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# Foreword

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The information contained in this Educator Guide is designed to raise educator awareness of the structure of the 2023 New York State Grades 3–8 Mathematics Tests measuring the [New York State Next Generation Mathematics Learning Standards](#) ()

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# 2023 New York State Grades 3–8 Testing Program

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## Purpose of State Testing

The federal Every Student Succeeds Act (2018) requires that states annually administer tests in English Language Arts (ELA) and Mathematics in grades 3–8. The Grades 3–8 ELA and Mathematics NYS Testing Program has been designed to measure student knowledge and skills as defined by the grade-level New York Next Generation Learning Standards (NGLS) in ELA and Mathematics. The Grades 3–8 state tests are designed to report student proficiency in one of four performance levels. Please refer to page 5 of this guide for further information regarding the Performance Level Descriptions.

## New York State Educators Involvement in Test Development

While teachers have always been included in the Grades 3–8 Test Development Process, the New York State Education Department (NYSED) continues to expand the number of opportunities for New York State educators to become involved. This includes writing all of the test questions. 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 prior to administration, and the development of scoring materials. NYSED remains committed to improving the quality of the State’s assessments and the experiences that students have taking these tests. For more information on opportunities to participate in the test development process, please visit the Test Development Participation [website \(http://www.nysed.gov/state-assessment/test-development-participation-opportunities\)](http://www.nysed.gov/state-assessment/test-development-participation-opportunities).

## Option for Schools to Administer the Tests on Computer

Schools have the option to administer the Grades 3–8 ELA and Mathematics Tests on computer or paper. More information about this option is available at the NYSED computer-based testing (CBT) [Support website \(http://cbtsupport.nysed.gov/\)](http://cbtsupport.nysed.gov/).

# The Next Generation Mathematics Learning Standards

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The NYS Next Generation Mathematics Learning Standards define the knowledge, skills, and understandings 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 protractor) to use.

## 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 Document \(http://www.nysed.gov/curriculum-instruction/new-york-state-next-generation-mathematics-learning-standards\)](http://www.nysed.gov/curriculum-instruction/new-york-state-next-generation-mathematics-learning-standards).

**Please note that the following grade-level overview is only a summary of the standards.**



## **Grade 5**

In Grade 5, instructional time focuses on three areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

## **Grade 6**

In Grade 6, instructional time focuses on five areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; (4) deepening understanding of area, surface area, and volume; and (5) developing understanding of simple probabilities and statistical thinking.

## **Grade 7**

In Grade 7, instructional time focuses on three areas: (1) developing understanding of and applying proportional relationships; (2) developing understanding of operations with rational numbers and working with expressions and linear equations; and (3) drawing inferences about populations based on samples.

## **Grade 8**

In Grade 8, instructional time focuses on three areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; and (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

**For more information about the Next Generation Mathematics Learning Standards, please refer to the NYSED [website \(http://www.nysed.gov/next-generation-learning-standards\)](http://www.nysed.gov/next-generation-learning-standards).**



## Performance Level Definitions

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For each subject area, students perform along a continuum of the knowledge and skills necessary to meet the demands of the Learning Standards for English Language Arts and Mathematics. New York State assessments are designed to classify student performance into one of four 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 Learning Standards. For this reason, the Performance Level Descriptions play a central role in the test development process, specifically question writing.

These performance levels are defined as:

### NYS Level 4

Students performing at this level **excel** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **more than sufficient** for the expectations at this grade.

### NYS Level 3

Students performing at this level are **proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered **sufficient** for the expectations at this grade.

### NYS Level 2

Students performing at this level are **partially proficient** in standards for their grade. They demonstrate knowledge, skills, and practices embodied by the Learning Standards that are considered partial but insufficient for the expectations at this grade. Students performing at Level 2 are considered on track to meet current New York high school graduation requirements but are **not yet proficient** in Learning Standards at this grade.

### NYS Level 1

Students performing at this level are **below proficient** in standards for their grade. They may demonstrate **limited** knowledge, skills, and practices embodied by the Learning Standards that are considered **insufficient** for the expectations at this grade.

## Performance Level Descriptions

For information about the Next Generation Mathematics Learning Standards Performance Level Descriptions for grades 3–8, please see the [website \(http://www.nysed.gov/state-assessment/next-generation-learning-standards-mathematics\)](http://www.nysed.gov/state-assessment/next-generation-learning-standards-mathematics).

