



2015–2016 NC Final Exams of Earth and Environmental Science, Physical Science, Physics, and Chemistry

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 Final Exams for High School Science courses will measure students' academic progress in the NC *Essential Standards*, adopted by the North Carolina State Board of Education in June 2010. The NC *Essential Standards* are posted at:

<http://www.ncpublicschools.org/acre/standards/new-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.

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

- 2010: North Carolina State Board of Education adoption of the NC *Essential Standards*.
- 2012–13: Operational administration of the Measures of Student Learning: Common Exams.
- 2013–14: Redesign and subsequent first operational administration of the NC Final Exams.
- 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 item formats.
- Tables 1–4 describe the percentage range of total score points that will appear on the NC Final Exams in High School Science courses (i.e., Earth and Environmental, Physical Science, Physics, and Chemistry). All High School Science NC Final Exams contain multiple-choice items. The table of test specification weights describe the percent of total score points.

*Table 1. Test Specification Weights for the **Earth and Environmental Science** NC Final Exam*

Standards	Percent of Total Score Points
Earth in the Universe	
EEn.1.1	11% to 16%
Earth Systems, Structures, and Processes	
EEn.2.1	11% to 17%
EEn.2.2	11% to 17%
EEn.2.3	4% to 10%
EEn.2.4	7% to 12%
EEn.2.5	4% to 10%
EEn.2.6	7% to 10%
EEn.2.7	14%-19%
EEn.2.8	9%-14%
Total	100%

*Table 2. Test Specification Weights for the **Physical Science** NC Final Exam*

Standards	Percent of Total Score Points
Forces and Motion	
PSc.1.1	2% to 7%
PSc.1.2	9% to 14%
Matter: Properties and Change	
PSc.2.1	11% to 17%
PSc.2.2	23% to 31%
PSc.2.3	2% to 7%
Energy: Conservation and Transfer	
PSc.3.1	7% to 10%
PSc.3.2	14%-19%
PSc.3.3	9%-14%
Total	100%

*Table 3. Test Specification Weights for the **Physics** NC Final Exam*

Standards	Percent of Total Score Points
Forces and Motion	
Phy.1.1	7% to 12%
Phy.1.2	7% to 12%
Phy.1.3	7% to 12%
Energy: Conservation and Transfer	
Phy.2.1	12% to 17%
Phy.2.2	7% to 12%
Phy.2.3	14% to 19%
Interactions of Energy and Matter	
Phy.3.1	12% to 17%
Phy.3.2	9% to 14%
Total	100%

*Table 4. Test Specification Weights for the **Chemistry** NC Final Exam*

Standards	Percent of Total Score Points
Matter: Properties and Change	
Chm.1.1	11% to 17%
Chm.1.2	14% to 19%
Chm.1.3	4% to 10%
Energy: Conservation and Transfer	
Chm.2.1	14% to 19%
Chm.2.2	14% to 19%
Interactions of Energy and Matter	
Chm.3.1	7% to 12%
Chm.3.2	12% to 17%
Total	100%

Cognitive Rigor

NC Final Exams items in High School Science were aligned to the Essential Standards using the Revised Bloom's Taxonomy (RBT).

Types of Items and Supplemental Materials

All NC Final Exams in High School Science will contain four-response-option multiple-choice items.

Students taking the Physical Science, Physics, and Chemistry NC Final Exams should be provided with a reference table and a scientific calculator. Earth and Environmental Science NC Final Exam should only be provided a scientific calculator.

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 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.

Testing Structure and Test Administration Time

NC Final Exams in High School Science contains a total of 45 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
Earth and Environmental	40 multiple-choice	5 multiple-choice	45
Physical Science	40 multiple-choice	5 multiple-choice	45
Physics	40 multiple-choice	5 multiple-choice	45
Chemistry	40 multiple-choice	5 multiple-choice	45

*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.

Appendices A-D show the number of operational items for each clarifying objective for the 2015–16 exams. Note that future coverage of objectives could vary within the constraints of the content category weights in *Tables 1–4*.

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 2015–16 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
Earth and Environmental Science NC Final Exam 2015–16
Number of Operational Items by Clarifying Objectives

The following table shows the number of operational (scored) test items for each clarifying objective. Note that future coverage of objectives could vary within the constraints of the test specification weights in *Tables 1–4*. Some objectives 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.

