

# End-of-Grade Mathematics Tests at Grades 3–8 North Carolina Test Specifications

## Purpose of the Tests

The Grades 3–8 End-of-Grade (EOG) Mathematics Tests measure students' proficiency on the [NC Standard Course of Study \(NCSCOS\) for Mathematics](#), adopted by the North Carolina State Board of Education in June 2017.

Test results will be used for school and district accountability under the accountability model and for federal reporting purposes.

## Curriculum Cycle

- June 2017: The North Carolina State Board of Education adoption of the [NCSCOS for Mathematics](#)
- 2017–2018: Items developed and administration of embedded field test items for the EOG Mathematics Tests
- 2018–2019: First operational administration of EOG Mathematics Tests (Edition 5)

## Developing Tests

North Carolina educators were recruited and trained to write new items. The diversity among item writers and their knowledge of the current standards was addressed during recruitment. Trained North Carolina educators also review items and suggest improvements, if necessary. The use of North Carolina educators to write and review items strengthens evidence of content validity of EOG assessments.

For an in-depth explanation of the test development process, see [North Carolina State Board Policy TEST-013: Multiple Choice Test Development](#) or reference the [Test Development Process: Item, Selection, and Form Development document](#).

## Prioritization of Standards

Members of the North Carolina Department of Public Instruction (NCDPI)'s Test Development Section invited North Carolina educators to collaborate and develop recommendations for a prioritization of standards indicating the relative importance of each standard, the anticipated instructional time, and the appropriateness of the standard for test design.

Subsequently, Academic Standards and Test Development staff from the NCDPI met to review the recommendations from the teacher panels and adopt final weight distributions across the domains for each grade level.

Some content standards in the [NCSCOS for Mathematics](#) will not be directly assessed in the tests because either (1) the standard cannot be appropriately assessed during a limited time test using multiple-choice and/or gridded-response items and/or technology-enhanced items or (2) the standard is better assessed through another, more inclusive standard.

Tables 1, 2, and 3 describe the range of total items by domain and Depth of Knowledge (DOK) that will appear on the EOG Mathematics Tests.

**Table 1. EOG Mathematics grades 3–5 domain weight distributions.**

Domain	Grade 3	Grade 4	Grade 5
Operations and Algebraic Thinking	32–36%	14–18%	9–13%
Number and Operations in Base Ten	9–13%	25–29%	25–29%
Number and Operations – Fractions	28–32%	30–34%	39–43%
Measurement and Data, Geometry	23–27%	23–27%	19–23%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 2. EOG Mathematics grades 6–8 domain weight distributions.**

Domain	Grade 6	Grade 7	Grade 8
Ratios and Proportional Relationships	24–28%	24–28%	—
The Number System	20–24%	8–12%	—
Expressions and Equations	22–26%	20–24%	—
The Number System, Expressions and Equations	—	—	24–28%
Functions	—	—	28–32%
Geometry	12–16%	16–20%	24–28%
Statistics and Probability	12–16%	22–26%	16–20%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Table 3. EOG Mathematics grades 3–8 item by DOK distribution.**

Grade	DOK 1	DOK 2	DOK 3
3	40–50%	50–60%	—
4	35–45%	50–60%	5%
5	30–40%	50–60%	8–10%
6	25–35%	50–60%	8–15%
7	25–35%	50–60%	8–15%
8	25–35%	50–60%	8–15%

### **Cognitive Rigor and Item Complexity**

Test items for the EOG Mathematics Tests have been designed, developed, and classified to ensure that the cognitive rigor of the operational test forms

align to the cognitive complexity and demands of Webb’s Depth of Knowledge and the [NCSCOS for Mathematics](#). Items on the EOG assessments cover the full breadth and depth of grade-level cognitive expectation that can be assessed using the current test format.

### Testing Structure and Test Administration

Table 4 provides the number of operational and field test items for EOG Mathematics Tests. Included in the total item counts are embedded field test items that will not be included as part of students’ final scores but will be used for purposes of developing items for future test forms.

**Table 4. EOG Mathematics total number of items.**

<b>Grade</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Operational Items	40	40	40	45	45	45
Field Test Items	6	6	8	8	8	8
<b>Total Items</b>	<b>46</b>	<b>46</b>	<b>48</b>	<b>53</b>	<b>53</b>	<b>53</b>

The grade 3 mathematics tests will include both calculator inactive and calculator active sections. Both sections will consist of four-response-option multiple-choice items and technology-enhanced items. All items will be worth one point each.

