

# FOR TEACHERS ONLY

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

## PHYSICAL SETTING/EARTH SCIENCE

Thursday, June 20, 2024 — 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 Thursday, June 20, 2024. 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.

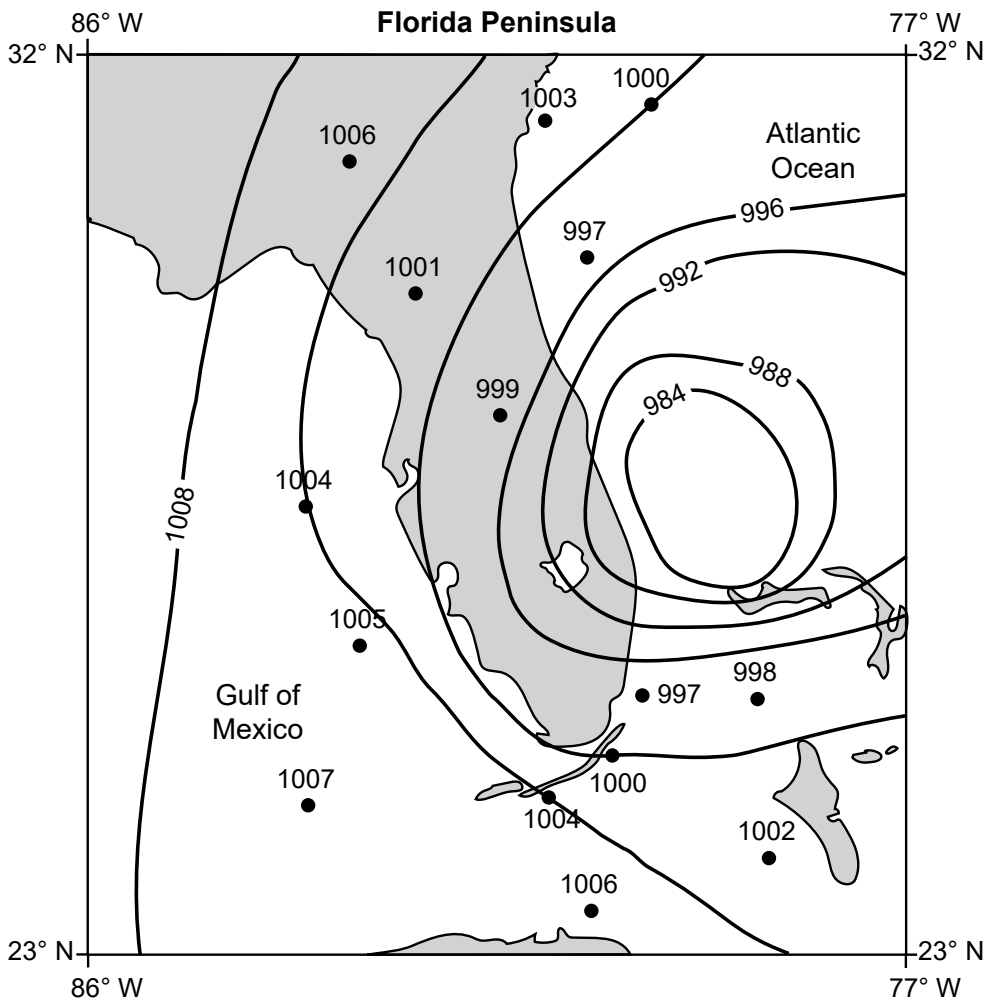
**Part B–2**

**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 *both* the 1000 mb and 1004 mb isobars are correctly drawn to the edges of the map. The isobars must pass through or touch both 1000 dots and *both* 1004 dots. If additional isobars are drawn, all isobars must be correct to receive credit.

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



- 52** [1] Allow 1 credit for any value from 29.05 to 29.06 in of Hg.

53 [1] Allow 1 credit for barometer *or* barograph.

54 [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 or 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 *2011 Edition Reference Tables for Physical Setting/Earth Science*.

