the Vs.

Note: Do *not* allow credit for “streams flow downhill,” because this does not indicate how contour lines show the direction of stream flow.

83 [1] Allow 1 credit if *both* arrowheads are correct. The arrowhead on the western side *must* show an upward direction and the arrowhead on the eastern side *must* show a downward direction.

Example of a 1-credit response:



- 84 [1] Allow 1 credit if the air temperature *and* moisture conditions are correct. Acceptable responses include, but are not limited to:

Air temperature:

- It's hotter on the eastern side.
- warmer area
- higher temperatures
- It's 10°C warmer.
- The west side is cooler.

Moisture:

- dryer
- arid
- less moisture
- less precipitation
- lower relative humidity
- The west side is more moist.

- 85 [1] Allow 1 credit if *both* temperatures are correct

West:

- any value from 17°C to 18°C

East:

- any value from 24°C to 26°C

Regents Examination in Physical Setting/Earth Science

June 2023

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

The *Chart for Determining the Final Examination Score for the June 2023 Regents Examination in Physical Setting/Earth Science* will be posted on the Department's web site at: <https://www.nysed.gov/state-assessment/high-school-regents-examinations> on Friday, June 16, 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 <https://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

June 2023 Physical Setting/Earth Science			
Question Numbers			
Key Ideas/Performance Indicators	Part A	Part B	Part C
Standard 1			
Math Key Idea 1	7		72
Math Key Idea 2			73, 74, 80
Math Key Idea 3		40, 49	79, 82
Science Inquiry Key Idea 1	4, 5, 10, 12, 21, 24, 26	37, 38, 43, 47, 48, 49, 52, 54, 57, 59	66, 68, 70, 71, 84
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	1, 7, 9, 14, 16, 19, 20, 22, 23, 28, 29, 30, 33, 34, 35	44, 45, 47, 48, 49, 50, 55, 56, 59, 63, 65	67, 77, 78, 79, 85
Engineering Design Key Idea 1			
Standard 2			
Key Idea 1			
Key Idea 2			
Key Idea 3			
Standard 6			
Key Idea 1			75
Key Idea 2	13, 16, 20, 22, 25, 28	36, 40, 41, 42, 43, 44, 45, 46, 51, 53, 55, 56, 58, 60, 61, 62	66, 67, 68, 69, 71, 75, 76, 77, 78, 81, 83, 84, 85
Key Idea 3			80
Key Idea 4	27	39	
Key Idea 5	14, 18	36, 37, 38, 42, 56, 60, 61, 64	68, 76, 83, 84
Key Idea 6			
Standard 7			
Key Idea 1			
Key Idea 2			
Standard 4			
Key Idea 1	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 19, 20, 21, 24, 25	36, 37, 40, 41, 43, 48, 49, 50, 60, 61, 62, 63, 64, 65	67, 69, 70, 71, 75, 76, 77, 78
Key Idea 2	9, 13, 14, 15, 16, 17, 18, 22, 23, 26, 27, 28, 29, 30, 31, 32	38, 39, 42, 51, 52, 53, 54, 55, 56, 57, 58, 59	66, 68, 72, 73, 74, 79, 80, 81, 82, 83, 84, 85
Key Idea 3	33, 34, 35	44, 45, 46, 47	
Reference Tables			
ESRT 2011 Edition (Revised)	1, 7, 9, 16, 19, 20, 22, 23, 28, 29, 30, 33, 34, 35	44, 45, 47, 48, 49, 50, 55, 56, 59, 63	77, 78, 79