



# 2017–2018 NC Final Exams of NC Math 2 and NC Math 3

## North Carolina Assessment Specifications

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### Purposes of the Assessments

□ The NC Final Exams (NCFEs) for NC Math 2 and NC Math 3 measure students' academic progress on the North Carolina *Standard Course of Study*, adopted by the North Carolina State Board of Education (SBE) in June 2016. The North Carolina *Standard Course of Study* for Mathematics is available at:

<http://maccss.ncdipi.wikispaces.net/REVISED+High+School+Math+Standards+6-2016>.

□ The NCFEs are considered standardized artifacts reflective of student growth for teachers and school growth for participants in the teacher evaluation process.

□ SBE policy TEST-016 requires public schools to use the course-specific operational assessments as the only final exams for specific courses and to use the results from all course-specific operational assessments as a minimum of twenty percent (20%) of the student's final grade for each respective course.

[https://stateboard.ncpublicschools.gov/policy-manual/testing/copy\\_of\\_use-of-state-designated-assessments-for-the-nc-teacher-evaluation-process](https://stateboard.ncpublicschools.gov/policy-manual/testing/copy_of_use-of-state-designated-assessments-for-the-nc-teacher-evaluation-process)

### Developing Assessments

□ North Carolina educators are recruited and trained to write new items for the NCFEs. The diversity among the item writers and their knowledge of the content standards are 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. Teachers interested in training to become an item writer or reviewer for the North Carolina Testing Program can visit

<https://center.ncsu.edu/ncpd/course/view.php?id=128>

□ For an in-depth explanation of the test development process see SBE policy TEST-013 or reference <https://stateboard.ncpublicschools.gov/policy-manual/testing/test-development-process-for-multiple-choice-tests>.

### Prioritization of Standards

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

□ Tables 1 and 2 describe the percentage range of score points associated with each content category that will appear on the NCFE forms. The table of content category weights describe the percent of total score points.

Table 1. *Test Specification Weights for the NC Math 2 NCFE*

<b>Domain</b>	<b>Percent of Total Score Points</b>
<b>Number and Quantity</b>	3% to 10%
The Real Number System (RN)	
The Complex Number System (CN)	
<b>Algebra</b>	21% to 28%
Seeing Structure in Expressions (SSE)	
Arithmetic with Polynomials & Rational Expressions (APR)	
Creating Equations (CED)	
Reasoning with Equations & Inequalities (REI)	18% to 25%
<b>Functions</b>	
Interpreting Functions (IF)	
Building Functions (BF)	27% to 34%
<b>Geometry</b>	
Congruence (CO)	
Similarity, Right Triangles, & Trigonometry (SRT)	
Expressing Geometric Properties with Equations (GPE)	
Geometric Measurement and Dimension (GMD)	15% to 22%
Modeling with Geometry (MG)	
<b>Statistics and Probability</b>	
Making Inferences & Justifying Conclusions (IC)	15% to 22%
Conditional Probability and the Rules of Probability (CP)	
<b>Total</b>	<b>100%</b>

Table 2. *Test Specification Weights for the NC Math 3 NCFE*

<b>Domain</b>	<b>Percent of Total Score Points</b>
<b>Number and Quantity, and Algebra</b>	30% to 37%
The Real Number System (RN)	
Seeing Structure in Expressions (SSE)	
Arithmetic with Polynomials and Rational Expressions (APR)	
Creating Equations (CED)	
Reasoning with Equations & Inequalities (REI)	

<b>Functions</b>	
Interpreting Functions (IF)	
Building Functions (BF)	
Linear and Exponential Models (LE)	
Trigonometric Functions (TF)	
<b>Geometry</b>	
Congruence (CO)	
Similarity, Right Triangles, & Trigonometry (SRT)	
Circles (C)	
Expressing Geometric Properties with Equations (GPE)	
Geometric Measurement and Dimension (GMD)	
Modeling with Geometry (MG)	
<b>Statistics and Probability</b>	
Making Inferences and Justifying Conclusions (IC)	
<b>Total</b>	<b>100%</b>

### Cognitive Rigor

Each standard was classified using Webb’s Depth of Knowledge (DOK) Model.

### Types of Items and Supplemental Materials

- The NC Math 2 and NC Math 3 NCFEs consist of four-response-option (i.e., A, B, C, D) multiple-choice items.
- Students will be provided a graphing calculator.
- Students will be provided graph and blank paper.
- A complete list of the supplemental test materials (i.e., *NC Final Exams Materials List*) may be reviewed at <http://www.ncpublicschools.org/accountability/common-exams/>.
- Released items (as available), are accessed at <http://www.ncpublicschools.org/accountability/common-exams/released-items/>. Released items may be used by school systems to help acquaint students with items. These materials must not be used for personal or financial gain.
- Schools must ensure every student participating in an online assessment for the North Carolina Testing Program has completed the appropriate Online Assessment Tutorial for the associated assessment(s) at least one time per year at the school. Students should not complete the tutorial on the day of the test administration prior to the test. 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.