Earth and Environmental Clarifying Objectives	Number of Operational Items per Objective
EEn.1.1.1	1
EEn.1.1.2	1
EEn.1.1.3	2
EEn.1.1.4	1
EEn.2.1.2	–
EEn.2.1.1	2
EEn.2.1.3	3
EEn.2.2.1	4
EEn.2.2.2	1
EEn.2.3.1	3
EEn.2.3.2	1
EEn.2.4.1	1
EEn.2.4.2	2
EEn.2.5.1	1
EEn.2.5.2	2
EEn.2.5.3	–
EEn.2.5.5	1
EEn.2.6.1	1
EEn.2.6.3	2
EEn.2.6.4	1
EEn.2.7.1	1
EEn.2.7.2	3
EEn.2.7.3	2
EEn.2.8.2	1
EEn.2.8.3	3

Appendix B
Physical Science NC Final Exam 2015–16
Number of Operational Items by Clarifying Objectives

The following table shows the number of operational (scored) test items for each clarifying objective. Note that future coverage of objectives could vary within the constraints of the test specification weights in *Tables 1–4*. Some objectives 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.

Physical Science Clarifying Objectives	Number of Operational Items per Objective
PSc.1.1.1	1
PSc.1.1.2	2
PSc.1.2.1	2
PSc.1.2.2	–
PSc.1.2.3	3
PSc.2.1.1	2
PSc.2.1.2	–
PSc.2.1.3	3
PSc.2.1.4	1
PSc.2.2.1	3
PSc.2.2.2	1
PSc.2.2.3	–
PSc.2.2.4	3
PSc.2.2.5	2
PSc.2.2.6	1
PSc.2.3.1	1
PSc.2.3.2	1
PSc.3.1.1	1
PSc.3.1.2	1
PSc.3.1.3	1
PSc.3.1.4	–
PSc.3.2.1	2
PSc.3.2.2	2
PSc.3.2.3	2
PSc.3.2.4	–
PSc.3.3.1	1
PSc.3.3.2	2
PSc.3.3.3	–
PSc.3.3.4	1
PSc.3.3.5	1

Appendix C
Physics NC Final Exam 2015–16
Number of Operational Items by Clarifying Objectives

The following table shows the number of operational (scored) test items for each clarifying objective. Note that future coverage of objectives could vary within the constraints of the test specification weights in *Tables 1–4*. Some objectives 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.

Physics Clarifying Objectives	Number of Operational Items per Objective
Phy.1.1.1	1
Phy.1.1.2	2
Phy.1.1.3	1
Phy.1.2.1	2
Phy.1.2.2	–
Phy.1.2.3	1
Phy.1.2.4	1
Phy.1.2.5	–
Phy.1.3.1	3
Phy.1.3.2	1
Phy.2.1.1	1
Phy.2.1.2	4
Phy.2.1.3	2
Phy.2.2.1	2
Phy.2.2.2	2
Phy.2.2.3	–
Phy.2.3.1	2
Phy.2.3.2	1
Phy.2.3.3	1
Phy.2.3.4	3
Phy.2.3.5	–
Phy.3.1.1	–
Phy.3.1.2	2
Phy.3.1.3	2
Phy.3.1.4	2
Phy.3.1.5	–
Phy.3.2.1	1
Phy.3.2.2	2
Phy.3.2.3	1

Appendix D
Chemistry NC Final Exam 2015–16
Number of Operational Items by Clarifying Objectives

The following table shows the number of operational (scored) test items for each clarifying objective. Note that future coverage of objectives could vary within the constraints of the test specification weights in *Tables 1–4*. Some objectives 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.

Chemistry Clarifying Objectives	Number of Operational Items per Objective
Chm.1.1.1	3
Chm.1.1.2	1
Chm.1.1.3	1
Chm.1.1.4	1
Chm.1.2.1	2
Chm.1.2.2	1
Chm.1.2.3	–
Chm.1.2.4	2
Chm.1.2.5	2
Chm.1.3.1	1
Chm.1.3.2	3
Chm.1.3.3	–
Chm.2.1.1	3
Chm.2.1.2	1
Chm.2.1.3	–
Chm.2.1.4	1
Chm.2.1.5	2
Chm.2.2.1	–
Chm.2.2.2	2
Chm.2.2.3	1
Chm.2.2.4	2
Chm.2.2.5	2
Chm.3.1.1	3
Chm.3.1.2	1
Chm.3.1.3	–
Chm.3.2.1	2
Chm.3.2.2	1
Chm.3.2.3	–
Chm.3.2.4	–
Chm.3.2.5	1
Chm.3.2.6	1