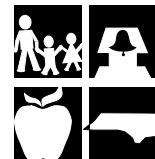


Assessment Brief



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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Calculator Requirements for the North Carolina Testing Program

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State Philosophy and Policy for Calculator Use

All North Carolina tests assess the goals and objectives in the North Carolina *Standard Course of Study*. For multiple-choice tests, items are written to test specific objectives; on open-ended tests, items are written to span across the objectives and/or goals. If a student is asked to solve a problem, the focus of all items written for the objective and/or goal should be problem solving, regardless of the process used to solve the problem. If a student is asked to solve a problem using a specific procedure, the focus of all items written for the objective and/or goal should be the procedure. This difference in focus can be enhanced or hindered by the use of specific tools or technology, i.e., calculators, since more sophisticated technology may interfere with the assessment of specific procedures necessary to solve problems.

This publication contains the calculator requirements for the North Carolina Testing Program for 2000-2001 and beyond. The use of keyboarding calculators and symbol manipulation calculators is prohibited during the administration of any North Carolina test. Symbol manipulation calculators are those capable of doing symbolic algebra (i.e., factoring, expanding, or simplifying given variable output), or symbolic calculus. As curricula and technology change, the policy concerning technology use on North Carolina tests (both multiple-choice and open-ended) will be reevaluated.

Inappropriate Uses of Calculators

Calculators are not appropriate when assessing objectives that ask the student to do tasks that are intended to assess specific mathematical procedures similar to the following: find the square root of perfect squares, solve problems involving the addition of two single-digit numbers, or solve problems by estimation.

Sample Question: For science lab, each wick for the burner should be at least 5 inches long. Which of the following pieces of string could be used to make 10 wicks?

- (a) 5
- (b) 15
- (c) 45
- (d) 100

Appropriate Uses of Calculators

Calculators are appropriate when assessing objectives where the focus is on problem solving. Items that are dependent on order of operations are not on the calculator active part of a test. Calculators become tools for students to demonstrate their understanding of complex problems beyond paper and pencil.

Sample Question: A two-inch cube ($2 \times 2 \times 2$) of silver weighs 3 pounds and is worth \$246.72. How much is a three-inch cube of silver worth?

Graphing calculators are appropriate when assessing objectives where the focus is on solving problems that are not simple in nature (i.e., quadratic, exponential).

Sample Question: When a ball is thrown into the air, its height depends on the time since the ball was thrown. The equation for its height is $h = -t^2 + 2t + 3$. Find the greatest height above the ground attained by the ball.

Beginning in the 2000-2001 school year, all North Carolina-developed mathematics tests will measure the goals and objectives from the revised 1998 *North Carolina Mathematics Standard Course of Study*. The following table contains the minimum calculator requirements for the 2000-2001 school year and beyond.

Minimum Calculator Requirements North Carolina Testing Program

The minimum calculator requirement for each state test is listed below. Calculators with additional capabilities are allowed; however, keyboarding or symbol manipulation calculators are prohibited during the administration of secure North Carolina tests. Symbol manipulation calculators are those capable of doing symbolic algebra (e.g., factoring, expanding, or simplifying giving variable output) or symbolic calculus. Prior to the test administration, students must have experience with the use of calculators as part of the instructional process. Calculators that meet the minimum requirements must be available to all students during the test administration. Calculator memory must be cleared prior to and after the test administration.

Test	Minimum Calculator Requirement
Grade 3 Pretest Mathematics ¹	<u>Calculator Inactive:</u> Calculator use is not allowed.
	<u>Calculator Active:</u> Four-function calculator with memory key
Open-Ended Assessment Grades 4 & 8 Mathematics	<u>Grade 4:</u> Four-function calculator with memory key
	<u>Grade 8:</u> Any four-function calculator with square root function, y^x , π (pi), and algebraic logic
End-of-Grade Mathematics Tests Grades 3–8 ¹	<u>Calculator Inactive at Grades 3–8:</u> Calculator use is not allowed.
	<u>Calculator Active at Grades 3–5:</u> Four-function calculator with memory key
	<u>Calculator Active at Grades 6–8:</u> Any four-function calculator with square root function, y^x , π (pi), and algebraic logic
Competency Test Mathematics (Forms F, G, H)	<u>Mathematics Computation:</u> Calculator use is not allowed.
	<u>Mathematics Applications:</u> Any four-function calculator with square root function, y^x , π (pi), and algebraic logic
High School Comprehensive Test Mathematics	Graphing calculator
End-of-Course Tests	<u>Algebra I and Algebra II:</u> Graphing calculator
	<u>Chemistry, Geometry, Physical Science, and Physics:</u> Scientific calculator
High School Exit Exam <i>Beginning Spring 2002 at 11th Grade</i>	Graphing calculator

¹ Mathematics computation has been renamed calculator inactive; mathematics applications has been renamed calculator active.