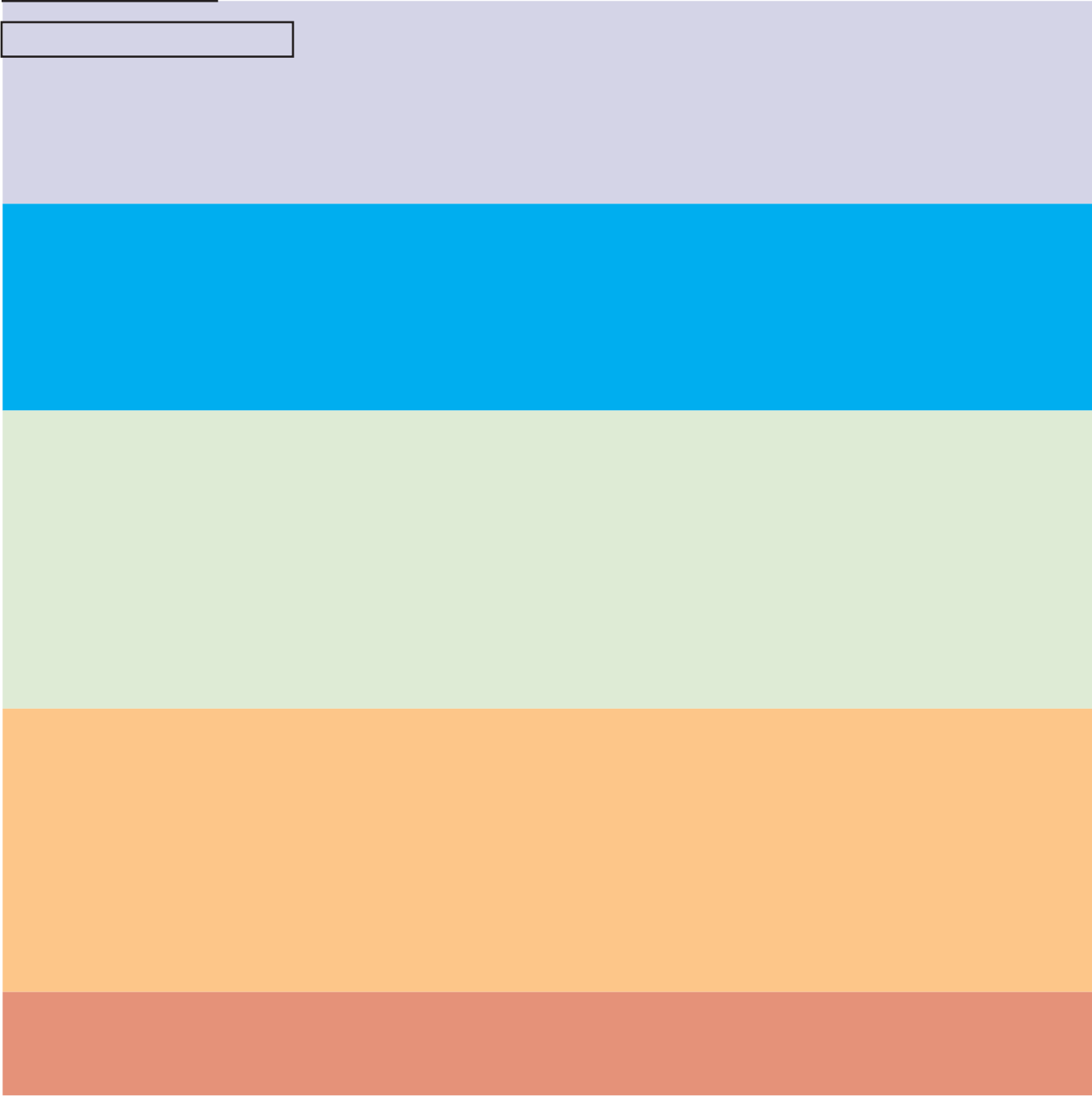




**Grade 4**

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**Grade 5**




**Grade 7**

Blue	Blue	Blue	Blue
		Blue	Blue
		Blue	Blue
Yellow	Yellow	Yellow	Yellow
		Yellow	Yellow
		Yellow	Yellow
Purple	Purple	Purple	Purple
		Purple	Purple
	Purple	Purple	Purple
		Purple	Purple
Orange			
Light Blue			

## Grade 8

Domain	Cluster	Standard(s)	Post Standard
The Number System	<i>Know that there are numbers that are not rational, and approximate them by rational numbers.</i>	NY-8.NS.1	
		NY-8.NS.2	
Expressions, Equations, and Inequalities	<i>Work with radicals and integer exponents.</i>	NY-8.EE.1	
		NY-8.EE.2	
		NY-8.EE.3	X
		NY-8.EE.4	X
	<i>Understand the connections between proportional relationships, lines, and linear equations.</i>	NY-8.EE.5	
		NY-8.EE.6	
<i>Analyze and solve linear equations and pairs of simultaneous linear equations.</i>	NY-8.EE.7a, 7b		
	NY-8.EE.8a, 8b (Fluency), 8c	X	
Functions	<i>Define, evaluate, and compare functions.</i>	NY-8.F.1	
		NY-8.F.2	
		NY-8.F.3	
	<i>Use functions to model relationships between quantities.</i>	NY-8.F.4	
		NY-8.F.5	
Geometry	<i>Understand congruence and similarity using physical models, transparencies, or geometry software.</i>	NY-8.G.1a, 1b, 1c	
		NY-8.G.2	
		NY-8.G.3	
		NY-8.G.4	
		NY-8.G.5	
	<i>Understand and apply the Pythagorean Theorem.</i>	NY-8.G.6	
		NY-8.G.7	
		NY-8.G.8	
	<i>Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.</i>	NY-8.G.9	
Statistics and Probability	<i>Investigate patterns of association in bivariate data.</i>	NY-8.SP.1	
		NY-8.SP.2	
		NY-8.SP.3	

