New York State Testing Program

Educator Guide to the Regents Examination in Geometry

Next Generation Mathematics Learning Standards

THE UNIVERSITY OF THE STATE OF NEW YORK

Regents of The University

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Foreword

The information contained in this Educator Guide is designed to raise educator awareness of the structure of the New York State Regents Examination in Geometry measuring the New York State Next Generation Mathematics Learning Standards.

New York State High School Mathematics Testing Program

In September 2017, the Board of Regents adopted the New York State Next Generation Mathematics Learning Standards, which were implemented at the beginning of the 2022-2023 school year. The New York State High School Mathematics Testing Program is designed to measure student progress on the Next Generation Mathematics Learning Standards following the implementation timeline for the Regents Examinations as follows:

- June 2024: Algebra I
- June 2025: Geometry
- June 2026: Algebra II

New York State Educators' Involvement in Test Development

Many steps in the test development process for the Regents Examination in Geometry involve New York State-certified classroom teachers. For example, teachers write and revise all test questions and scoring rubrics. The New York State Education Department (NYSED) continues to expand the number of opportunities for New York State educators to become involved. New York State educators provide the critical input necessary to ensure that the tests are fair, valid, and appropriate for students through their participation in many test-development activities.

The test development process includes the development, review, and approval of test questions, construction of field and operational test forms, final approval of test forms priri4 (nd ope)o4 Tc 0.01.2 (r)3 (i4 (nd o02 Tc -0.(i)-2

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The Next Generation Mathematics Learning Standards

The NYS Next Generation Mathematics Learning Standards define the knowledge and skills that individuals can and do habitually demonstrate over time when exposed to high-quality instructional environments and learning experiences. The Learning Standards, defined through the integration of the Standards for Mathematical Content and the Standards for Mathematical Practice, collectively, are focused and cohesive — designed to support student access to the knowledge and understanding of the mathematical concepts that are necessary to function in a world very dependent upon the application of mathematics. Students are expected to understand math conceptually, use procedural skills, and solve math problems rooted in the real world, deciding for themselves which strategies, formulas, and grade-appropriate tools (e.g., calculator, straightedge, or compass) to use.

Curriculum and instruction that support the content of the learning standards and the unique learning needs of students are locally determined by each individual district in New York State. Teacher preference and flexibility in planning units of study continue to play vital roles to both meet the needs of the students and align with the expectations of the learning standards. For additional guidance with instructional planning surrounding the Next Generation Mathematics Learning Standards, please see the Next Generation Mathematics Learning Standards.

Standards for Mathematical Practice

The Learning Standards for each grade level (and high school course) begin with the eight Standards for Mathematical Practice. The Standards for Mathematical Practice describe the ways in which developing practitioners increasingly should engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years. References to the integration of the Standards for Mathematical Content and the Standards for Mathematical Practice are provided throughout the Next Generation Mathematics Learning Standards.

Please note that the Geometry overview does not include every standard/topic that should be included in instruction. Further information about the entire scope of the learning expectations for each grade level, as well as additional instructional considerations that include the within-grade connections, grade-level fluencies, and connecting the Standards for Mathematical Practice to Mathematical Content can be found in

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Conceptual Categories, Domains, Clusters, Standards, and Assessment

The Geometry Examination will measure the NYS Next Generation Mathematics Learning Standards. The NYS Next Generation Mathematics Learning Standards are divided into conceptual categories, domains, clusters, and standards.

- Conceptual Categories are the highest organizing level in the standards and portray a coherent view of high school mathematics.
- Domains are larger groups of related clusters and standards. Standards from different domains may be closely related.
- Clusters are groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.
- Standards define what students should understand and be able to do. In some cases, standards are further articulated into lettered components.

Geometry is associated with the high school content standards within one conceptual category: **Geometry**. The conceptual category of **Modeling** is also included in Geometry, but is best interpreted not as a collection of isolated topics but rather in relation to other standards. Making mathematical models is a Standard for Mathematical Practice, and specific modeling standards appear throughout the high school standards. Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions.

While all questions on the Regents Examination are linked to a primary standard, some questions measure more than one standard and one or more of the Standards for Mathematical Practice. Similarly, some questions measure cluster-level understandings. As a result of the alignment to standards, clusters, and Standards for Mathematical Practice, the test assesses students' conceptual understanding, procedural fluency, and problem-solving abilities, rather than assessing their knowledge of isolated skills and facts.