The grades 4–8 mathematics tests will include both calculator inactive and calculator active sections. Both sections will consist of four-response-option multiple-choice, gridded response/numeric entry, and technology-enhanced item types. All items will be worth one point each.

Table 5 provides the number of calculator inactive and calculator active operational test items for EOG Mathematics Tests.

**Table 5. EOG Mathematics calculator inactive/active operational items.**

<b>Grade</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
Calculator Inactive Operational Items	20	20	20	15	15	15
Calculator Active Operational Items	20	20	20	30	30	30
<b>Total Operational Items</b>	<b>40</b>	<b>40</b>	<b>40</b>	<b>45</b>	<b>45</b>	<b>45</b>

Based on analysis of item-completion timing data, the NCDPI estimates it will take 2 hours (120 minutes) for most students to complete the EOG Mathematics Tests. The NCDPI requires all students be allowed ample opportunity to complete the test. The maximum amount of time allowed is 3

hours (180 minutes) except for students with documented special needs requiring accommodations, such as *Scheduled Extended Time*. Refer to the *North Carolina Test Coordinators' Policies and Procedures Handbook* on the [Testing Policy and Operations webpage](#) for additional information.

### **Test Cycle and Delivery Mode**

The EOG Mathematics Tests must be administered during the last ten days of the instructional year (traditional yearlong schedule).

The EOG Mathematics Tests are provided only in English. Native language translation versions are not available. North Carolina [G.S. §115C-81.45\(a\)](#) requires all teachers and principals to conduct all classes other than foreign language classes in English.

The EOG Mathematics Tests at grades 3–8 will be required to be administered in online administrations.

Online tests are provided through NCTest, the NCDPI's online testing platform. Schools must ensure every student participating in an online test for the North Carolina Testing Program completes the Online Assessment Tutorial for the associated test at least once at the school before test day. The tutorial provides students the opportunity to practice the mechanics of navigating through the testing platform, to become familiar with the tools, and to respond to the sample items. Refer to the *North Carolina Test Coordinators' Policies and Procedures Handbook* on the [Testing Policy and Operations webpage](#) for additional information.

Paper versions of all online tests, including required online administrations, are available for students with disabilities who need to test in the paper mode for accessibility.

### **Supplemental Materials and Additional Resources**

Students in grades 3–5 must be provided any four-function calculator with memory key. Students in grade 6–7 must be provided any four-function calculator with a square root function,  $y$ ,  $x$ ,  $\pi$  (pi), and algebraic logic. Students in grade 8 must be provided any four-function calculator with a square root function,  $y$ ,  $x$ ,  $\pi$  (pi), and algebraic logic and a graphing calculator. The online version of these tests has an online calculator option. Students may practice using this online calculator at the links shown in Table 6, below. Refer to the [North Carolina Testing Program Calculator Requirements Assessment Brief](#) for additional information.

**Table 6. EOG Mathematics embedded calculators.**

Grade	Embedded Calculator Link
3–5	<a href="#">Four-Function Calculator</a>
6–7	<a href="#">Scientific Calculator</a>
8	<a href="#">Scientific Calculator</a> <a href="#">Graphing Calculator</a>

All students must be provided [graph paper](#), scratch paper, and a writing utensil.

Released forms are available on the [EOG webpage](#) and through NCTest, the NCDPI’s online testing platform. The released forms for the EOG Mathematics Tests are built using the same operational test specifications. A single released form may not reflect the full depth and breadth of grade level assessed standards, but it reflects the range of difficulty found on any EOG operational test form.

Released items may be used by public school units to acquaint students with items. These materials must not be used for personal or financial gain, are copyrighted to the NCDPI, and cannot be uploaded into third party applications. Released items may be accessed via [NCTest](#) by clicking on the released items icon.

Achievement Level Descriptors for the Edition 5 EOG Mathematics Tests were adopted by the NC State Board of Education in August 2019 and are available on the [EOG webpage](#).

A sample Individual Student Report for the Edition 5 EOG Mathematics Test is available on the [Individual Student Reports \(ISRs\) webpage](#).