



NC Standard Course of Study (NCSCS) for Mathematics

End-of-Grade Grades 3–8 Math Assessments

North Carolina Assessment Specifications

Purpose of the Assessments

- Edition 4 grades 3–8 mathematics assessments will measure students' proficiency on the [NC Standard Course of Study \(NCSCS\) for Mathematics](#), adopted by the North Carolina State Board of Education in June 2010.
- Assessment results will be used for school and district accountability under the READY Accountability Model and for Federal reporting purposes.

Curriculum Cycle

- June 2010: North Carolina State Board of Education adoption of the NCSCS
- 2010–11: Item development for the End-of-Grade Assessments, Edition 4
- 2011–12: Administration of stand-alone field tests of Edition 4 assessments
- 2012–13: Operational administration of Edition 4 assessments aligned to the NCSCS

Standards

- The NCSCS may be reviewed by visiting the North Carolina Department of Public Instruction (NCDPI)/[Mathematics K-12 Standards, Curriculum and Instruction](#) website.
- 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.
- Additional instructional resources are provided by the [NCDPI/K-12 Mathematics team](#).

Developing Assessments

- North Carolina educators were recruited and trained to write new items for the NC Final Exams. 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 Delineating Test Development Process for Multiple-Choice Tests](#) or reference the [Test Development Process: Item, Selection and Form Development](#) (Updated May 2016).

Prioritization of Standards

- The Members of the NCDPI/Test Development Section invited teachers 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 a multiple-choice or gridded response item format. Subsequently, curriculum 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 NCSCS 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 and 2 describe the range of total items by conceptual category that will appear on the assessments.

Table 1: Weight Distributions for Grades 3–5

Domain	Grade 3	Grade 4	Grade 5
Operations and Algebraic Thinking	30–35%	12–17%	5–10%
Number and Operations in Base Ten	5–10%	22–27%	22–27%
Number and Operations—Fractions	20–25%	27–32%	47–52%
Measurement and Data	22–27%	12–17%	10–15%
Geometry	10–15%	12–17%	2–7%
Total	100%	100%	100%

Table 2: Weight Distributions for Grades 6–8

Domain	Grade 6	Grade 7	Grade 8
Ratios and Proportional Relationships	12–17%	22–27%	NA
The Number System	27–32%	7–12%	2–7%
Expressions and Equations	27–32%	22–27%	27–32%
Functions	NA	NA	22–27%
Geometry	12–17%	22–27%	20–25%
Statistics and Probability	7–12%	12–17%	15–20%
Total	100%	100%	100%

- Appendices A-F show the number of operational items for each standard administered on the assessments. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*.

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 the NCSCS for Mathematics. These items will require students to not only recall information, but also apply concepts and skills and make decisions.

Types of Items and Supplemental Materials

- The grades 3 and 4 mathematics assessments will include both calculator active and calculator inactive sections. The assessments will consist of four-response-option multiple-choice items. There are 27 multiple-choice items in the calculator inactive section and 27 multiple-choice items in the calculator active section. Multiple-choice items will be worth one point each.
- The grade 5 mathematics assessment will include both calculator active and calculator inactive sections. There are 27 items (19 multiple-choice, 8 gridded response/numeric entry) in the calculator inactive section and 27 multiple-choice items in the calculator active section. All items will be worth one point each.
- The grades 6–8 mathematics assessments will include both calculator active and calculator inactive sections. There are 18 items (7 multiple-choice, 11 gridded response/numeric entry) in the calculator inactive section and 42 multiple-choice items in the calculator active section. All items will be worth one point each.
- 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, y^x , π (pi), and algebraic logic. Refer to the assessment brief [North Carolina Testing Program Calculator Requirements](#) (October 20, 2016) for additional information.
- All students must be provided [graph paper](#) and blank paper.
- Released items are available on the [NCDPI/Accountability Services Division](#) website. Released items may be used by school systems to help acquaint students with items. The released items may not reflect the breadth of the standards assessed and/or the range of item difficulty found on the EOG assessments. These materials must not be used for personal or financial gain. The released items for grades 6-8 are also available to schools through NCTest, the NCDPI's online assessment platform.
- 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 pages 14, 42, 103) for additional information.

Testing Structure and Test Administration Time

- Included in the total item counts are embedded field test items that will not be included in the score but will be used for purposes of developing items for future test forms.

