

Assessment Brief



Public Schools of North Carolina

State Board of Education • Phillip J. Kirk, Jr., Chairman • North Carolina Department of Public Instruction • Michael E. Ward, Superintendent

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The 1998 Mathematics *Standard Course of Study* and North Carolina Mathematics Tests

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Introduction

North Carolina has had a *Standard Course of Study* to guide instruction in North Carolina public schools since 1898. Since that time, the curriculum has been revised periodically to reflect the changing needs of students and society. The intent of the *North Carolina Standard Course of Study* in Mathematics is to establish competency goals and objectives for the teaching and learning of mathematics in North Carolina.

Prior to the 1998 revisions, the most recent revisions of the state mathematics curriculum occurred in 1989 (grades K–8) and 1992 (grades 9–12). Those curricula reflected the shift in the knowledge, skills, and attitudes related to mathematics needed by students who enter business, industry, and society to function successfully in an information-driven world. The 1998 revisions continue to build upon those efforts.

The State Board of Education approved revisions to the *North Carolina Mathematics Standard Course of Study* at the May 1998 monthly meeting. The revised curriculum was used for instructional planning and textbook selection during the 1998–1999 school year. During the 1999–2000 school year, implementation of the transitional mathematics curriculum occurred. Field test items were embedded in most North Carolina mathematics tests in 1999–2000 in preparation for the revision of mathematics tests during the 2000–2001 school year.

Beginning in the 2000–2001 school year, North Carolina mathematics tests will measure the goals and objectives in the 1998 *North Carolina Mathematics Standard Course of Study*.

The 1998 North Carolina Standard Course of Study in Mathematics

As defined in the 1998 *North Carolina Standard Course of Study*, the goals in mathematics education for students to develop are:

- (1) Strong mathematical problem solving and reasoning abilities;
- (2) A firm grounding in essential mathematical concepts and skills, including computation and estimation;
- (3) Connections within mathematics and with other disciplines;
- (4) The ability to use appropriate tools including technology to solve mathematical problems;
- (5) The ability to communicate an understanding of mathematics effectively; and
- (6) Positive attitudes and beliefs about mathematics.

The competency goals and objectives of the 1998 mathematics curriculum for each grade and subject are organized into four strands:

- (1) Number Sense, Numeration, and Numerical Operations;
- (2) Spatial Sense, Measurement, and Geometry;
- (3) Patterns, Relationships, and Functions;
- (4) Data, Probability, and Statistics.

North Carolina Mathematics Tests

Beginning Fall 2000, North Carolina mathematics test questions will measure mathematical concepts at the appropriate grade level with appropriate mathematical vocabulary as reflected in the 1998 curriculum. The curricular revisions have resulted in changes on the following mathematics tests:

- North Carolina Grade 3 Pretest — Mathematics;
- North Carolina End-of-Grade Tests — Mathematics (grades 3–8); and
- North Carolina End-of-Course Tests of Algebra I, Geometry, and Algebra II.

All North Carolina Mathematics Tests

The following are updates for all North Carolina-developed mathematics tests beginning in the 2000–2001 school year:

- (1) Students will receive a separate sheet of NCDPI-issued graph paper to be used during the administration of North Carolina mathematics tests.
- (2) Field test items will not be embedded in the regular test book. Stand-alone mathematics field test administrations are expected to occur during the school year for the grade 3 pretest, end-of-grade tests, and end-of-course tests of Algebra I, Geometry, and Algebra II.
- (3) All mathematical formulas will remain the same as those used during the 1999–2000 school year. Revised mathematical formula pages may be included in mathematics field tests during the 2000–2001 school year. The end-of-course test of Algebra I does not contain a formula page.
- (4) Updated information for the use of calculators on end-of-grade and end-of-course mathematics tests is located in this publication. A complete update regarding calculator use during the administration of all North Carolina-developed mathematics tests is available in a separate *Assessment Brief* publication. Contact the school system or visit the NCDPI/Division of Accountability Services/Testing Section web site at www.ncpublicschools.org/accountability/testing.
- (5) To continue to follow standard psychometric practices, all North Carolina mathematics tests will be:
 - Renormed to reflect revisions in their measured curriculum, test design, and student performance on the revised tests. This will affect percentiles reported during the 2000–2001 school year.
 - Rescaled for the 2000–2001 school year.
 - Re-evaluated for the setting of performance standards (achievement levels) for all mathematics tests.

Grade 3 Pretest and End-of-Grade Tests

Beginning in the 2000–2001 school year, the following requirements are applicable to the North Carolina Pretest—Grade 3 and the North Carolina End-of-Grade Test—Mathematics (grades 3–8):

- (1) The mathematics computation and applications parts of the tests have been renamed calculator inactive and calculator active, respectively. The difference between the calculator inactive and calculator active parts of the tests is whether or not calculator use is permitted.

Calculator Inactive. The calculator inactive part of the tests measures mathematics in context to reflect the practical nature of mathematics computation. Calculator use is

prohibited. Approximately thirty percent of the test questions will be calculator inactive.

Calculator Active. Calculators will be provided to students at grades 3–8. Approximately seventy percent of the test questions will be calculator active.

- (2) The minimum requirements for calculators:
 - Four-function calculator with memory key at grades 3–5; and
 - Any four-function calculator with square root function, y^x , π (πi), and algebraic logic at grades 6–8.
- (3) Students at grades 3–8 will receive NCDPI-issued/approved six-inch/15-cm rulers with a leading edge to be used during the administration of the mathematics test. Students at grades 5–8 will also receive NCDPI-issued/approved protractors.
- (4) The 15 minutes extra time (three minutes for calculator inactive) that has been offered to all students at the end of the standard administrations of mathematics tests will be included in the actual test administration time during the 2000–2001 school year. The NCDPI Division of Accountability Services/Testing Section will collect actual test administration time and analyze the data. The Testing Section reserves the right to calibrate actual test administration time for the revised mathematics tests in the 2001–2002 school year and beyond. As a result, extra time will no longer be part of a standard test administration.

End-of-Course Mathematics Tests

The requirements listed below will be effective for the end-of-course mathematics tests for the 2000–2001 school year.

- (1) For the end-of-course tests of Algebra I and Algebra II, the minimum calculator requirement is a graphing calculator. For the end-of-course test of Geometry, the minimum calculator requirement is a scientific calculator.
- (2) All end-of-course mathematics tests will be calculator active. That is, the Algebra I test will no longer include a calculator inactive part.
- (3) The 15 minutes extra time will no longer be part of a standard test administration.

According to State Board of Education policy: (1) all students, including those with disabilities, who are taking a course for credit must be administered the end-of-course tests and (2) end-of-course Algebra I test results must count 25 percent of each student's final grade. The test results from the end-of-course Geometry and Algebra II tests must count as part of each student's final course grade. The local school system determines the percentage of the final course grade for the Geometry and Algebra II test results.