



# 2015–2016 NC Final Exams of Math II and Math III

## North Carolina Assessment Specifications

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### Purpose of the Assessments

NC Final Exams were developed to replace locally developed assessments, providing teachers and principals with a common measure for all students state-wide during a given testing window.

The NC Final Exams for Math II and Math III will measure students' academic progress in the NC *Standard Course of Study*, adopted by the North Carolina State Board of Education in June 2010. The NC *Standard Course of Study* for Mathematics is available at:

<http://maccss.ncdpi.wikispaces.net/HS+Standards>.

NC Final Exam scores (along with any other relevant end-of-course or end-of-grade assessment scores) will be used in the Educational Value-Added Assessment System (EVAAS) to produce student growth measures to satisfy Standards 6 and 8 of the North Carolina Educator Evaluation System. For more information on the North Carolina Educator Evaluation System, go to: <http://www.ncpublicschools.org/effectiveness-model/>.

NC State Board of Education policy GCS-A-016 directs schools to use the results from all course-specific NC Final Exams as a minimum of 20% of the student's final course grade.

<http://sbepolicy.dpi.state.nc.us/>

NC Final Exams will not be used for school and district accountability under the READY Accountability Model or for Federal reporting purposes.

### 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. If a teacher is interested in training to become an item writer or reviewer for the North Carolina Testing Program, he/she can visit

[https://center.ncsu.edu/nc/x\\_courseNav/index.php?id=21](https://center.ncsu.edu/nc/x_courseNav/index.php?id=21).

For an in-depth explanation of the test development process see State Board policy GCS-A-013 or reference <http://www.ncpublicschools.org/accountability/testing/shared/testdevprocess>.

## Curriculum and Assessment Cycle

- June 2010: North Carolina State Board of Education adoption of the *NC Standard Course of Study*.
- 2012–13: Operational administration of the Measures of Student Learning: Common Exams.
- 2013–14: Redesign and subsequent first operational administration of the NC Final Exams of Math II and Math III.
- 2014–15: Second operational administration of the NC Final Exams.
- 2015–16: Third operational administration of the NC Final Exams.

## Prioritization of Standards

- Members of the Test Development section of the North Carolina Department of Public Instruction (NCDPI) 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 NC Final Exams forms. The table of content category weights describe the percent of total score points.

*Table 1. Test Specification Weights for the Math II NC Final Exam*

Domain	Percent of Total Score Points
The Real Number System (RN)	2% to 5%
Seeing Structure in Expressions (SSE)	26% to 34%
Arithmetic with Polynomials & Rational Expressions (APR)	
Creating Equations (CED)	
Reasoning with Equations & Inequalities (REI)	
Interpreting Functions (IF)	25% to 31%
Building Functions (BF)	
Congruence (CO)	25% to 31%
Similarity, Right Triangles, & Trigonometry (SRT)	
Expressing Geometric Properties with Equations (GPE)	
Geometric Measurement and Dimension (GMD)	
Modeling with Geometry (MG)	7% to 10%
Making Inferences & Justifying Conclusions (IC)	
Conditional Probability and the Rules of Probability (CP)	
Total	100%

Table 2. Test Specification Weights for the **Math III** NC Final Exam

Domain	Percent of Total Score Points
The Real Number System (RN)	4% to 7%
The Complex Number System (CN)	
Seeing Structure in Expressions (SSE)	26% to 34%
Arithmetic with Polynomials and Rational Expressions (APR)	
Creating Equations (CED)	
Reasoning with Equations & Inequalities (REI)	
Interpreting Functions (IF)	28% to 36%
Building Functions (BF)	
Linear and Exponential Models (LE)	
Trigonometric Functions (TF)	
Congruence (CO)	24% to 32%
Similarity, Right Triangles, & Trigonometry (SRT)	
Circles (C)	
Expressing Geometric Properties with Equations (GPE)	
Modeling with Geometry (MG)	
Interpreting Categorical and Quantitative Data (ID)	4% to 7%
Making Inferences and Justifying Conclusions (IC)	
Total	100%

### Cognitive Rigor

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

### Types of Items and Supplemental Materials

The NC Final Exams of Math II and III will consist of four-response-option multiple-choice items.

Students must be provided a graphing calculator.

Students taking math NC Final Exams will be provided with graph 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, any necessary formula/reference sheets, and graph paper (if applicable) are available 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 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.

### Testing Structure and Test Administration Time

The NC Final Exams of Math II and Math III contain 37 items. Included in the total item counts are embedded multiple-choice field test items that will not count toward the students score but will be used for purposes of developing items for future test forms.

NC Final Exam 2015-16	Number of Operational Items	Number of Field Test Items*	Total Number of Items
Math II	33 multiple-choice	4 multiple-choice	37
Math III	33 multiple-choice	4 multiple-choice	37

\*Field test items will not count toward the students score but will be used for purposes of developing items for future test forms.

Students will be given 120 minutes to answer all items.

Appendices A–B show the number of operational items for each standard for the 2015–2016 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 NC Final Exams are administered to students enrolled in fall and spring courses. A list of course codes that align with the 2015–2016 NC Final Exams (i.e., *Course Codes that Align with the NC Final Exams*) is available at <http://www.ncpublicschools.org/accountability/common-exams/>.

The NC Final Exams are administered through NCTest, the NCDPI’s online assessment platform. Paper editions are available.