### Testing Structure and Test Administration Time

□ The NC Math 2 and NC Math 3 NCFEs each have 37 assessment items. Included in the total item counts are embedded multiple-choice field test items that do not count toward or against a student’s score. These items are used for multiple purposes, including, but not limited to, linking between curriculum cycles, examining across-grade performance, and examining items for inclusion on future operational assessments. These items are indistinguishable from operational items and should not interfere with the student’s test-taking experience.

NC Final Exam 2017-18	Number of Operational Items	Number of Field Test Items	Total Number of Items
NC Math 2	33 multiple-choice	4 multiple-choice	37
NC Math 3	33 multiple-choice	4 multiple-choice	37

□ Students have 120 minutes to respond to all items.

□ Appendices A–B show the number of operational items for each standard for the 2017–2018 tests. Note that future coverage of standards could vary within the constraints of the content category weights in Tables 1 and 2.

### Test Cycle and Delivery Mode

□ The NCFEs are administered to students enrolled in fall and spring courses. A list of course codes that align with the 2017–2018 NCFEs (i.e., *Course Codes that Align with the NC Final Exams*) is available at <http://www.ncpublicschools.org/accountability/common-exams/>.

□ The NCFEs are administered through NCTest, the NCDPI’s secure online assessment platform.

**Appendix A**  
**NC Math 2 NC Final Exam 2017–18**  
**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 and 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. The standards may be reviewed at <http://maccss.ncdpi.wikispaces.net/REVISED+High+School+Math+Standards+6-2016>

NC Math 2 Standard (High School)	Number of Operational Items Per Standard*
<b>Number and Quantity</b>	
The Real Number System	
N-RN.1	–
N-RN.2	1
N-RN.3	1
The Complex Number System	
N-CN.1	–
<b>Algebra</b>	
Seeing Structure in Expressions	
A-SSE.1	1
A-SSE.3	1
Arithmetic with Polynomials & Rational Expressions	
A-APR.1	–
Creating Equations	
A-CED.1	1
A-CED.2	1
A-CED.3	–
Reasoning with Equations & Inequalities	
A-REI.1	–
A-REI.2	–
A-REI.4	2
A-REI.7	1
A-REI.11	1
<b>Functions</b>	
Interpreting Functions	
F-IF.1	–
F-IF.2	1
F-IF.4	1

F-IF.7	2
F-IF.8	–
F-IF.9	1
<b>Building Functions</b>	
F-BF.1	1
F-BF.3	1
<b>Geometry</b>	
<b>Congruence</b>	
G-CO.2	–
G-CO.3	1
G-CO.4	–
G-CO.5	1
G-CO.6	–
G-CO.7	–
G-CO.8	1
G-CO.9	1
G-CO.10	1
<b>Similarity, Right Triangles, &amp; Trigonometry</b>	
G-SRT.1	–
G-SRT.2	1
G-SRT.3	–
G-SRT.4	2
G-SRT.6	–
G-SRT.8	1
G-SRT.12	1
<b>Statistics and Probability</b>	
<b>Making Inferences &amp; Justifying Conclusions</b>	
S-IC.2	1
<b>Conditional Probability and the Rules of Probability</b>	
S-CP.1	1
S-CP.3	–
S-CP.4	1
S-CP.5	1
S-CP.6	1
S-CP.7	–
S-CP.8	1

\* 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.

**Appendix B**  
**NC Math 3 NC Final Exam 2017–18**  
**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 and 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. The standards may be reviewed at <http://maccss.ncdpi.wikispaces.net/REVISED+High+School+Math+Standards+6-2016>

NC Math 3 Standard (High School)	Number of Operational Items Per Standard*
<b>Number and Quantity, and Algebra</b>	
The Complex Number System	
N-CN.9	–
Seeing Structure in Expressions	
A-SSE.1	–
A-SSE.2	2
A-SSE.3	–
Arithmetic with Polynomials & Rational Expressions	
A-APR.2	1
A-APR.3	1
A-APR.6	1
A-APR.7	1
Creating Equations	
A-CED.1	1
A-CED.2	1
A-CED.3	–
Reasoning with Equations & Inequalities	
A-REI.1	–
A-REI.2	2
A-REI.11	1
<b>Functions</b>	
Interpreting Functions	
F-IF.1	–
F-IF.2	1
F-IF.4	1
F-IF.7	1
F-IF.9	1
Building Functions	
F-BF.1	1
F-BF.3	1

F-BF.4	1
Linear and Exponential Models	
F-LE.3	1
F-LE.4	1
Trigonometric Functions	
F.TF.1	1
F.TF.2	1
F.TF.5	1
<b>Geometry</b>	
Congruence	
G-CO.10	1
G-CO.11	–
G-CO.14	1
Circles	
G-C.2	–
G-C.5	1
Expressing Geometric Properties with Equations	
G-GPE.1	1
Geometric Measurement & Dimension	
G-GMD.3	1
G-GMD.4	1
Modeling with Geometry	
G-MG.1	1
<b>Statistics and Probability</b>	
Making Inferences and Justifying Conclusions	
S-IC.1	2
S-IC.3	1
S-IC.4	–
S-IC.5	–
S-IC.6	–

\* 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.