



## 2014–2015 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://www.corestandards.org/Math/>.
- 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.
- 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 reviewed items and suggested improvements, if necessary. The use of North Carolina educators to develop and review items strengthens the instructional validity of the items.

#### **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.

### 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, rather than the percent of total items.

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

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

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

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

### Cognitive Rigor

Each standard was classified using Webb’s depth of knowledge (DOK) classification scheme.

### Types of Items and Supplemental Materials

The NC Final Exams of Math II and III 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., *2014-2015 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.

### 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.
- Students will be given 120 minutes to answer all items. Students should monitor the clock to ensure they allow themselves adequate time to respond to all items.
- Appendices A–B show the number of operational items for each standard for the 2014–2015 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 2014–2015 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 available for paper-and-pencil mode. However, transition to online administrations is proceeding during the 2014–2015 academic year.

NC Final Exam	Fall 2014 Delivery Mode Option(s)	Spring 2015 Delivery Mode Options
Math II	Paper-and-Pencil and Online via NCTest	Paper-and-Pencil and Online via NCTest
Math III	Paper-and-Pencil and Online via NCTest	Paper-and-Pencil and Online via NCTest

**Appendix A**  
**Math II NC Final Exam 2014–15**  
**Number of 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://www.corestandards.org/Math/>.

Math II Standard (High School)	Number of Items Per Standard*
Number and Quantity: The Real Number System HSN-RN.A.2	1
Number and Quantity: Quantities HSN-Q.A	–
Algebra: Seeing Structure in Expressions HSA-SSE.A.1.A	–
HSA-SSE.A.1.B	1
HSA-SSE.A.2	1
HSA-SSE.B.3.C	–
Algebra: Arithmetic with Polynomials & Rational Expressions HSA-APR.A.1	2
HSA-APR.B.3	1
Algebra: Creating Equations HSA-CED.A.1	1
HSA-CED.A.2	1
HSA-CED.A.3	–
HSA-CED.A.4	–
Algebra: Reasoning with Equations & Inequalities HSA-REI.A.1	–
HSA-REI.A.2	1
HSA-REI.B.4.B	2
HSA-REI.C.7	–
HSA-REI.D.10	1
HSA-REI.D.11	–
Functions: Interpreting Functions HSF-IF.A.2	2
HSF-IF.B.4	1
HSF-IF.B.5	–
HSF-IF.C.7.B	1
HSF-IF.C.7.E	1
HSF-IF.C.8.A	2

HSF-IF.C.9	1
Functions: Building Functions	
HSF-BF.A.1	–
HSF-BF.B.3	1
Geometry: Congruence	
HSG-CO.A.2	1
HSG-CO.A.3	–
HSG-CO.A.4	–
HSG-CO.A.5	–
HSG-CO.B.6	–
HSG-CO.B.7	–
HSG-CO.B.8	1
HSG-CO.C.10	–
HSG-CO.D.13	–
Geometry: Similarity, Right Triangles, & Trigonometry	
HSG-SRT.A.1	–
HSG-SRT.C.6	1
HSG-SRT.C.7	–
HSG-SRT.C.8	3
HSG-SRT.D.9	–
HSG-SRT.D.11	–
Geometry: Expressing Geometric Properties with Equations	
HSG-GPE.A.1	–
HSG-GPE.B.6	1
Geometry: Geometric Measurement & Dimension	
HSG-GMD.B.4	1
Geometry: Modeling with Geometry	
HSG-MG.A.1	1
HSG-MG.A.2	–
HSG-MG.A.3	–
Statistics & Probability: Making Inferences & Justifying Conclusions	
HSS-IC.A.2	2
HSS-IC.B.6	–
Statistics & Probability: Conditional Probability & the Rules of Probability	
HSS-CP.A.1	–
HSS-CP.A.2	–
HSS-CP.A.3	–
HSS-CP.A.4	–
HSS-CP.A.5	–
HSS-CP.B.6	–
HSS-CP.B.7	–

HSS-CP.B.8	–
HSS-CP.B.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 2014–15**  
**Number of Questions 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://www.corestandards.org/Math/>.

Math III Standard (High School)	Number of Items Per Standard*
Number and Quantity: The Real Number System HSN-RN.B.3	1
Number and Quantity: Quantities HSN-Q.A.1	–
HSN-QA.2	–
HSN-Q.A.3	–
Number and Quantity: The Complex Number System HSN-CN.A.1	–
HSN-CN.A.2	–
HSN-CN.C.7	1
HSN-CN.C.9	–
Algebra: Seeing Structure in Expressions HSA-SSE.A.1	–
HSA-SSE.A.2	–
HSA-SSE.B.3.B	1
HSA-SSE.B.4	–
Algebra: Arithmetic with Polynomials & Rational Expressions HSA-APR.A.1	–
HSA-APR.B.2	1
HSA-APR.B.3	–
HSA-APR.C.4	1
HSA-APR.D.6	1
HSA-APR.D.7	1
Algebra: Creating Equations HSA-CED.A.1	–
HSA-CED.A.2	–
HSA-CED.A.3	1
HSA-CED.A.4	–
Algebra: Reasoning with Equations & Inequalities HSA-REI.A.1	–
HSA-REI.A.2	2
HSA-REI.B.4.A	–
HSA-REI.B.4.B	1



HSA-REI.D.10	–
HSA-REI.D.11	1
Functions: Interpreting Functions	
HSF-IF.A.2	–
HSF-IF.B.4	2
HSF-IF.B.5	–
HSF-IF.C.7.C	–
HSF-IF.C.7.E	–
HSF-IF.C.8.A	–
HSF-IF.C.9	–
Functions: Building Functions	
HSF-BF.A.1.A	–
HSF-BF.A.1.B	–
HSF-BF.A.2	1
HSF-BF.B.3	2
HSF-BF.B.4.A	1
Functions: Linear, Quadratic, & Exponential Models	
HSF-LE.A.3	–
HSF-LE.A.4	1
Functions: Trigonometric Functions	
HSF.TF.A.1	1
HSF.TF.A.2	1
HSF.TF.B.5	–
HSF.TF.C.8	1
Geometry: Congruence	
HSG-CO.A.1	–
HSG-CO.C.9	–
HSG-CO.C.10	1
HSG-CO.C.11	–
HSG-CO.D.12	–
Geometry: Similarity, Right Triangles, & Trigonometry	
HSG-SRT.A.2	1
HSG-SRT.A.3	–
HSG-SRT.B.4	1
HSG-SRT.B.5	1
Geometry: Circles	
HSG-C.A.1	–
HSG-C.A.2	1
HSG-C.A.3	–
HSG-C.B.5	1
Geometry: Expressing Geometric Properties with Equations	
HSG-GPE.A.1	1
HSG-GPE.A.2	1

Geometry: Modeling with Geometry HSG-MG.A.3	1
Statistics & Probability: Interpreting Categorical & Quantitative Data HSS-ID.A.4	1
Statistics & Probability: Making Inferences & Justifying Conclusions HSC.IC.A.1	–
HSS-IC.B.3	–
HSS-IC.B.4	1
HSS-IC.B.5	–
HSS-IC.B.6	–
Statistics & Probability: Using Probability to Make Decisions HSS-MD.B.6	–
HSS-MD.B.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.