

North Carolina End-of-Grade Test—Grade 8 Mathematics

<p>What are the purposes of the NC Testing Program?</p>	<p>The North Carolina End-of-Grade tests are designed to measure student performance on the competencies specified in the goals and objectives of the North Carolina <i>Standard Course of Study</i> (SCS).</p> <p>The North Carolina End-of-Grade Tests are required by General Statute 115C.174.10 as a component of the North Carolina Annual Testing Program. As stated, the purposes of North Carolina state-mandated tests are “(i) to assure that all high school graduates possess those minimum skills and that knowledge thought necessary to function as a member of society, (ii) to provide a means of identifying strengths and weaknesses in the education process in order to improve instructional delivery, and (iii) to establish additional means for making the education system at the state, local, and school levels accountable to the public for results.”</p> <p>This test is one component of the end-of-grade tests, which include reading comprehension and mathematics tests in grades three through eight. (Students in grade three began taking a reading comprehension and mathematics pretest in the fall of 1996.) The scores from the end-of-grade tests are used to obtain a growth indicator used for school, school system, and state accountability purposes.</p> <p>North Carolina public school students in grades 3, 5, and 8 are required to meet statewide standards (gateways) for promotion in addition to local promotion requirements. The EOG mathematics test is one part of each gateway. Students must demonstrate grade-level proficiency by scoring at or above Achievement Level III on the test. (See Policy HSP-N-003.) For students who do not meet gateway requirements, the student accountability standards include procedures (safeguards) for re-testing, as well as a formal review process. (See Policy HSP-N-005.)</p>
<p>What is measured by the test?</p>	<p>The North Carolina End-of-Grade (EOG) Grade 8 test in mathematics assesses the eighth-grade goals and objectives in the North Carolina Mathematics Standard Course of Study adopted in March 2003. During the test administration, students are expected to demonstrate knowledge of important principles and concepts and relate mathematical information to everyday situations. In order to align with the mathematics curriculum’s focus on inquiry instruction and higher-order thinking, the EOG Grade 8 test in mathematics has a substantial focus on processing information and higher-order thinking.</p> <p>Each item on the EOG Grade 8 test in mathematics is related to one of the eighth-grade competency goals in the North Carolina Mathematics Standard Course of Study. The five competency goals for the Grade 8 mathematics curriculum describe the knowledge and skills that are to be taught in all eighth-grade classes in North Carolina and provide the basis for the content of the items on the EOG test. Many of the items on the EOG Grade 8 test in mathematics assess whether a student can move beyond memorization and apply process skills to the investigation of mathematics.</p> <p>Table 1 on the next page provides some descriptive information about the test.</p>

Table 1. Descriptive Information for the North Carolina End-of-Grade Test—Grade 8 Mathematics

Goal	Description of Goal	Percentage of Questions on Test*
1: Number and Operations	The learner will understand and compute with real numbers.	10-15%
2: Measurement	The learner will understand and use measurement concepts.	10-15%
3: Geometry	The learner will understand and use properties and relationships in geometry.	10-15%
4: Data Analysis and Probability	The learner will understand and use graphs and data analysis.	20-25%
5: Algebra	The learner will understand and use linear relations and functions.	35-40%

*All questions on the test have the same weight. Therefore, the percentage of questions on the test is also the relative weight of that goal in a student's score.

<p>How is the test administered?</p>	<p>The test is administered within the last three weeks of the school year. The EOG Grade 8 test in mathematics consists of 80 multiple-choice questions. Students may use calculators on the entire test.</p> <p>To best allow students to demonstrate higher-order learning, the EOG mathematics tests are designed as power tests rather than as speeded tests. As such, the tests are untimed. Test administration time estimates are provided for scheduling, based on the time needed for the vast majority of students to complete the tests during the field test administration. At the school level, provisions are to be made for those students who, in order to have ample time to complete the mathematics tests, will need time beyond that scheduled.</p> <p>Several equivalent test forms are administered in each classroom to provide a greater breadth of information for curriculum evaluation and planning. For each test form, most of the items are scored for accountability and reporting purposes. The other items are experimental items included for field testing or for research purposes. These experimental items are not included in any reporting or in any accountability decisions, whether at the student, classroom, school, or school district level. In addition, the experimental items are not counted for determinations of Adequate Yearly Progress (AYP) under the federal No Child Left Behind (NCLB) Act.</p>
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	<p>No rulers or protractors are required or permitted during the administration of the 2003-SCS-aligned EOG Mathematics tests. End-of-grade graph paper will be provided, as done during past EOG test administrations.</p> <p>No formula sheets are required or provided for the 2003-SCS-aligned EOG Mathematics tests. Information on the formulas from the measurement and geometry strands of the SCS that students are expected to know is provided in the document Required Formulas for the EOG Math Tests (published January 2006). This document is available at http://www.ncpublicschools.org/accountability/testing/eog/math/</p>
How was the test developed?	<p>NCDPI Test Development staff, other NCDPI staff, classroom teachers, and other professionals were involved in the development and review of the items and test forms. The questions on the EOG Grade 8 test of mathematics were written and reviewed in 2003 through 2005. The items were field tested statewide in Spring 2005. Each field test item was administered to approximately 4,000 students. For further information on the stages of the North Carolina test development process, see the following web site: www.ncpublicschools.org/accountability/testing/shared/testdevprocess .</p> <p>The Mathematics EOG Grade 8 tests aligned to the North Carolina Mathematics Standard Course of Study (adopted in March 2003) will be implemented statewide for the first time in the spring of the 2005-2006 school year.</p>

