

North Carolina End-of-Course Test Algebra I

What are the purposes of the NC Testing Program?

The North Carolina End-of-Course Tests are required by General Statute 115C-174.10 as a component of the North Carolina Annual Testing Program. 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.” This test is one component of the North Carolina Testing Program, which includes reading comprehension and mathematics tests in grades three through eight and end-of-course tests in many courses.

For school, school system, and state accountability, prediction formulas (first used in 2000-2001) are used to determine growth expectations for end-of-course tests. The prediction formula is used to determine a student’s expected score for each school on each EOC test. Each expected score is determined by students’ performance (average scores) on the North Carolina EOG or EOC tests, which serve as predictors of the same students’ performance in the EOC course where they are currently enrolled.

What is measured by the test?

The North Carolina End-of-Course (EOC) Test of Algebra I assesses the Algebra I goals and objectives in the *North Carolina Mathematics Standard Course of Study* (adopted in May 1998). On the test, 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 EOC Algebra I test has an increased focus on processing information and higher-order thinking.

Each item on the EOC Algebra I test is related to one of the Algebra I competency goals in the *North Carolina Mathematics Standard Course of Study*. The four competency goals for the Algebra I curriculum describe the knowledge and skills that are to be taught in all Algebra I classes in North Carolina and provide the basis for the content of the items on the test. Many of the items on the EOC Algebra I test assess whether a student can move beyond memorization and apply process skills to the investigation of mathematics.

Table 1. Descriptive Information for the North Carolina End-of-Course Test of Algebra I

Goal	Description of Goal	Percentage of Items on Test
1	The learner will perform operations with real numbers and polynomials to solve problems.	15%
2	The learner will solve problems in a geometric context.	5%
3	The learner will graph and use relations and functions to solve problems.	70%
4	The learner will collect and interpret data to solve problems.	10%

How is the test administered? The EOC Algebra I test consists of 80 multiple-choice questions administered during a fixed block of time within the last week (block schedule or summer school) or the last two weeks (traditional schedule) of the course. Three equivalent forms are administered in each classroom to provide a breadth of information for curriculum evaluation and planning.

How was the test developed? The questions on the EOC Algebra I test were written and reviewed by trained North Carolina teachers and educators during the 1999–2000 and 2000–2001 school years. The EOC Algebra I tests aligned to the *North Carolina Mathematics Standard Course of Study* (adopted in May 1998) were implemented statewide for the first time in the spring of the 2000-2001 school year.

What kinds of scores do students receive on the test? The scores on the EOC Algebra I tests are reported as scale scores and achievement levels. The scale used was designed to have a range of 20 to 80 with a mean of 50 and a standard deviation of 10. The use of scale scores provides for easier and more consistent interpretations of the results from test to test. The use of achievement levels provides an interpretation of student performance relative to a pre-determined standard. The four achievement levels are typically established by linking teacher judgments to the performance distribution of student scores from the field test or the first operational administration of the test.

Table 2. Achievement Levels for the North Carolina End of Course Test of Algebra I

Level	Description	Scale Score Range
1	Students performing at this level do not have sufficient mastery of knowledge and skills in the subject to be successful at a more advanced level in the content area.	23-44
2	Students performing at this level demonstrate inconsistent mastery of knowledge and skills in the subject area and are minimally prepared to be successful at a more advanced level in the content area.	45-54
3	Students performing at this level consistently demonstrate mastery of the subject matter and skills and are well prepared for a more advanced level in the content area.	55-65
4	Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient in subject matter and skills and are very well prepared for a more advanced level in the content area.	66-87

Sample Items The following pages contain samples of the types of items that appear on the North Carolina End-of-Course Test of Algebra I. The objective indicates the curriculum objective the item is designed to assess. The thinking skill corresponds to the level of thinking the item requires as defined by a thinking skills framework adapted from *Dimensions of Thinking* by Robert J. Marzano and others.

For additional information: **Assessment Briefs:**
<http://www.ncpublicschools.org/accountability/testing/briefs/MathematicsScs/>
<http://www.ncpublicschools.org/accountability/testing/briefs/CalculatorRequirements/>

Mathematics Curriculum:
<http://www.ncpublicschools.org/curriculum>

Thinking Skills:
<http://www.ncpublicschools.org/accountability/testing/>

Additional Mathematics Sample Items:
<http://www.ncpublicschools.org/accountability/testing/eoc/>

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