

# VMAST

Virginia **M**odified **A**chievement **S**tandards **T**est

**Test Blueprint**

Grade 7 Mathematics

**Virginia Modified Achievement Standards  
Test Based on the  
2009 Mathematics Standards of Learning**

**This test blueprint will be effective with the administration  
of the 2011-2012 Mathematics Virginia Modified  
Achievement Standards Tests (VMAST).**

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# Grade 7 Mathematics

## Virginia Modified Achievement Standards Test

### Test Blueprint

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## General Test Information

### Virginia Modified Achievement Standards Test Background Information

The Virginia Modified Achievement Standards Test (VMAST) is an online grade level alternate assessment based on modified achievement standards designed for eligible students with disabilities. Students participating in the VMAST are expected to learn the Standards of Learning (SOL) objectives for grade level content; however, they may require additional time and a variety of instructional and assessment supports. The achievement expectations are modified, and rigor is reduced by including supports and simplifications that allow participating students to access and demonstrate knowledge of grade level content.

### 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. The VMAST blueprint is based on the SOL test blueprint but includes 20% fewer items.

### 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 7 Mathematics Virginia Modified Achievement Standards 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 VMAST tests are reported, the scores will be presented for each reporting category and as a total test score. The VMAST blueprint includes the same reporting categories as the SOL test, but there are 20% fewer items in each reporting category.

### Assignment of Standards of Learning to Reporting Category

In the Grade 7 Mathematics VMAST, each SOL is assigned to only one reporting category. For example, SOL 7.1 b-d 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 VMAST. 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 version (form) of a VMAST. 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 a VMAST.

### Use of the Curriculum Framework

The Grade 7 Mathematics Standards of Learning, amplified by the Curriculum Framework, define the essential understandings, knowledge, and skills that are measured by the Virginia Modified Achievement Standards Test. 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, unless stated otherwise in the students’ Individualized Education Program (IEP), as a testing accommodation. The SOL 7.1b-d and 7.3b will be assessed in the first section of the Grade 7 Mathematics test. All other SOL will be assessed in the second section with the use of a calculator.

Grade 7 Mathematics  
Test Blueprint Summary Table

Reporting Category	Grade 7 SOL	Number Of VMAST Items
<b>Number, Number Sense, Computation and Estimation</b>	7.1a 7.1b-d * 7.1e 7.2 7.3a 7.3b * 7.4	13
<b>Measurement and Geometry</b>	7.5a-c 7.6 7.7 7.8	10
<b>Probability, Statistics, Patterns, Functions, and Algebra</b>	7.9 7.10 7.11a-b 7.12 7.13a-b 7.14a-b 7.15a-b 7.16a-e	17
<b>Excluded from Testing</b>	None	
<b>Number of Operational Items</b>		<b>40</b>
<b>Number of Field-Test Items**</b>		<b>8</b>
<b>Total Number of Items on Test</b>		<b>48</b>

\* Items measuring these SOL will be completed without 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.

VMAST Grade 7 Mathematics  
Expanded Test Blueprint

**Reporting Category: Number, Number Sense, Computation and Estimation**

**Number of Items: 13**

**Standards of Learning:**

- 7.1 The student will
- a) investigate and describe the concept of negative exponents for powers of ten;
  - b) determine scientific notation for numbers greater than zero (*complete items without the use of a calculator*);
  - c) compare and order fractions, decimals, percents, and numbers written in scientific notation (*complete items without the use of a calculator*);
  - d) determine square roots (*complete items without the use of a calculator*); and
  - e) identify and describe absolute value for rational numbers.
- 7.2 The student will describe and represent arithmetic and geometric sequences, using variable expressions.
- 7.3 The student will
- a) model addition, subtraction, multiplication, and division of integers; and
  - b) add, subtract, multiply, and divide
  - c) integers (*complete items without the use of a calculator*).
- 7.4 The student will solve single-step and multistep practical problems, using proportional reasoning.

**Reporting Category: Measurement and Geometry**

**Number of Items: 10**

**Standards of Learning:**

- 7.5 The student will
- a) describe volume and surface area of cylinders;
  - b) solve practical problems involving the volume and surface area of rectangular prisms and cylinders; and
  - c) describe how changing one measured attribute of a rectangular prism affects its volume and surface area.
- 7.6 The student will determine whether plane figures quadrilaterals and triangles are similar and write proportions to express the relationships between corresponding sides of similar figures.
- 7.7 The student will compare and contrast the following quadrilaterals based on properties: parallelogram, rectangle, square, rhombus, and trapezoid.

- 7.8 The student, given a polygon in the coordinate plane, will represent transformations (reflections, dilations, rotations, and translations) by graphing in the coordinate plane.

**Reporting Category: Probability, Statistics, Patterns, Functions, and Algebra**

**Number of Items: 17**

**Standards of Learning:**

- 7.9 The student will investigate and describe the difference between the experimental probability and theoretical probability of an event.
- 7.10 The student will determine the probability of compound events, using the Fundamental (Basic) Counting Principle.
- 7.11 The student, given data for a practical situation, will
- construct and analyze histograms; and
  - compare and contrast histograms with other types of graphs presenting information from the same data set.
- 7.12 The student will represent relationships with tables, graphs, rules, and words.
- 7.13 The student will
- write verbal expressions as algebraic expressions and sentences as equations and vice versa; and
  - evaluate algebraic expressions for given replacement values of the variables.
- 7.14 The student will
- solve one- and two-step linear equations in one variable; and
  - solve practical problems requiring the solution of one- and two-step linear equations.
- 7.15 The student will
- solve one-step inequalities in one variable; and
  - graph solutions to inequalities on the number line.
- 7.16 The student will apply the following properties of operations with real numbers:
- the commutative and associative properties for addition and multiplication;
  - the distributive property;
  - the additive and multiplicative identity properties;
  - the additive and multiplicative inverse properties; and
  - the multiplicative property of zero.