

# Test Blueprint **Grade 3 Mathematics** 2016 Mathematics Standards of Learning

**This test blueprint will be effective with the administration of the spring 2024 Mathematics Standards of Learning (SOL) tests.**

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**Grade 3 Mathematics**

**Standards of Learning**

**Test Blueprint**

## TABLE OF CONTENTS

General Test Information………………………………………………………..1

Defines common terms

Test Blueprint Summary Table………………………………………………….3

Organizes the SOL and the number of items assessed

Expanded Test Blueprint……...…………………………………………………4

Full text of each SOL as organized for the test

## 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 an online assessment that is customized for every 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 (paper, large print, or braille) of the test respond to the same test questions. All online versions of the Grade 3 Mathematics Standards of Learning (SOL) test (including audio) are computer adaptive.

All students are required to take the online version of the SOL tests with the exception of students who meet the criteria for needing a paper test. All paper versions of the test (including large print and braille) will be administered using the traditional format. All test questions for Grade 3 Mathematics have been determined to meet the criteria for Universal Design. The Universal Design principles require that language that is not specific to the content area (e.g., mathematics) be simplified and test questions be written so they are accessible by all populations of students. The SOL test questions have been reviewed by Virginia teachers and have been determined to meet the criteria for Universal Design.

### 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.”

### 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.

### Additional Items

Beginning in spring 2023, the computer adaptive Standards of Learning tests will include a section of additional items at the end of the test. The computer algorithm may deliver items one grade level above a student's current grade based upon the student's responses to the on-grade-level item**s**. The Test Scaled Score (0 to 600) and corresponding performance level (i.e., pass/proficient, pass/advanced, fail/basic, fail/below basic) are based upon a student’s performance on the on-grade-level Operational Items only. The student’s responses to the on-grade-level Operational Items *and* the Additional Items that may be on grade level or one grade level above or below the current grade level will be reflected in the student’s Vertical Scaled Score.

### Seal Code

A seal code will appear approximately halfway through the computer adaptive test. The exact placement of the seal code may vary by 2-3 items on the computer adaptive test. A stop sign will appear after question 20 on the paper test.

## Grade 3 Mathematics Test Blueprint Summary Table

Beginning in spring 2023, the computer adaptive Standards of Learning tests will include a section of additional items at the end of the test. The computer algorithm may deliver items one grade level above or one grade level below a student's current grade based upon the student's responses to the on-grade-level items. The Test Scaled Score (0 to 600) and corresponding performance level (i.e., pass/proficient, pass/advanced, fail/basic, fail/below basic) are based upon a student’s performance on the on-grade-level Operational Items only. The student’s responses to the on-grade-level Operational Items *and* the Additional Items that may be on grade level or one grade level above or below the current grade level will be reflected in the student’s Vertical Scaled Score.

|  |  |  |  |
| --- | --- | --- | --- |
| **Reporting Category** | **Grade 3 SOL** | **Number of Items**  **Computer Adaptive Test (CAT) Format** | **Number of Items**  **Paper Format** |
| **Number and Number Sense** | **3.1a-c**  **3.2a-c** | **7** | **10** |
| **Computation and Estimation** | **3.3a-b**  **3.4a-d**  **3.5** | **7** | **10** |
| **Measurement and Geometry** | **3.6a-c**  **3.7a-b**  **3.8a-b**  **3.9a-c**  **3.10**  **3.11**  **3.12a-c**  **3.13** | **8** | **11** |
| **Probability, Statistics, Patterns, Functions, and Algebra** | **3.14**  **3.15a-b**  **3.16**  **3.17** | **6** | **9** |
| **Number of Operational Items** | | **28** | **40** |
| **Number of Field-Test Items\*** | | **4** | **0** |
| **Number of Additional On- or Off-Grade-Level Items\*\*** | | **6** | **0** |

A seal code will appear approximately halfway through the operational and field-test items on a computer adaptive test. The exact placement of the seal code may vary by 2-3 items on the computer adaptive test. A stop sign will appear after question 20 on a paper test.

Items measuring Grade 3 SOL and Grade 2 SOL will be completed without the use of a calculator. Grade 4 SOL calculator-active items will have the online calculator included on the toolbar with the item. For additional information, please refer to the list of Online Mathematics Tools available on the Grades 3-8 Mathematics Growth Assessments.

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

\*\* Legislation passed in the 2021 Virginia General Assembly ([HB2027](https://lis.virginia.gov/cgi-bin/legp604.exe?ses=212&typ=bil&val=HB2027) and [SB1357](https://lis.virginia.gov/cgi-bin/legp604.exe?ses=212&typ=bil&val=SB1357)) requires these assessments have the ability to contain additional test items at, below, and above a student’s grade level as appropriate for the student. All test items will be delivered online via the computer adaptive algorithm. Students who meet the criteria for a paper test will receive only on-grade-level items.

## 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, write, and identify the place and value of each digit in a six-digit whole number, with and without models;

b) round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand; and

c) compare and order whole numbers, each 9,999 or less.

3.2 The student will

a) name and write fractions and mixed numbers represented by a model;

b) represent fractions and mixed numbers, with models and symbols; and

c) compare fractions having like and unlike denominators, using words and symbols (>, <, =, or ≠), with models.

### Reporting Category: Computation and Estimation

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

**Standards of Learning:**

3.3 The student will

1. estimate and determine the sum or difference of two whole numbers; and
2. create and solve single-step and multistep practical problems involving sums or differences of two whole numbers, each 9,999 or less.

3**.**4The student will

1. represent multiplication and division through 10 × 10, using a variety of approaches and models;
2. create and solve single-step practical problems that involve multiplication and division through 10 × 10;
3. demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10; and
4. solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less.

3.5 The student will solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less.

### Reporting Category: Measurement and Geometry

**Number of Items: 8 (CAT) 11 (Traditional)**

**Standards of Learning:**

3.6 The student will

1. determine the value of a collection of bills and coins whose total value is $5.00 or less;
2. compare the value of two sets of coins or two sets of coins and bills;and
3. make change from $5.00 or less.

3.7 The student will estimate and use U.S. Customary and metric units to measure

a) length to the nearest inch, inch, foot, yard, centimeter, and meter; and

b) liquid volume in cups, pints, quarts, gallons, and liters.

3.8The student will estimate and

a) measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units; and

b) count the number of square units needed to cover a given surface in order to determine its area.

3.9 The student will

* 1. tell time to the nearest minute, using analog and digital clocks;
  2. solve practical problems related to elapsed time in one-hour increments within a 12-hour period; and
  3. identify equivalent periods of time and solve practical problems related to equivalent periods of time.

3.10 The student will read temperature to the nearest degree.

3.11 The student will identify and draw representations of points, lines, line segments, rays, and angles.

3.12 The student will

1. define polygon;
2. identify and name polygons with 10 or fewer sides; and
3. combine and subdivide polygons with three or four sides and name the resulting polygon(s).

3.13 The student will identify and describe congruent and noncongruent figures.

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

**Number of Items: 6 (CAT) 9 (Traditional)**

**Standards of Learning:**

3.14 The student will investigate and describe the concept of probability as a measurement of chance and list possible outcomes for a single event.

3.15 The student will

1. collect, organize, and represent data in pictographs or bar graphs; and
2. read and interpret data represented in pictographs and bar graphs.

3.16 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables.

3.17 The student will create equations to represent equivalent mathematical relationships.