



# **CRCT Content Descriptions**

based on the Georgia Performance Standards

## **Mathematics**

Grades 1 - 8



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**Criterion-Referenced Competency Tests (CRCT)**  
**Content Descriptions**  
**Mathematics**

Georgia law requires the development and administration of the CRCT in the content areas of Reading, English/Language Arts, Mathematics, Science, and Social Studies. Each spring students in grades 1 through 8 take the Reading, English/Language Arts, and Mathematics CRCT, while students in grades 3 through 8 also take the Science and Social Studies CRCT. These tests are designed to measure student achievement of the Georgia Performance Standards (GPS).

**Program Purpose**

The CRCT is designed to measure student acquisition and understanding of the knowledge, concepts, and skills set forth in the GPS. The testing program serves as a measure of the quality of education in the state. Reports yielding information on academic achievement at the student, class, school, system, and state levels are produced annually.

**Mandated Grades for Mathematics**

Grades 1 through 8 are mandated to participate in the Mathematics CRCT each spring.

**CRCT Content Descriptions**

The CRCT Content Descriptions are provided to acquaint Georgia educators with the content coverage of the CRCT. Only the knowledge, concepts, and skills reflected in the GPS will be assessed on the CRCT. Committees of Georgia educators reviewed the curriculum and provided guidance for the assessment program.

It is important to note that some curricular standards are better suited for classroom or individual assessment rather than large-scale, paper-pencil assessment. While those curricular standards designed for classroom/individual assessment are not included in the Content Descriptions, the knowledge, concepts, and skills outlined are often required for the mastery of the standards that are assessed. Therefore, the CRCT Content Descriptions are in *no way* intended to substitute for the GPS; they are provided to help educators better understand how the curriculum will be assessed. Further, the CRCT Content Descriptions *by no means* suggest *when* concepts and skills should be introduced in the instructional sequence; rather, their purpose is to communicate when concepts and skills will be assessed on the CRCT. Georgia law requires educators to teach the standards set forth in the state-adopted curriculum (i.e., the GPS). The GPS is located at <http://www.georgiastandards.org>.

## Mathematics Content Domains

To provide reliable measures as well as structure to the assessment program, the curricular standards provided in the GPS were grouped into content domains. Each domain is comprised of standards with similar content characteristics. The domains for Mathematics are:

Grades 1–2

Number and Operations

Measurement

Geometry

Data Analysis and Probability

Grade 6

Number and Operations

Measurement

Geometry

Algebra

Data Analysis and Probability

Grades 3–5

Number and Operations

Measurement

Geometry

Algebra

Data Analysis and Probability

Grades 7–8

Number and Operations

Geometry

Algebra

Data Analysis and Probability

The GPS in Mathematics requires that mathematical concepts be taught in the context of real-world phenomena. The mathematical process standards require students to solve single and multi-step routine and non-routine word problems while implementing a variety of problem-solving strategies. The process standards concepts and skills are taught and applied within context rather than merely following a prescribed algorithm. The concepts and skills inherent in the process standards are integrated in items across the five content domains.

## Using the Mathematics CRCT Content Descriptions

The Mathematics CRCT Content Descriptions provide information about the content and skills assessed by the CRCT. The documents are organized by grade and content domain. The curriculum standards assessed in each domain are provided as are the related concepts, skills, and abilities assessed. It is important to note the differences between the GPS and the former curriculum. The GPS is a conceptual curriculum, requiring instruction be integrated; the concepts, knowledge, skills, and abilities described in this document should not be viewed as discrete or taught in isolation. Deep understanding by students, resulting in higher achievement, is best achieved when the full curriculum is taught in an integrated, conceptual fashion.

## Mathematics

Grade: 5

Domain: Number and Operations

### Domain Description

Number and Operations refers to students' skill in further developing understanding of numbers, the meanings of multiplication and division of decimals, and the use of decimals and common fractions in computation and problem solving.

### Standards Associated with Domain

M5N1

M5N2

M5N3

M5N4

M5N5

### Associated Concepts, Skills, and Abilities

- Classify the set of counting numbers into subsets with distinguishing characteristics (odd/even, prime/composite).
- Find multiples and factors.
- Analyze and use divisibility rules.
- Understand place value.
- Analyze the effect on the product when a number is multiplied by 10, 100, 1000, 0.1, 0.01, and 0.001.
- Use  $<$ ,  $>$ , or  $=$  to compare decimals and justify the comparison.
- Model multiplication and division of decimals.
- Explain the process of multiplication and division, including situations in which the multiplier and divisor are both whole numbers and decimals.
- Multiply and divide with decimals including decimals less than one and greater than one.
- Understand that the relationships and rules for multiplication and division of whole numbers also apply to decimals.
- Understand division of whole numbers can be represented as a fraction ( $a/b = a \div b$ ).
- Understand the value of a fraction is not changed when both its numerator and denominator are multiplied or divided by the same number because it is the same as multiplying or dividing by one.
- Find equivalent fractions and simplify fractions.
- Model the multiplication and division of common fractions.
- Explore finding common denominators using concrete, pictorial, and computational models.
- Use  $<$ ,  $>$ , or  $=$  to compare fractions and justify the comparison.
- Add and subtract common fractions and mixed numbers with unlike denominators.
- Use fractions (proper and improper) and decimals interchangeably.
- Estimate products and quotients.
- Explore and model percents using multiple representations.
- Apply percents to circle graphs.

