Virginia

Standards of Learning Assessments

Test Blueprint

Grade 6 Mathematics

2009 Mathematics Standards of Learning

This revised test blueprint will be effective beginning with the fall 2014 test administration.

Notice to Reader

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Grade 6 Mathematics
Standards of Learning

Test Blueprint

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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. Each course that has an associated Standards of Learning test (e.g., grade 3 reading, grade 5 mathematics, grade 8 science, Virginia and United States History) has a test blueprint.

For grade 6 mathematics, the blueprint contains information for two types of tests, the online computer adaptive test (CAT) and the traditional test. A CAT is a customized assessment for each student based on how the student responds to the questions. This is in contrast to the traditional test in which all students who take a particular version of the test respond to the same test questions.

All online versions of the grade 6 mathematics test will be computer adaptive beginning in fall 2014 except for the online Plain English version which will be presented in the traditional format. The Plain English version of the test will be computer adaptive beginning in spring 2015. All paper versions of the test (including Plain English, large print, and Braille) will also be administered using the traditional format.

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 6 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 6 Mathematics SOL test, each SOL is assigned to only one reporting category. For example, SOL 6.2a-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.

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 SOL test. By necessity, to keep the length of a test reasonable, each test will sample from the SOL within a reporting category. All SOL are eligible for inclusion on the traditional forms as well as the CAT forms.

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Use of the Curriculum Framework
The Grade 6 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 the use of a calculator. The SOL 6.2c-d, 6.6a, and 6.8 will be assessed in the first section of the Grade 6 Mathematics test. All other SOL will be assessed in the second section with the use of a calculator.

Grade 6 Mathematics
Test Blueprint Summary Table

Reporting Category	Grade 6 SOL	Number of Items Computer Adaptive Test (CAT) Format	Number of Items Traditional Format
Number and Number Sense	**6.1** **6.2a-b** **6.2c-d*** **6.3a-c** **6.4** **6.5**	9	10
Computation and Estimation	**6.6a*** **6.6b** **6.7** **6.8***	8	9
Measurement and Geometry	**6.9** **6.10a-d** **6.11a-b** **6.12** **6.13**	11	12
Probability, Statistics, Patterns, Functions, and Algebra	**6.14a-c** **6.15a-b** **6.16a-b** **6.17** **6.18** **6.19a-c** **6.20**	17	19
Excluded from Testing	**None**		
Number of Operational Items		45	50
Number of Field-Test Items**		8	10
Total Number of Items on Test		53	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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Grade 6 Mathematics
Expanded Test Blueprint

Reporting Category: Number and Number Sense
Number of Items: 9 (CAT) 10 (Traditional)
Standards of Learning:

6.1   The student will describe and compare data, using ratios, and will use appropriate notations, such as $\frac{a}{b}$, *a to b*, and *a:b*.

6.2   The student will
   a) investigate and describe fractions, decimals and percents as ratios;
   b) identify a given fraction, decimal or percent from a representation;
   c) (*complete items without the use of a calculator*) demonstrate equivalent relationships among fractions, decimals, and percents; and
   d) (*complete items without the use of a calculator*) compare and order fractions, decimals, and percents.

6.3   The student will
   a) identify and represent integers;
   b) order and compare integers; and
   c) identify and describe absolute value of integers.

6.4   The student will demonstrate multiple representations of multiplication and division of fractions.

6.5   The student will investigate and describe concepts of positive exponents and perfect squares.

Reporting Category: Computation and Estimation
Number of Items: 8 (CAT) 9 (Traditional)

Standards of Learning:

6.6   The student will
   a) (*complete items without the use of a calculator*) multiply and divide fractions and mixed numbers; and
   b) estimate solutions and then solve single-step and multistep practical problems involving addition, subtraction, multiplication and division of fractions.

6.7   The student will solve single-step and multistep practical problems involving addition, subtraction, multiplication, and division of decimals.

6.8   The student will (*complete items without the use of a calculator*) evaluate whole number numerical expressions, using the order of operations.

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Reporting Category: Measurement and Geometry
Number of Items: 11 (CAT) 12 (Traditional)

Standards of Learning:

6.9   The student will make ballpark comparisons between measurements in the U.S. Customary System of measurement and measurements in the metric system.

6.10   The student will
    a) define π *(pi)* as the ratio of the circumference of a circle to its diameter;
    b) solve practical problems involving circumference and area of a circle, given the diameter or radius;
    c) solve practical problems involving area and perimeter; and
    d) describe and determine the volume and surface area of a rectangular prism.

6.11   The student will
    a) identify the coordinates of a point in a coordinate plane; and
    b) graph ordered pairs in a coordinate plane.

6.12   The student will determine congruence of segments, angles, and polygons.

6.13   The student will describe and identify properties of quadrilaterals.

Reporting Category: Probability, Statistics, Patterns, Functions, and Algebra
Number of Items: 17 (CAT) 19 (Traditional)

Standards of Learning:

6.14   The student, given a problem situation, will
    a) construct circle graphs;
    b) draw conclusions and make predictions, using circle graphs: and
    c) compare and contrast graphs that present information from the same data set.

6.15   The student will
    a) describe mean as balance point; and
    b) decide which measure of center is appropriate for a given purpose.

6.16   The student will
    a) compare and contrast dependent and independent events; and
    b) determine probabilities for dependent and independent events.

6.17   The student will identify and extend geometric and arithmetic sequences.

6.18   The student will solve one-step linear equations in one variable involving whole number coefficients and positive rational solutions.

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6.19   The student will investigate and recognize
         a)   the identity properties for addition and multiplication;
         b)   the multiplicative property of zero; and
         c)   the inverse property for multiplication.

6.20   The student will graph inequalities on a number line.

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