55 [1] Allow 1 credit for any value great than 590°C but less than 640°C.

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

- Garnet coefficients are higher when rock formation temperature is lower.
- Higher temperatures result in lower garnet coefficients.
- inverse relationship/negative correlation

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

- phyllite
- schist
- gneiss

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

- The warmest temperatures occur in June, July, and August and the coldest temperatures occur in December, January, and February for a city in New York State.
- The curve would be opposite of Melbourne’s curve.
- Temperatures would increase until July then decrease.
- The line would generally go up to the middle of the graph, then down.
- The range of temperatures on the curve would be greater for a location in New York State.

**Note:** Do *not* allow credit for “it is cold in the winter and/or warm in the summer” because it is always cold in the winter and warm in the summer, this alone does not explain that the seasons are reversed for these locations.

59 [1] Allow 1 credit for circling warm *and* identifying the East Australia/East Australia Current as the ocean current.

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

- wave action/ocean waves
- mass movement/gravity
- rainwater runoff
- groundwater seepage
- wind

**61** Allow 1 credit for 0.8 *or* .8 ft/yr.

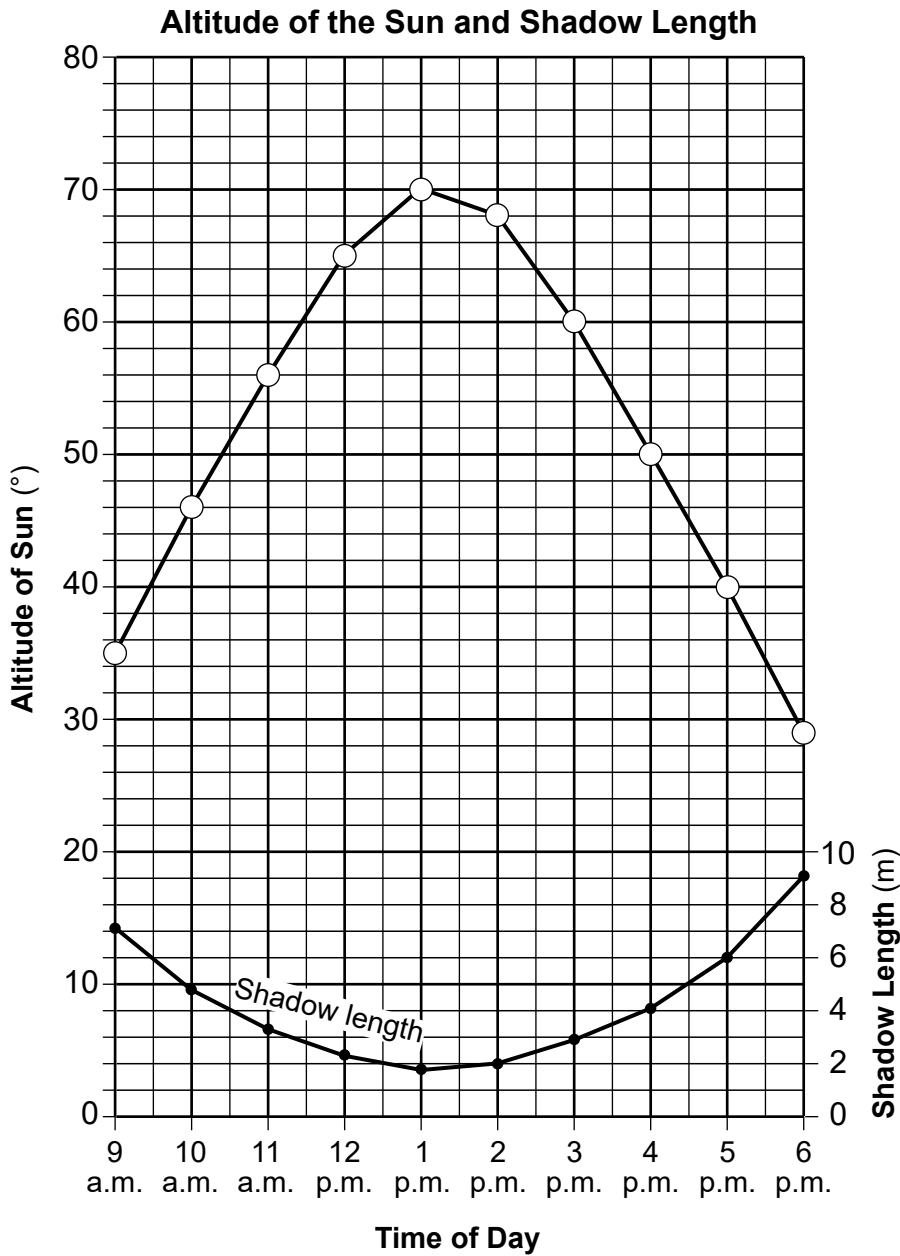
**62** [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- Add large boulders along the shoreline around the lighthouse.
- Build barriers to stop waves from affecting the coastal areas.
- Plant more trees and vegetation to hold the soil in place.
- Build a seawall or jetty.