## **Mathematics**

**Grade: 5**

**Domain: Measurement**

### **Domain Description**

Measurement refers to students' skill in understanding and computing the areas of geometric plane figures, the volumes of simple geometric solids, and the measurement of capacity. This domain also refers to students' skill in converting measures from one unit to another within a system of measurement.

### **Standards Associated with Domain**

M5M1

M5M3

M5M4

### **Associated Concepts, Skills, and Abilities**

- Estimate the area of geometric plane figures.
- Derive the formula for the area of a parallelogram.
- Derive the formula for the area of a triangle.
- Find the areas of triangles and parallelograms using formulae.
- Estimate the area of a circle through partitioning and tiling.
- Find the area of a polygon (regular and irregular) by dividing it into squares, rectangles, and/or triangles, and find the sum of the areas of those shapes.
- Find the area of a circle using the formula and  $\pi \approx 3.14$ .
- Find the circumference of a circle using the formula and  $\pi \approx 3.14$ .
- Use milliliters, liters, fluid ounces, cups, pints, quarts, and gallons to measure capacity.
- Compare one unit to another within a single system of measurement.
- Understand a cubic unit ( $u^3$ ) is represented by a cube in which each edge has the length of 1 unit.
- Identify the units used in computing volume as cubic centimeters ( $\text{cm}^3$ ), cubic meters ( $\text{m}^3$ ), cubic inches ( $\text{in}^3$ ), cubic feet ( $\text{ft}^3$ ), and cubic yards ( $\text{yd}^3$ ).
- Derive the formula for finding the volume of a cube and a rectangular prism using manipulatives.
- Compute the volume of a cube and a rectangular prism using formulae.
- Estimate the volume of a simple geometric solid.
- Understand the similarities and differences between volume and capacity.

**Mathematics****Grade: 5****Domain: Geometry****Domain Description**

Geometry refers to students' skill in understanding geometric figures.

**Standards Associated with Domain**

M5G1          M5G2

**Associated Concepts, Skills, and Abilities**

- Understand congruence of geometric figures and the correspondence of their vertices, sides, and angles.
- Understand the relationship of the circumference of a circle to its diameter is pi ( $\pi \approx 3.14$ ).

**Mathematics****Grade: 5****Domain: Algebra****Domain Description**

Algebra refers to students' skill in representing and investigating mathematical expressions algebraically by using variables.

**Standard Associated with Domain**

M5A1

**Associated Concepts, Skills, and Abilities**

- Use variables, such as  $n$  or  $x$ , for unknown quantities in algebraic expressions.
- Investigate simple algebraic expressions by substituting numbers for the unknown.

**Mathematics****Grade: 5****Domain:** Data Analysis**Domain Description**

Data Analysis refers to students' skill in gathering, organizing, and displaying data. This domain also refers to students' skill in interpreting graphs.

**Standards Associated with Domain**

M5D1

M5D2

**Associated Concepts, Skills, and Abilities**

- Analyze data presented in a graph.
- Compare and contrast multiple graphic representations (circle graphs, line graphs, line plot graphs, pictographs, Venn diagrams, and bar graphs) for a single set of data and discuss the advantages/disadvantages of each.
- Collect, organize, and display data using the most appropriate graph.

## **Mathematics**

**Grade: 5**

### **Mathematical Process Skills**

Mathematical Process Skills are integrated across the five domains.

Mathematical Process Skills refers to students' dexterity in applying concepts and skills in the context of authentic problems and understanding concepts rather than merely following a sequence of procedures. Process skills are used to acquire and apply content knowledge.

Process skills include solving problems that arise in mathematics and other contexts; reasoning and evaluating mathematical arguments; communicating mathematically; making connections among mathematical ideas and to other content areas; and representing mathematical ideas in multiple ways.

### **Standards Associated with Domain**

M5P1

M5P2

M5P3

M5P4

M5P5

### **Associated Concepts, Skills, and Abilities**

- Build new mathematical knowledge through problem solving.
- Solve problems that arise in mathematics and in other contexts.
- Apply and adapt a variety of appropriate strategies to solve problems.
- Monitor and reflect on the process of mathematical problem solving.
- Recognize reasoning and proof as fundamental aspects of mathematics.
- Make and investigate mathematical conjectures.
- Develop and evaluate mathematical arguments and proofs.
- Select and use various types of reasoning and methods of proof.
- Organize and consolidate their mathematical thinking through communication.
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others.
- Analyze and evaluate the mathematical thinking and strategies of others.
- Use the language of mathematics to express mathematical ideas precisely.
- Recognize and use connections among mathematical ideas.
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- Recognize and apply mathematics in contexts outside of mathematics.
- Create and use representations to organize, record, and communicate mathematical ideas.
- Select, apply, and translate among mathematical representations to solve problems.
- Use representations to model and interpret physical, social, and mathematical phenomena.