X = Standard designated for inclusion in Mathematics








## Test Blueprint

All questions on the 2023 Grades 3–8 Mathematics Tests measure the Next Generation Mathematics Learning Standards. All the content at each grade level is connected to the Standards for Mathematical Practice; therefore, the 2023 Grades 3–8 Mathematics Tests will include questions that require students to connect mathematical content and mathematical practice.

While all questions 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 tests assess students’ conceptual understanding, procedural fluency, and problem-solving abilities, rather than assessing their knowledge of isolated skills and facts.

The tables below illustrate the domain-level test blueprint percent ranges for each grade. For further detail of the scope of grade-level content, please see the grade-level standards charts on pages 7–12 of this guide.

Domain-Level Test Blueprint—Percent Ranges for Grade 3 Test				
<b>Operations and Algebraic Thinking</b>				

**Domain-Level Test Blueprint—Percent Ranges for Grade 7 Test**

<b>Domain-Level Test Blueprint—Percent Ranges for Grade 7 Test</b>				
<b>Ratios and Proportional Relationships</b>				

## Question Formats

The 2023 Grades 3–8 Mathematics Tests contain 1-credit multiple-choice questions, 1-credit constructed-response questions, 2-credit constructed-response questions, and 3-credit constructed-response questions. For multiple-choice questions, students select the correct response from four answer choices. For the constructed-response questions, students write an answer to an open-ended question and may be required to show their work. In some cases, they may be required to provide a written explanation for how they arrived at their answers. Some test questions target more than one standard or assess an entire cluster. As such, many individual test questions assess September-to-April/May standards in conjunction with May-to-June standards from past grades (i.e., post-test standards).

### Multiple-Choice 1-credit Questions

Multiple-choice questions will mainly be used to assess procedural skills and conceptual understanding. Many multiple-choice questions require students to complete multiple steps. Likewise, some of these questions are linked to more than one standard, drawing on the simultaneous application of multiple skills and concepts. Within answer choices, distractors<sup>3</sup> will all be based on plausible missteps.

### Constructed-Response 1-credit Questions

Constructed-response 1-credit questions require students to complete a task and provide only their final answer. The constructed-response 1-credit questions will often require multiple steps, assessing procedural skills, as well as conceptual understanding and application. While students may show how they arrived to their final answer, only the final answer will be scored.

### Constructed-Response 2-credit Questions

Constructed-response 2-credit questions require students to complete a task and show their work. Constructed-response 2-credit questions will often require multiple steps, the application of multiple mathematics skills, and real-world applications. Many of the constructed-response 2-credit questions will assess conceptual application and understanding.

### Constructed-Response 3-credit Questions

Constructed-response 3-credit questions ask students to show their work in completing two or more tasks or a more extensive problem. Constructed-response 3-credit questions allow students to show their understanding of mathematical procedures, conceptual understanding, and application. Constructed-response 3-credit questions may also assess student reasoning and the ability to critique the arguments of others.

## Additional Assessment Resources

[The New York State Question Sampler](#) ( \_\_\_\_\_ )

\_\_\_\_\_



### 3-Credit Constructed-Response Holistic Rubric

3 Credits	



The following scoring policies must be applied while scoring the mathematics tests for all grades 3–8. The rubrics for the constructed-response questions are designed to provide a systematic, consistent method for awarding credit. Each response must be rated carefully using the teacher’s professional judgment and

## **2023 2- and 3-Credit Constructed-Response Mathematics Scoring Policies**

1. If a student shows the work in other than a designated “Show your work” or “Explain” area, that work should still be scored.
- 2.



# Reference Sheets



# Grade 7 Mathematics Reference Sheet

## CONVERSIONS

1 yard = 3 feet  
1 mile = 5,280 feet

1 cup = 8 fluid ounces  
1 pint = 2 cups  
1 quart = 2 pints  
1 gallon = 4 quarts

1 pound = 16 ounces  
1 ton = 2,000 pounds

## CONVERSIONS ACROSS MEASUREMENT SYSTEMS

1 inch = 2.54 centimeters  
1 meter = 39.37 inches  
1 mile = 1.609 kilometers  
1 kilometer = 0.6214 mile

1 gallon = 3.785 liters  
1 liter = 0.2642 gallon

1 pound = 0.454 kilogram  
1 kilogram = 2.2 pounds

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## FORMULAS AND FIGURES

### Simple Interest

$I = prt$  where  $I$  is interest,