Grade Level	Number of Operational Items	Number of Field Test Items	Total Number of Items
Grade 3	22 MC/CI, 22 MC/CA	5 MC/CI, 5 MC/CA	54
Grade 4	22 MC/CI, 22 MC/CA	5 MC/CI, 5 MC/CA	54
Grade 5	16 MC/CI, 6 GR/CI, 22 MC/CA	3 MC/CI, 2 GR/CI, 5 MC/CA	54
Grade 6	6 MC/CI, 9 GR/CI, 35 MC/CA	1 MC/CI, 2 GR/CI, 7 MC/CA	60
Grade 7	6 MC/CI, 9 GR/CI, 35 MC/CA	1 MC/CI, 2 GR/CI, 7 MC/CA	60
Grade 8	6 MC/CI, 9 GR/CI, 35 MC/CA	1 MC/CI, 2 GR/CI, 7 MC/CA	60

*MC=Multiple-Choice Item, CI=Calculator Inactive Section,
GR=Gridded Response/Numeric Entry Item, CA=Calculator Active Section

- The NCDPI estimates it will take 180 minutes for nearly all students to complete the assessment. The NCDPI requires all students be allowed ample opportunity to complete the assessment. The maximum amount of time allowed is 240 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.

Test Cycle and Delivery Mode

- EOG assessments must be administered during the last ten days of the school year. All student 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.
- Grades 3–8 mathematics assessments will be designed for paper/pencil administrations. The grade 7 mathematics assessment will be available for online administration effective with the 2014–15 spring administration. The grade 8 mathematics assessment will be available for online administration effective with the 2015–16 spring administration. The grade 6 mathematics assessment will be available for online administration effective with the 2016–17 spring administration.

- 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.

Alternate Assessment

- The *NCEXTENDI* alternate assessment is a performance-based alternate assessment designed to assess students with significant cognitive disabilities who are being taught using the Extended Content Standards. The *NCEXTENDI* alternate assessment items are grade-level, performance-based, multiple-choice items that measure the standards specified in the [North Carolina Extended Content Standards](#).
- Eligibility criteria and additional information is available in the *2016 Testing Students with Disabilities: North Carolina Testing Program* document available on the [Accountability Services/Testing Students with Disabilities](#) web page.
- The *NCEXTENDI* alternate assessments will consist of fifteen performance-based, multiple-choice items. All items will be worth one point each.

Appendix A
Grade 3 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 3 Math Standards</u>	Number of Operational Items by Standard
Operations and Algebraic Thinking 3.OA.1	–
3.OA.2	–
3.OA.3	2
3.OA.4	2
3.OA.5	3
3.OA.6	–
3.OA.7	–
3.OA.8	4
3.OA.9	3
Number and Operations in Base Ten 3.NBT.1	1
3.NBT.2	2
3.NBT.3	1
Number and Operations-Fractions 3.NF.1	3
3.NF.2	4
3.NF.3	3
Measurement and Data 3.MD.1	1
3.MD.2	1
3.MD.3	2
3.MD.4	1
3.MD.5	–
3.MD.6	–
3.MD.7	3
3.MD.8	3
Geometry 3.G.1	2
3.G.2	3

Appendix B
Grade 4 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 4 Math Standards</u>	Number of Operational Items by Standard
Operations and Algebraic Thinking 4.OA.1	–
4.OA.2	3
4.OA.3	2
4.OA.4	1
4.OA.5	1
Number and Operations in Base Ten 4.NBT.1	–
4.NBT.2	2
4.NBT.3	3
4.NBT.4	2
4.NBT.5	2
4.NBT.6	2
Number and Operations-Fractions 4.NF.1	3
4.NF.2	1
4.NF.3	3
4.NF.4	3
4.NF.5	1
4.NF.6	1
4.NF.7	1
Measurement and Data 4.MD.1	2
4.MD.2	1
4.MD.3	1
4.MD.4	1
4.MD.5	–
4.MD.6	1
4.MD.7	1
Geometry 4.G.1	2
4.G.2	2
4.G.3	2

Appendix C
Grade 5 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 5 Math Standards</u>	Number of Operational Items by Standard
Operations and Algebraic Thinking 5.OA.1	1
5.OA.2	1
5.OA.3	1
Number and Operations in Base Ten 5.NBT.1	–
5.NBT.2	1
5.NBT.3	1
5.NBT.4	1
5.NBT.5	1
5.NBT.6	3
5.NBT.7	4
Number and Operations-Fractions 5.NF.1	3
5.NF.2	4
5.NF.3	3
5.NF.4	5
5.NF.5	–
5.NF.6	3
5.NF.7	4
Measurement and Data 5.MD.1	2
5.MD.2	1
5.MD.3	–
5.MD.4	–
5.MD.5	3
Geometry 5.G.1	–
5.G.2	1
5.G.3	–
5.G.4	1

