

Virginia

Standards of Learning Assessments

Test Blueprint

Grade 3 Mathematics

**2009 Mathematics
Standards of Learning**

**This revised test blueprint will be effective beginning with the
spring 2016 test administration.**

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Grade 3 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. There is a blueprint for each test (e.g., grade 3 reading, grade 5 mathematics, grade 8 science, Virginia and United States History).

The Grade 3 Mathematics 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 3 Mathematics test (including Plain English, Plain English audio, and regular audio) will be computer adaptive beginning in spring 2016. All paper versions of the test (including Plain English, large print, and Braille) will 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 3 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 3 Mathematics SOL test, each SOL is assigned to only one reporting category. For example, SOL 3.1a-c 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.

Use of the Curriculum Framework

The Grade 3 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.

**Grade 3 Mathematics
Test Blueprint Summary Table**

Reporting Category	Grade 3 SOL	Number of Items Computer Adaptive Test (CAT) Format	Number of Items Traditional Format
Number and Number Sense	3.1a-c 3.2 3.3a-c	7	10
Computation and Estimation	3.4 3.5 3.6 3.7	7	10
Measurement and Geometry	3.8 3.9a-d 3.10a-b 3.11a-b 3.12 3.13 3.14 3.15 3.16	8	11
Probability, Statistics, Patterns, Functions, and Algebra	3.17a-c 3.18 3.19 3.20a-b	6	9
Excluded from Testing	None		
Number of Operational Items		28	40
Number of Field-Test Items*		4	10
Total Number of Items on Test		32	50

*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.

Grade 3 Mathematics Expanded Test Blueprint

Reporting Category: Number and Number Sense

Number of Items: 7 (CAT) 10 (Traditional)

Standards of Learning:

- 3.1 The student will
- a) read and write six-digit numerals and identify the place value and value of each digit;
 - b) round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand; and
 - c) compare two whole numbers between 0 and 9,999, using symbols ($>$, $<$, or $=$) and words (*greater than*, *less than*, or *equal to*).
- 3.2 The student will recognize and use the inverse relationships between addition/subtraction and multiplication/division to complete basic fact sentences. The student will use these relationships to solve problems.
- 3.3 The student will
- a) name and write fractions (including mixed numbers) represented by a model;
 - b) model fractions (including mixed numbers) and write the fractions' names; and
 - c) compare fractions having like and unlike denominators, using words and symbols ($>$, $<$, or $=$).

Reporting Category: Computation and Estimation

Number of Items: 7 (CAT) 10 (Traditional)

Standards of Learning:

- 3.4 The student will estimate solutions to and solve single-step and multistep problems involving the sum or difference of two whole numbers, each 9,999 or less, with or without regrouping.
- 3.5 The student will recall multiplication facts through the twelves table, and the corresponding division facts.
- 3.6 The student will represent multiplication and division, using area, set, and number line models, and create and solve problems that involve multiplication of two whole numbers, one factor 99 or less and the second factor 5 or less.
- 3.7 The student will add and subtract proper fractions having like denominators of 12 or less.

Reporting Category: Measurement and Geometry**Number of Items: 8 (CAT) 11 (Traditional)****Standards of Learning:**

- 3.8 The student will determine, by counting, the value of a collection of bills and coins whose total value is \$5.00 or less, compare the value of the bills and coins, and make change.
- 3.9 The student will estimate and use U.S. Customary and metric units to measure
- length to the nearest $\frac{1}{2}$ - inch, inch, foot, yard, centimeter, and meter;
 - liquid volume in cups, pints, quarts, gallons, and liters;
 - weight/mass in ounces, pounds, grams, and kilograms; and
 - area and perimeter.
- 3.10 The student will
- measure the distance around a polygon in order to determine perimeter; and
 - count the number of square units needed to cover a given surface in order to determine area.
- 3.11 The student will
- tell time to the nearest minute, using analog and digital clocks; and
 - determine elapsed time in one-hour increments over a 12-hour period.
- 3.12 The student will identify equivalent periods of time, including relationships among days, months, and years, as well as minutes and hours.
- 3.13 The student will read temperature to the nearest degree from a Celsius thermometer and a Fahrenheit thermometer. Real thermometers and physical models of thermometers will be used.
- 3.14 The student will identify, describe, compare, and contrast characteristics of plane and solid geometric figures (circle, square, rectangle, triangle, cube, rectangular prism, square pyramid, sphere, cone, and cylinder) by identifying relevant characteristics, including the number of angles, vertices, and edges, and the number and shape of faces, using concrete models.
- 3.15 The student will identify and draw representations of points, line segments, rays, angles, and lines.
- 3.16 The student will identify and describe congruent and noncongruent plane figures.

Reporting Category: Probability, Statistics, Patterns, Functions, and Algebra
Number of Items: 6 (CAT) 9 (Traditional)

Standards of Learning:

- 3.17 The student will
- a) collect and organize data, using observations, measurements, surveys, or experiments;
 - b) construct a line plot, a picture graph, or a bar graph to represent the data; and
 - c) read and interpret the data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.
- 3.18 The student will investigate and describe the concept of probability as chance and list possible results of a given situation.
- 3.19 The student will recognize and describe a variety of patterns formed using numbers, tables, and pictures, and extend the patterns, using the same or different forms.
- 3.20 The student will
- a) investigate the identity and the commutative properties for addition and multiplication; and
 - b) identify examples of the identity and commutative properties for addition and multiplication.