Regents Examination in Geometry Blueprint

Conceptual Category	Domain	Cluster	Cluster Code	Standard
				G-CO.1
		Experiment with transformations in the plane.	G-CO.A	G-CO.2

Congruence
27% – 34%

Geometry

Geometry Examination: Time, Format, Design, and Scoring

Testing Session and Time

The Regents Examination in Geometry will consist of one booklet that is administered during the designated time determined by NYSED. Students are permitted three hours to complete the Regents Examination in Geometry. While it is likely that most students will complete the test in less than three hours, students may not leave the testing location prior to the Uniform Admission Deadlineat (s)-y i-2 (aTc 0.003 Tw [(G)Tj0 Tc 4.37-6 (

Geometry Examination Design

Test Component	Number of Questions	Credits per Question	Credits per Section
Part I	24	2	48
Part II	7	2	14
Part III	3	4	12
Part IV	1	6	6
Total	35	-	80

Geometry Scoring Policies

The general procedures to be followed in scoring Regents Examinations are provided in the publications Directions for Administering Regents Examinations (DET 541) and the School Administrator's Manual. Both documents are available on the Department's website. For more information see the Information Booklet for Scoring the Regents Examinations in Geometry, the Directions for Administering Regents Examinations, the Scoring Key and Rating Guides, and the Model Response Set for the appropriate examination.

Policy Definitions

For each subject area, students perform along a continuum of the knowledge and skills necessary to meet the demands of the Learning Standards for Mathematics. Regents Examinations are designed to classify student performance into one of five levels based on the knowledge and skills the student has demonstrated. Due to the need to identify student proficiency, the State tests must provide students at each performance level opportunities to demonstrate their knowledge and skills in the Next Generation Mathematics Learning Standards.

These performance levels are defined as:

NYS Level 5

Students performing at this level **meet with distinction** grade-level expectations of learning standards.

NYS Level 4

Students performing at this level **fully meet** grade-level expectations of learning standards (likely prepared to succeed in the next level of coursework).

NYS Level 3

Students performing at this level **minimally meet** grade-level expectations of learning standards (meet the content area requirements for a Regents diploma but may need additional support to succeed in the next level of coursework).

NYS Level 2 (Safety Net)

Students performing at this level **partially meet** grade-level expectations of learning standards (sufficient for Local Diploma purposes).

NYS Level 1

Students performing at this level demonstrate knowledge and skills below Level 2.

Performance Level Descriptions

Performance Level Descriptions exemplify the knowledge and skills that students at each performance level demonstrate and describe the progression of learning within a subject area. The Performance Level Descriptions play a central role in the test development process, specifically question-writing and standard-setting. For more information about the Next Generation Mathematics Learning Standards Performance ge6 (b)0 TdET/Span

Mathematics Tools for the Regents Examination in Geometry

Calculators

Students **must** have the exclusive use of a Graphing Calculator for the full duration of the Regents Examination in Geometry. No students may use calculators that are capable of symbol manipulation or that can communicate with other calculators through infrared sensors, nor may students use operating manuals, instruction or formula cards, or other information concerning the operation of calculators during the test. For more information regarding calculators see

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Reference Sheet

A detachable reference sheet will be included at the end of the Regents Examination in Geometry test booklet. It contains information that students are expected to apply, but not necessarily memorize. Teachers should use this reference sheet in instruction throughout the Geometry course to familiarize students with its content.

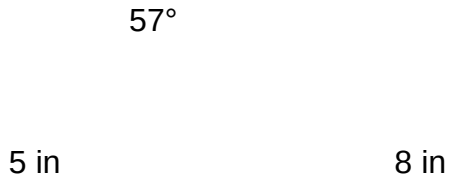
This reference sheet is available at:
https://www.nysed.gov/sites/default/files/programs/state-assessment/geometry-next-gen-reference-sheet.pdf

2. G-SRT.C

In right triangle # $ % below, m á % = 90°, m á

3. G-SRT.D

In non-right triangle $\#\$\%$ shown below, $\#\% = 5$ in, $\$\% = 8$ in, and $m\acute{a}\% = 57°$.



What is the area of $\text{-}ABC$, to the nearest tenth of a square inch?

(1) 10.9

(2) 16.8

(3) 21.8

(4) 33.5

4. G-GPE.A

Circle P with center at $(3,2)$ and passing through $\#(0,6)$

5. G-CO.A
A triangle with vertices at

6. G-CO.D

Triangle XYZ is shown below. Using a compass and straightedge, construct the circumcenter of $\triangle XYZ$

8. G-GPE.B

Hexagon *ABCDEF* with coordinates at #(0,6), $(3,3), %(3,1), &(0, F2), '(F3,1), and ((F3,3) is graphed on the set of axes below.

Determine and state the perimeter of *ABCDEF* in simplest radical form.

Answer Key to Geometry Sample Items

1. Choice 2
2. Choice 3
3. Choice 2
4. Choice 4

5. Rubric

[2] A correct graph of the image is drawn.

[1] Appropriate work is shown, but one computational or graphing error is made.

or

[1] Appropriate work is shown, but one conceptual error is made.

or

[1] $(-4,3)$, $(6,6)$, and $(4,1)$ are stated, but no further correct work is shown.

[0] A zero response does not contain enough relevant course-

7. Rubric

[4] 10, and correct work is shown.

[3] Appropriate work is shown, but one computational or factoring error is made.

or

[3] Correct work is shown to find $T = 7$, but no further correct work is shown.

[2]