63 [1] Allow 1 credit if the centers of *all ten* 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.



64 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- As the altitude of the Sun increases, the shadow length decreases.
- When the Sun gets higher, the shadow gets shorter.
- inverse *or* negative relationship/negative correlation

65 [1] Allow 1 credit for any value from 5.0 m to 5.1 m.

### Part C

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

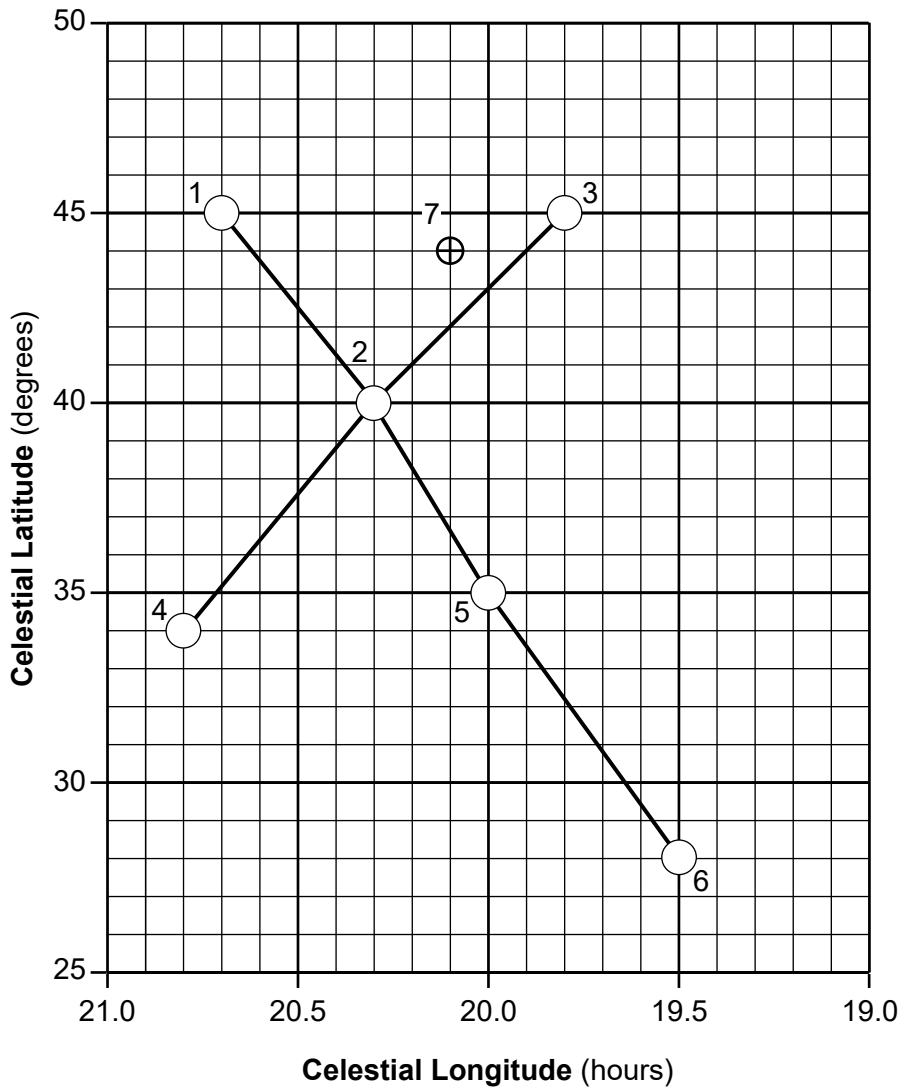
- 66** [1] Allow 1 credit for Silurian *or* Devonian or Ordovician Period.
- 67** [1] Allow 1 credit for *both* circling younger and describing correct evidence. Acceptable responses include, but are not limited to:
- Fault *YZ* displaces both rock layers *G* and *H*.
  - The fault has cut across these two preexisting rock layers.
  - The fault illustrates the Law of Crosscutting Relationships.

