Virginia

Standards of Learning Assessments

Test Blueprint

Grade 5 Mathematics

2009 Mathematics Standards of Learning

This revised test blueprint will be effective with the administration of the 2011-2012 Mathematics Standards of Learning (SOL) tests.

Notice to Reader

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Grade 5 Mathematics
Standards of Learning

Test Blueprint

TABLE OF CONTENTS

General Test Information

Test Blueprint
Much like the blueprint for a building, a test blueprint serves as a guide for test construction. The blueprint indicates the content areas that will be addressed by the test and the number of items that will be included by content area and for the test as a whole. There is a blueprint for each test (e.g., grade 3 reading, grade 5 mathematics, grade 8 science, Virginia and United States History).

Reporting Categories
Each test covers a number of Standards of Learning. In the test blueprint, the SOL are grouped into categories that address related content and skills. These categories are labeled as reporting categories. For example, a reporting category for the Grade 5 Mathematics Standards of Learning test is *Computation and Estimation*. Each of the SOL in this reporting category addresses computation using addition, subtraction, multiplication, or division or requires the student to estimate the answer to a problem. When the results of the SOL tests are reported, the scores will be presented for each reporting category and as a total test score.

Assignment of Standards of Learning to Reporting Category
In the Grade 5 Mathematics SOL test, each SOL is assigned to only one reporting category. For example, SOL 5.2a-b is assigned to "Number and Number Sense."

Standards of Learning Excluded from Testing
In some content areas, there are SOL that do not lend themselves to assessment within the current format of the SOL tests. The SOL not tested are listed as "Excluded from Testing" at the end of the blueprint for each test. For example, in Grade 5 Mathematics, SOL 5.16a cannot be assessed within the current format.

Coverage of Standards of Learning
Due to the large number of SOL in each grade level content area, *every* Standard of Learning will not be assessed on every version (form) of an SOL test. By necessity, to keep the length of a test reasonable, each version will sample from the SOL within a reporting category. Every SOL in the blueprint will be tested within a three year period, and *all of these* SOL are eligible for inclusion on each version of an SOL test.

Use of the Curriculum Framework
The Grade 5 Mathematics Standards of Learning, amplified by the Curriculum Framework, define the essential understandings, knowledge, and skills that are measured by the Standards of Learning tests. The Curriculum Framework asks essential questions, identifies essential understandings, defines essential content knowledge, and describes essential skills students need to master.

Use of Calculators
The first section of the test will be taken without use of a calculator. The SOL 5.2a-b, 5.4, 5.5a-b, 5.6, and 5.7 will be assessed in the first section of the Grade 5 Mathematics test. All other SOL will be assessed in the second section with the use of a calculator.

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Grade 5 Mathematics
Test Blueprint Summary Table

Reporting Category	Grade 5 SOL	Number of Items
Number and Number Sense	**5.1** **5.2a-b*** **5.3a-b**	**7**
Computation and Estimation	**5.4*** **5.5a-b*** **5.6*** **5.7***	**13**
Measurement and Geometry	**5.8a-e** **5.9** **5.10** **5.11** **5.12a-b** **5.13a-b**	**12**
Probability, Statistics, Patterns, Functions, and Algebra	**5.14** **5.15** **5.16b-d** **5.17** **5.18a-d** **5.19**	**18**
Excluding from Testing	**5.16a**	
Number of Operational Items		**50**
Number of Field-Test Items*		**10**
Total Number of Items on Test		**60**

*Items measuring these SOL will be completed <u>without</u> the use of a calculator.

**Field-test items are being tried out with students for potential use on subsequent tests and will not be used to compute students' scores on the test.

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2

Grade 5 Mathematics
Expanded Test Blueprint

Reporting Category: Number and Number Sense
Number of Items: 7
Standards of Learning:

5.1   The student, given a decimal through thousandths, will round to the nearest whole number, tenth, or hundredth.

5.2   The student will (*complete items without the use of a calculator*)
        a)   recognize and name fractions in their equivalent decimal form and vice versa; and
        b)   compare and order fractions and decimals in a given set from least to greatest and greatest to least.

5.3   The student will
        a)   identify and describe the characteristics of prime and composite numbers; and
        b)   identify and describe the characteristics of even and odd numbers.

Reporting Category: Computation and Estimation
Number of Items: 13
Standards of Learning:

5.4   The student will (*complete items without the use of a calculator*) create and solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division with and without remainders of whole numbers.

5.5   The student will (*complete items without the use of a calculator*)
        a)   find the sum, difference, product, and quotient of two numbers expressed as decimals through thousandths (divisors with only one nonzero digit); and
        b)   create and solve single-step and multistep practical problems involving decimals.

5.6   The student will (*complete items without the use of a calculator*) solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers and express answers in simplest form.

5.7   The student will (*complete items without the use of a calculator*) evaluate whole number numerical expressions, using the order of operations limited to parentheses, addition, subtraction, multiplication, and division.

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3

Reporting Category: Measurement and Geometry
Number of Items: 12
Standards of Learning:

5.8   The student will
        a) find perimeter, area, and volume in standard units of measure;
        b) differentiate among perimeter, area, and volume and identify whether the
            application of the concept of perimeter, area, or volume is appropriate for a given
            situation;
        c) identify equivalent measurements within the metric system;
        d) estimate and then measure to solve problems, using U.S. Customary and metric units;
            and
        e) choose an appropriate unit of measure for a given situation involving measurement
            using U.S. Customary and metric units.

5.9   The student will identify and describe the diameter, radius, chord, and circumference of a
        circle.

5.10   The student will determine an amount of elapsed time in hours and minutes within a
        24-hour period.

5.11   The student will measure right, acute, obtuse, and straight angles.

5.12   The student will classify
        a) angles as right, acute, obtuse, or straight; and
        b) triangles as right, acute, obtuse, equilateral, scalene, or isosceles.

5.13   The student, using plane figures (square, rectangle, triangle, parallelogram, rhombus, and
        trapezoid), will
        a) develop definitions of these plane figures; and
        b) investigate and describe the results of combining and subdividing plane figures.

Reporting Category: Probability, Statistics, Patterns, Functions, and Algebra
Number of Items: 18
Standards of Learning:

5.14   The student will make predictions and determine the probability of an outcome by
        constructing a sample space.

5.15   The student, given a problem situation, will collect, organize, and interpret data in a
        variety of forms, using stem-and-leaf plots and line graphs.

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4

5.16   The student will
   b) describe mean as fair share;
   c) find the mean, median, mode, and range of a set of data; and
   d) describe the range of a set of data as a measure of variation.

5.17   The student will describe the relationship found in a number pattern and express the relationship.

5.18   The student will
   a) investigate and describe the concept of variable;
   b) write an open sentence to represent a given mathematical relationship, using a variable;
   c) model one-step linear equations in one variable, using addition and subtraction; and
   d) create a problem situation based on a given open sentence, using a single variable.

5.19   The student will investigate and recognize the distributive property of multiplication over addition.

Standards of Learning Excluded from Testing:

5.16   The student will
   a) describe mean, median, and mode as measures of center.

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5