**Appendix A**  
**Math II NC Final Exam 2015–16**  
**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/Math+II+Standards>.

Math II Standard (High School)	Number of Operational Items Per Standard*
<b>The Real Number System</b>	
N-RN.2	1
<b>Quantities</b>	
N-Q.A	–
<b>Seeing Structure in Expressions</b>	
A-SSE.1.a	1
A-SSE.1.b	1
A-SSE.2	–
A-SSE.3.c	–
<b>Arithmetic with Polynomials &amp; Rational Expressions</b>	
A-APR.1	2
A-APR.3	1
<b>Creating Equations</b>	
A-CED.1	2
A-CED.2	–
A-CED.3	–
A-CED.4	–
<b>Reasoning with Equations &amp; Inequalities</b>	
A-REI.1	–
A-REI.2	1
A-REI.4.b	1
A-REI.7	1
A-REI.10	1
A-REI.11	–

<b>Math II Standard (High School)</b>	<b>Number of Operational Items Per Standard*</b>
<b>Interpreting Functions</b>	
F-IF.2	2
F-IF.4	–
F-IF.5	–
F-IF.7.b	–
F-IF.7.e	1
F-IF.8.a	2
F-IF.9	1
<b>Building Functions</b>	
F-BF.1	2
F-BF.3	1
<b>Congruence</b>	
G-CO.2	1
G-CO.3	–
G-CO.4	–
G-CO.5	1
G-CO.6	–
G-CO.7	–
G-CO.8	–
G-CO.10	–
G-CO.13	–
<b>Similarity, Right Triangles, &amp; Trigonometry</b>	
G-SRT.1	–
G-SRT.6	–
G-SRT.7	1
G-SRT.8	3
G-SRT.9	–
G-SRT.11	–
<b>Expressing Geometric Properties with Equations</b>	
G-GPE.1	1
G-GPE.6	–
<b>Geometric Measurement and Dimension</b>	
G-GMD.B.4	1
<b>Modeling with Geometry</b>	
G-MG.1	1
G-MG.2	–
G-MG.3	–

<b>Math II Standard (High School)</b>	<b>Number of Operational Items Per Standard*</b>
<b>Making Inferences &amp; Justifying Conclusions</b>	
S-IC.2	1
S-IC.6	–
<b>Conditional Probability and the Rules of Probability</b>	
S-CP.1	1
S-CP.2	–
S-CP.3	–
S-CP.4	–
S-CP.5	–
S-CP.6	–
S-CP.7	–
S-CP.8	–
S-CP.9	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**  
**Math III NC Final Exam 2015–16**  
**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/Math+II+Standards>.

Math III Standard (High School)	Number of Operational Items Per Standard*
<b>The Real Number System</b>	
N-RN.3	1
<b>Quantities</b>	
N-Q.1	–
N-.2	–
N-Q.3	–
<b>The Complex Number System</b>	
N-CN.1	–
N-CN.2	1
N-CN.7	–
N-CN.9	–
<b>Seeing Structure in Expressions</b>	
A-SSE.1	–
A-SSE.2	–
A-SSE.3.b	–
A-SSE.4	1
<b>Arithmetic with Polynomials &amp; Rational Expressions</b>	
A-APR.1	–
A-APR.2	2
A-APR.3	1
A-APR.4	–
A-APR.6	1
A-APR.7	–
<b>Creating Equations</b>	
A-CED.1	–
A-CED.2	–
A-CED.3	1
A-CED.4	–

Math III Standard (High School)	Number of Operational Items Per Standard*
<b>Reasoning with Equations &amp; Inequalities</b>	
A-REI.1	–
A-REI.2	1
A-REI.4.a	1
A-REI.4.b	1
A-REI.10	–
A-REI.11	1
<b>Interpreting Functions</b>	
F-IF.2	–
F-IF.4	2
F-IF.5	–
F-IF.7.c	–
F-IF.7.e	–
F-IF.8.a	–
F-IF.9	–
<b>Building Functions</b>	
F-BF.1	–
F-BF.2	–
F-BF.3	2
F-BF.4.a	2
<b>Linear and Exponential Models</b>	
F-LE.3	1
F-LE.4	–
<b>Trigonometric Functions</b>	
F.TF.1	1
F.TF.2	1
F.TF.5	1
F.TF.8	–
<b>Congruence</b>	
G-CO.1	–
G-CO.9	–
G-CO.10	1
G-CO.11	1
G-CO.12	–

<b>Math III Standard (High School)</b>	<b>Number of Operational Items Per Standard*</b>
<b>Similarity, Right Triangles, &amp; Trigonometry</b>	
G-SRT.2	–
G-SRT.3	–
G-SRT.4	–
G-SRT.5	2
<b>Circles</b>	
G-C.1	–
G-C.2	–
G-C.3	–
G-C.5	2
<b>Expressing Geometric Properties with Equations</b>	
G-GPE.1	2
G-GPE.2	–
<b>Modeling with Geometry</b>	
G-MG.3	1
<b>Interpreting Categorical and Quantitative Data</b>	
S-ID.4	1
<b>Making Inferences and Justifying Conclusions</b>	
C-IC.1	–
S-IC.3	–
S-IC.4	1
S-IC.5	–
S-IC.6	–
<b>Using Probability to Make Decisions</b>	
S-MD.6	–
S-MD.7	–

\* 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.