- 68 [1] Allow 1 credit if the centers of *all six* student plots are within or touch the circles shown and are correctly numbered. *All six* plots must be correctly connected with *two* separate lines that pass within or touch each circle as shown below.

Note: Allow credit if the lines do not pass through student plots, but are 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.

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



- 69 [1] Allow 1 credit for Mars.

- 70 [1] Allow 1 credit for ultraviolet or UV.



71 [1] Allow 1 credit for correctly completing the table as shown below.

Selected Stars in Cygnus	Color	Classification
Deneb	White	Supergiant
Alberio	Yellow or Orange or Yellow-orange	Giant
Tabby's Star	Yellow or Yellow-white	Main Sequence

72 [1] Allow 1 credit for stationary front *and* cold front.

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

- northeast/NE
- north northeast/NNE
- eastward/E
- east northeast/ENE

74 [1] Allow 1 credit if *all four* values are correct, as shown in the table below.

Weather Variable	Value
Cloud cover	0 %
Air Temperature	46 °F
Dewpoint	37 °F
Barometric pressure	1021.7 mb

75 [1] Allow 1 credit if *both* responses are correctly circled, as shown below:

November 8, 2022 lunar eclipse:

visible

not visible

April 20, 2023 solar eclipse:

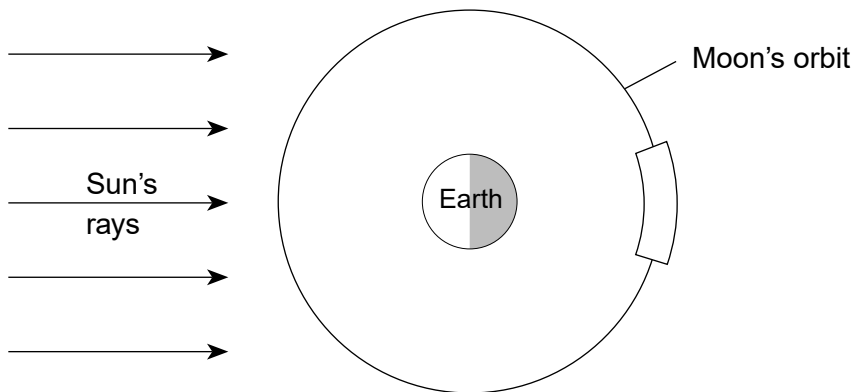
visible

not visible

76 [1] Allow 1 credit if the center of the **X** is within or touches the clear band 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.



(Not drawn to scale)

77 [1] Allow 1 credit for  $23.5^\circ$  or  $23\frac{1}{2}^\circ$ .

**Note:** Do *not* allow credit if a compass direction is included in the student's response.

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

- The pendulum swings in the same direction or plane above a spinning Earth.
- A Foucault pendulum appears to change direction of swing as Earth rotates beneath it.
- Earth is rotating.

79 [1] Allow 1 credit for any value from 1.9 to 2.1 million years for age and normal polarity for magnetic orientation.