What kinds of test scores do students receive?	<p>Students receive scale scores, percentile scores, and achievement level results. The scores on the end-of-grade tests in mathematics are reported on a developmental scale, which allows the measurement of growth in achievement across the grade levels. The scale will be defined in the summer and fall of 2006. The use of scale scores provides for easier and more consistent interpretations of the results from test to test. Achievement levels are used to provide an interpretation of student performance relative to pre-determined standards based on ranges of scale scores. Percentile scores show student performance relative to students who took the test during the first year the tests were administered.</p> <p>For further details, please refer to the assessment brief on scale scores mentioned on the last page of this document. Descriptions of each achievement level appear in Table 2 on the following page.</p>
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The paragraph to the right is common to each achievement level in Table 2 below.

In grade eight, students develop the concept of and make estimates with irrational numbers. Students use the Pythagorean Theorem and apply concepts of indirect measurement to solve problems. Eighth graders represent data on graphs and approximate lines of best fit for scatter plots. Students develop an understanding of functions and write equations for linear relationships. They use linear equations and inequalities to solve problems and justify solutions. They apply grade eight concepts as well as those developed in previous years to solve relevant and authentic problems.

Table 2. Achievement Levels for North Carolina End of Grade Test—Grade 8 Mathematics

Level	Description	Scale Score Range
1	<p>Achievement Level I: Students performing at this level do not have sufficient mastery of knowledge and skills in this subject area to be successful at the next grade level.</p> <p>Students performing at Achievement Level I lack conceptual understanding and computational accuracy. They frequently respond with inappropriate answers or procedures. They seldom use problem-solving strategies.</p>	to be determined September 2006
2	<p>Achievement Level II: Students performing at this level demonstrate inconsistent mastery of knowledge and skills in this subject area and are minimally prepared to be successful at the next grade level.</p> <p>Students performing at Achievement Level II exhibit inconsistent performance and show limited evidence of conceptual understanding. They have difficulty applying problem-solving strategies in unfamiliar situations.</p>	to be determined September 2006
3	<p>Achievement Level III: Students performing at this level consistently demonstrate mastery of grade level subject matter and skills and are well prepared for the next grade level.</p> <p>Students performing at Achievement Level III generally show conceptual understanding, compute accurately, and respond with appropriate answers or procedures. They use a variety of problem-solving strategies.</p>	to be determined September 2006
4	<p>Achievement Level IV: Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient at grade level work.</p> <p>Students performing at Achievement Level IV commonly show a high level of conceptual understanding, compute accurately, and respond consistently with appropriate answers or procedures. They demonstrate flexibility by using a variety of problem-solving strategies.</p>	to be determined September 2006

For Further Information:

Sample Items	Sample items aligned with the 2003 Mathematics Standard Course of Study are available at the following web site. http://www.ncpublicschools.org/accountability/testing/eog/math/
Assessment Briefs	The assessment briefs posted at this site include calculator use policies and a description of the thinking skills taxonomy used to classify test items. A brief document that describes the standard setting process used for determining scale scores and documents that give the ranges of scale scores corresponding to each achievement level will be available in the fall of 2006. http://www.ncpublicschools.org/accountability/policies/briefs/
Mathematics Curriculum	http://www.ncpublicschools.org/curriculum/mathematics/scos/
Accommodations for Students with Disabilities	See especially Section D of Testing Students with Disabilities http://www.ncpublicschools.org/docs/accountability/testing/alternate/disabilities/testingstudents.pdf

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