



# NC Standard Course of Study (NCSCOS) for Mathematics

## End-of-Grade Grades 3–8 Math Assessments

### North Carolina Assessment Specifications

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#### Purpose of the Assessments

- Edition 5 grades 3–8 mathematics assessments will 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.
- Assessment results will be used for school and district accountability under the Accountability Model and for Federal reporting purposes.

#### Curriculum Cycle

- June 2017: North Carolina State Board of Education adoption of the NCSCOS.
- 2017-18: Developed and field-tested items for the End-of-Grade (EOG) Assessments, Edition 5
- 2018-19: Operational administration of Edition 5 assessments aligned to the new NCSCOS.

#### Standards

- The eight Standards for [Mathematical Practice](#) help develop processes and proficiencies in students such as problem solving, reasoning, proof, communication, representations, and connections as well as conceptual understanding and procedural fluency. Test items that are developed for content standards may link to one or more of the Standards for Mathematical Practice.

#### Developing Assessments

- North Carolina educators were recruited and trained to write new items. The diversity among the 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 develop and review items strengthens the instructional validity of the items.
- For an in-depth explanation of the test development process see State Board Policy [Multiple-Choice Test Development \(TEST-013\)](#) or reference the [Test Development Process: Item, Selection and Form Development](#) (Updated May 2016).

#### Prioritization of Standards

- Members of the North Carolina Department of Public Instruction (NCDPI)/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 Multiple-Choice (MC) or Gridded

Response (GR)/Numeric Entry (NE) item format. Subsequently, Standards, Curriculum and Instruction and test development staff from the NCDPI met to review the results from the teacher panels and to develop weight distributions across the domains for each grade level.

- Some content standards in the NCSCOS will not be directly assessed in the assessments because either (1) the standard cannot be appropriately assessed during a limited time assessment using multiple-choice and/or gridded-response 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 conceptual category and Depth of Knowledge (DOK) that will appear on the Edition 5 assessments.

*Table 1: Weight Distributions for Grades 3–5*

<b>Domain</b>	<b>Grade 3</b>	<b>Grade 4</b>	<b>Grade 5</b>
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: Weight Distributions for Grades 6–8*

<b>Domain</b>	<b>Grade 6</b>	<b>Grade 7</b>	<b>Grade 8</b>
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 Math 3-8 Item by DOK Distribution*

<b>Grades</b>	<b>DOK1</b>	<b>DOK2</b>	<b>DOK3</b>
3	40%-60%	40%-50%	
4	40%-50%	50%-60%	5%
5	30%-40%	50%-60%	10%
6	25%-35%	50%-60%	10%-15%
7	25%-35%	50%-60%	10%-15%
8	25%-35%	50%-60%	15%

## Cognitive Rigor and Item Complexity

- Assessment items will be 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. These items will require students to not only recall information, but also apply concepts and skills and make decisions.

## Test Administration Time and Testing Structure

- The NCDPI estimates it will take 120 minutes for nearly all students to complete the EOG assessments. The NCDPI requires all students be allowed ample opportunity to complete the assessment. The maximum amount of time allowed is 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* for additional information.
- Table 4 describes the number of operational items and field test items. Embedded field test items will not be included in the score but will be used for purposes of developing items for future test forms.

Table 4: Total Number of Items

Grade	3	4	5	6	7	8
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 grades 3 and 4 mathematics assessments will include both calculator inactive and calculator active sections. The assessments will consist of four-response-option multiple-choice items. Multiple-choice items will be worth one point each.
- The grades 5-8 mathematics assessment will include both calculator inactive and calculator active sections. Both sections will have multiple-choice and gridded response/numeric entry item types. All items will be worth one point each.

Table 5: Total Number of Items by Format

Grade	3	4	5	6	7	8
MC-CI	23	23	18	12	12	12
GR-CI	–	–	6	6	6	6
GR-CA	–	–	6	6	6	6
MC-CA	23	23	18	29	29	29

\*MC: Multiple Choice; GR: Gridded Response/Numeric Entry; CI: Calculator Inactive; CA: Calculator Active

## Supplemental Materials

- Students in grades 3–5 must be provided any four-function calculator with memory key. Students in grade 6–8 must be provided any four-function calculator with a square root function,  $yx$ ,  $\pi$  ( $\pi$ ), and algebraic logic. The online version of these assessments will also have an online calculator option starting with the 2018-19 administration. Students may practice using this online calculator at:

- Grade 3–4: Four-Function Calculator [www.desmos.com/testing/northcarolina/fourfunction](http://www.desmos.com/testing/northcarolina/fourfunction),
  - Grade 5–8: Scientific Calculator [www.desmos.com/testing/northcarolina/scientific](http://www.desmos.com/testing/northcarolina/scientific).
  - Refer to the assessment brief [North Carolina Testing Program Calculator Requirements](#) for additional information.
- All students must be provided [graph paper](#) and blank paper.
  - Schools must ensure every student participating in an online assessment for the North Carolina Testing Program completes the Online Assessment Tutorial for the associated assessment 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](#) (PDF pp. 14, 42, and 103) for additional information.

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

- The EOG assessment must be administered during the last ten (10) days of the school year. All students in membership at grades 3–8 (according to PowerSchool) are expected to participate with or without accommodations in the standard administration of the EOG assessments in mathematics.
- The grades 3–8 assessments are designed for online and paper/pencil administrations.
- The End-of-Grade assessments are only provided in English. Native language translation versions are not available. [Chapter 115C-81 Basic Education Program](#) of the North Carolina General Statutes requires all teachers and principals to conduct classes except foreign language classes in English.