INFORMATION SHEET

Grade 4 Elementary-Level Science Test

Date of Introduction: May 2004

Test Description:

The purpose of the Grade 4 Elementary-Level Science Test is to measure achievement of the NYS *Learning Standards for Math, Science, and Technology* detailed in New York State's *Elementary-Level Science Core Curriculum Grades K-4*. The test will have a one-hour written component and a one-hour performance component; to be given on different dates within the testing period established by the Department. A State-designated level of performance will be established to help schools identify students who must receive academic intervention services. All students who score below a designated level on the test must receive such services, which must commence no later than the following September.

The test consists of questions in three formats: multiple choice, constructed response, and extended constructed response. The questions are based on the material in the *Elementary-Level Science Core Curriculum Grades K-4*. The first table below shows the approximate percentage of the test that addresses each of the five relevant learning standards. The second table shows the approximate percentage of the test devoted to specific parts of the test.

Area in New York State <i>Elementary-Level Science Core Curriculum (K-4)</i>	Approximate Percentage of the Test
Standard 1 – Mathematical Analysis, Scientific Inquiry, and Technological Design	25 - 30%
Standard 2 – Information Systems	0-5%
Standard 4 – The Living Environment; The Physical Setting	60 - 70%
Standard 6 – Interconnectedness: Common Themes	5 - 10%
Standard 7 – Interdisciplinary Problem Solving	0-5%

New York State Grade 4 Elementary-Level Science Test Blueprint

Parts of the Test (item formats and purposes)			
	Multiple- choice items	Content-based questions assessing the student's knowledge and understanding of core material (primarily from Standard 4)	35 - 40%
Written Test	Multiple- choice and constructed- response items	Content- and skills-based questions assessing the student's ability to apply, analyze, and evaluate material (primarily from Standards 1 and 4)	15 - 20%
	Constructed- response and extended constructed response items	Content and application questions assessing the student's ability to apply knowledge of science concepts and skills to address real- world situations (primarily from Standards 1, 2, 4, 6, and 7)	15 - 20%
Performance Test	open-ended items	Application questions assessing the student's skills in using hands- on equipment and materials in his or her responses to the questions posed (primarily from Standard 1)	25%

Scoring Time and Rating Techniques:

- Written Test Approximately one-third of the Written Test will be open-ended questions that will require scoring by elementary-level teachers. It is estimated that a teacher should be able to rate all of the open-ended responses for about 15 students in one hour. It will be helpful if there is expertise in physical science and life science within the group of teachers participating in the scoring session.
- Performance Test (Form A) All questions will require rating by elementary-level teachers. It is estimated that a teacher should be able to rate the responses to all three stations for about 10-15 students in one hour. This scoring can be most quickly accomplished if one science teacher rates all students' responses to Station 1 while another rates all students' responses to Station 2 and a third rates all students' responses to Station 3.

Performance Test, Form A:

This test will consist of hands-on tasks set up at three different stations. Students will work alone and will spend 15 minutes at each of the three stations during the testing period. The three stations on Form A are briefly described below. Detailed information on the equipment, materials preparation, and station setup will be provided at the regional workshops in the beginning of 2004.

Station 1 - Measuring Objects and Liquids

Students use measuring equipment and their observation skills to determine some physical properties

of solids and liquids.

Station 2 - Testing and Sorting Objects

Students use a magnet and electrical tester to collect data about a set of eight objects. They record their findings and use the data they collect to make inferences and generalizations. Students use the set of eight objects to create their own classification system and sort accordingly.

Station 3 - Ball and Ramp

Students use a ball-and-ramp apparatus to gather data and use the data they collect to make inferences and predictions.

Performance Test, Form A Materials List:

NOTE: Schools will need to provide pan balances with gram masses for the testing room. It is possible to set up one testing room with 8-12 groups of three stations each. In this case, 8-12 pan balances with gram masses are needed so that 24-36 students can be tested in a one-hour period. The rest of the materials below can be purchased in kits from commercial vendors and some BOCES. Pan balances with gram masses are also available commercially. Schools are responsible for having all of this equipment available in sufficient quantities at the time of testing.

Station 1 - Measuring Objects and Liquids (materials for one station):

- 1 balance, equal-arm
- 1 set of gram masses (mixture of two 20-g, three 10-g, four 5-g and 10 1-g for a total of 100 g)
- 1 resealable plastic bag, large enough to hold the set of gram masses
 - 3 jars, clear plastic, approximately 125-mL capacity
 - 2 screw tops to fit jars
- 1 plastic cup, approximately 300 mL capacity

• 1 graduated beaker, 100-mL capacity with clearly marked gradations to use as a measuring cup

• 1 rough cut rock (about 1" cube) that will sink in the water and fit easily into the beaker

• 1 ruler with units for metric (30-cm) and for standard (12 inches) measurement, neither with indented zero points

• 2-3 paper towels

Station 2 - Testing and Sorting Objects (materials for one station):

- electrical tester:
 - 1.5-volt "D" cell battery
 - 1.5-volt bulb and bulb holder
 - battery holder (plastic or metal recommended)
 - 3 insulated wires with clips
- bar magnet (approximately 1.5 cm 5 7 cm)
- resealable plastic bag containing eight objects and labeled "Test Objects"
 - penny
 - rubber band (at least 1/4 inch wide)
 - paper clip (all metal)
 - plastic spoon (small)
 - nickel (five cents)
 - wooden stick (such as a Popsicle stick or tongue depressor)
 - aluminum foil (heavy duty, about 5-cm square)
 - colored ceramic disk (magnetic)

Station 3 - Ball and Ramp (materials for one station):

- Wood block or 1-3 books to serve as ramp support (total height: 5-6 cm)
- 1 ruler, 30-cm plastic without an indented zero mark and with a grooved center that can accommodate a golf ball
- 1 transparent, round, plastic deli container about 12 cm diameter, 1 pint volume, and 12-15 grams mass
- 1 golf ball in a resealable clear-plastic bag labeled "Golf Ball"
- 1 Ping-Pong Ball in a reseatable clear plastic bag labeled "Ping-Pong Ball"
- 1 Place Mat