



2015–2016 NC Final Exam of Discrete Mathematics

North Carolina Assessment Specifications

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.

North Carolina's Final Exam for Discrete Mathematics measures students' academic progress in the 2003 *Standard Course of Study* (NCSCS). The 2003 North Carolina *Standard Course of Study* may be reviewed 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.

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

- 2003: North Carolina State Board of Education adoption of the *Standard Course of Study*.
- 2013–14: Operational administration of NC Final Exam of Discrete Mathematics.
- 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.

Table 1 describes the percentage range of score points that will appear on the NC Final Exam form in Discrete Mathematics. The table of test specification weights describe the percent of total score points.

*Table 1. Test Specification Weights for the **Discrete Mathematics** NC Final Exam*

<u>2003 Standard Course of Study</u>	<u>Percent of Total Score Points</u>
1.01	16% to 24%
1.02	8% to 16%
2.01	14% to 22%
2.02	19% to 27%
2.03	16% to 24%
3.01	9% to 16%
Total	100%

Cognitive Rigor

The Discrete Mathematics items were aligned to the content standards using Marzano’s *Thinking Skill Levels*.

Types of Items and Supplemental Materials

- The NC Final Exam of Discrete Mathematics consists 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.
- Formula sheets will be provided to students taking the NC Final Exam of Discrete Mathematics.
- 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 Exam of Discrete Mathematics contains 37 multiple-choice 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
Discrete Mathematics	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.

Appendix A shows 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 test specification weights in *Table 1*.

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
Discrete Mathematics NC Final Exam 2015–16
Number of Operational Items by Objective

The following table shows the number of operational items for each objective. Note that future coverage of objectives could vary within the constraints of the test specification weights in *Table 1*. The 2003 *Standard Course of Study* may be reviewed at <http://maccss.ncdpi.wikispaces.net/HS+Standards>.

Discrete Mathematics Objective	Number of Items Operational Per Objective*
Competency Goal 1: The learner will use matrices and graphs to model relationships and solve problems.	
1.01a	2
1.01b	4
1.02	4
Competency Goal 2: The learner will analyze data and apply probability concepts to solve problems.	
2.01a	–
2.01b	2
2.01c	2
2.01d	3
2.01e	–
2.01f	–
2.02a	2
2.02b	–
2.02c	3
2.02d	–
2.02e	–
2.02f	1
2.03a	3
2.03b	2
2.03c	2
2.03d	–
Competency Goal 3: The learner will describe and use recursively-defined relationships to solve problems.	
3.01a	1
3.01b	1
3.01c	–
3.01d	1
3.01e	–

* Some objective not designated with tested items (i.e., “–”) may be a prerequisite objective, may be tested within the context of another objective or may be included as an embedded field test item.