Appendix D
Grade 6 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 6 Math Standards</u>	Number of Operational Items by Standard
Ratios and Proportional Relationships 6.RP.1	–
6.RP.2	–
6.RP.3	7
The Number System 6.NS.1	3
6.NS.2	–
6.NS.3	5-6
6.NS.4	1
6.NS.5	–
6.NS.6	1
6.NS.7	2-3
6.NS.8	2
Expressions and Equations 6.EE.1	2
6.EE.2	2
6.EE.3	4
6.EE.4	–
6.EE.5	–
6.EE.6	2
6.EE.7	3
6.EE.8	1
6.EE.9	1
Geometry 6.G.1	2
6.G.2	2
6.G.3	2
6.G.4	2
Statistics and Probability 6.SP.1	–
6.SP.2	–
6.SP.3	–
6.SP.4	2
6.SP.5	3

Appendix E
Grade 7 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 7 Math Standards</u>	Number of Operational Items by Standard
Ratios and Proportional Relationships 7.RP.1	3
7.RP.2	5
7.RP.3	5
The Number System 7.NS.1	–
7.NS.2	–
7.NS.3	5
Expressions and Equations 7.EE.1	3
7.EE.2	–
7.EE.3	4
7.EE.4	6
Geometry 7.G.1	2
7.G.2	1
7.G.3	1
7.G.4	3
7.G.5	2
7.G.6	3
Statistics and Probability 7.SP.1	1
7.SP.2	–
7.SP.3	–
7.SP.4	3
7.SP.5	–
7.SP.6	–
7.SP.7	1
7.SP.8	2

Appendix F
Grade 8 Math
Number of Operational Items by Standard

The following table shows the number of operational items for each standard. Note that future coverage of standards could vary within the constraints of the content category weights in *Tables 1-2*. Some standards not designated with tested items (i.e., “–”) may be a prerequisite standard, may be tested within the context of another standard or may be included as an embedded field test item.

<u>Grade 8 Math Standards</u>	Number of Operational Items by Standard
The Number System 8.NS.1	1
8.NS.2	2
Expressions and Equations 8.EE.1	1
8.EE.2	1
8.EE.3	1
8.EE.4	1
8.EE.5	4
8.EE.6	2
8.EE.7	3
8.EE.8	3
Functions 8.F.1	1
8.F.2	3
8.F.3	2
8.F.4	4
8.F.5	2
Geometry 8.G.1	–
8.G.2	–
8.G.3	2
8.G.4	–
8.G.5	2
8.G.6	–
8.G.7	3
8.G.8	2
8.G.9	2
Statistics and Probability 8.SP.1	2
8.SP.2	3
8.SP.3	2
8.SP.4	1

Document History

Date	Comment	Revision Location	Revision Description
December 18, 2013	Original document posted	N/A	N/A
March 10, 2015	Additional information added	Delivery Mode (p. 3)	<i>The Grade 7 mathematics assessment will also be available for online administration during the 2014-15 spring administration.</i>
		Appendices A-G (pp. 4-11)	Tables reporting the number of items by standard were added.
March 18, 2016	Additional information added	Delivery Mode and Translation (p. 3)	<i>The grade 8 mathematics assessment will be available for online administration effective with the 2015–16 spring administration.</i>
		Delivery Mode and Translation (p. 3)	<i>End-of-grade and end-of-course assessments are only provided in English. Native language translation versions are not available.</i>
November 1, 2016	Revision	All EOC information removed and placed in a separate document.	All EOC information removed and placed in a separate document. The content standards for Math I were revised and adopted by the SBE in June 2016.
	Additional information added	Developing Assessments (p. 1)	This section was added to the document.
		Types of Items and Supplemental Materials (p. 3)	Information about supplemental materials, released forms and the online assessment tutorial was added to the document.
		Testing Structure and Test Administration Time (p. 4)	This section was added to the document.
		Test Cycle and Delivery Mode (p. 4)	Information about the test cycle was added. Also added information about the online option for grade 6 in the 2016–17 spring administration.
Alternate Assessment (p. 5)	This section was added to the document.		