80 [1] Allow 1 credit for Antarctic Plate and Indian-Australian Plate (Indo-Australian Plate).

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

- The molten rock cools rapidly, forming basalt.
- Basalt cools very rapidly.
- Magma cools quickly when it reaches the surface.
- Gabbro forms when magma cools slowly deep underground.
- It cools quickly.
- fast cooling rate

**Note:** Do *not* allow credit for “small crystal size” or “basalt has a fine texture” alone because the cooling time determines the texture/crystal size, *not* that the texture/crystal size determines the cooling time.

82 [1] Allow 1 credit for  $\text{SiO}_2$  *or* silicon dioxide.

83 [1] Allow 1 credit. Acceptable responses include, but are not limited to:

- hardness
- crystal shape *or* double-terminated crystal
- glassy luster *or* reflectivity
- clarity

**Note:** Do *not* allow credit for “Herkimer diamonds are the hardest mineral” because true diamonds are the hardest mineral.

Do *not* allow credit for “valuable” or “rare” because these are not physical characteristics.

84 [1] Allow 1 credit for Grenville orogeny.

85 [1] Allow 1 credit for *both* circling younger and citing correct evidence. Acceptable responses include, but are not limited to:

- Herkimer diamonds formed during the Carboniferous Period, which is long after the dolostone formation.
- Dolostone formed 500 million years ago, and the Herkimer diamonds formed between 359 and 299 years ago.
- Herkimer diamonds formed in cavities that were formed earlier in the dolostone by the acidic ocean.
- Cambrian dolostones are older than Carboniferous Herkimer diamonds.

## Regents Examination in Physical Setting/Earth Science

June 2024

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

**The *Chart for Determining the Final Examination Score for the June 2024 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 Thursday, June 20, 2024. 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

<b>June 2024 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	21	42, 61, 63	68
Math Key Idea 2	19, 26	41, 52, 55, 56, 64	78
Math Key Idea 3	9, 10		
Science Inquiry Key Idea 1	11, 30	36, 58	67, 78, 81, 83
Science Inquiry Key Idea 2			
Science Inquiry Key Idea 3	3, 5, 10, 12, 14, 16, 21, 22, 23, 24, 25, 26, 27, 34, 35	39, 42, 45, 46, 48, 49, 50, 52, 54, 57, 59, 61	66, 69, 70, 71, 72, 74, 80, 81, 82, 84
Engineering Design Key Idea 1			
<b>Standard 2</b>			
Key Idea 1		53	69, 85
Key Idea 2			
Key Idea 3			
<b>Standard 6</b>			
Key Idea 1	19, 28, 33	38	77
Key Idea 2	1, 4, 5, 7, 8, 9, 12, 19, 20, 24, 28, 30, 31, 32, 33, 35	36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65	66, 67, 68, 71, 72, 73, 74, 75, 76, 79
Key Idea 3	16	50	
Key Idea 4			
Key Idea 5	4, 18, 19, 21, 31, 35	40, 55, 64, 65	73, 76, 78, 85
Key Idea 6			
<b>Standard 7</b>			
Key Idea 1			
Key Idea 2		62	
<b>Standard 4</b>			
Key Idea 1	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 22, 23, 24, 25	36, 37, 38, 39, 40, 47, 48, 49, 63, 64, 65	66, 67, 68, 69, 71, 75, 76, 77, 78, 84, 85
Key Idea 2	12, 14, 15, 16, 17, 18, 19, 20, 21, 26, 27, 28, 29, 30, 31, 32, 33	41, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54, 58, 59, 60, 61, 62	70, 72, 73, 74, 79, 80
Key Idea 3	34, 35	55, 56, 57	81, 82, 83
<b>Reference Tables</b>			
ESRT 2011 Edition (Revised)	3, 5, 10, 12, 14, 16, 21, 22, 23, 24, 25, 26, 27, 34, 35	39, 42, 45, 46, 48, 49, 50, 52, 54, 57, 59, 61	66, 69, 70, 71, 72, 74, 80, 81, 82, 84