CRCT Content Descriptions

based on the Georgia Performance Standards

Mathematics

Grades 1 - 8

GEORGIA DEPARTMENT OF EDUCATION

Kathy Cox
State Superintendent of Schools

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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: 4
Domain: Number and Operations

Domain Description
Number and Operations refers to students' skill in further developing understanding of whole numbers and mastering the four basic operations with whole numbers by solving problems. This domain also refers to students' skill in understanding rounding and its appropriate use and adding and subtracting decimals and common fractions with like denominators.

Standards Associated with Domain
M4N1 M4N2 M4N3 M4N4 M4N5
M4N6 M4N7

Associated Concepts, Skills, and Abilities
- Identify place value names and places from hundredths through one million.
- Equate a number's word name, its standard form, and its expanded form.
- Round numbers to the nearest ten, hundred, or thousand.
- Describe situations in which rounding numbers would be appropriate and determine whether to round to the nearest ten, hundred, or thousand.
- Determine to which whole number or tenth a given decimal is closest using tools such as a number line and/or charts.
- Round a decimal to the nearest whole number or tenth.
- Represent the results of computation as a rounded number when appropriate and estimate a sum or difference by rounding numbers.
- Solve problems involving multiplication of 2- to 3-digit numbers by 1- or 2-digit numbers.
- Know the division facts with understanding and fluency.
- Solve problems involving division by a 1- or 2-digit number (including those that generate a remainder).
- Understand the relationship between dividend, divisor, quotient, and remainder.
- Understand and explain the effect on the quotient of multiplying or dividing both the divisor and dividend by the same number (2050 ÷ 50 yields the same answer as 205 ÷ 5).
- Understand decimals are a part of the base-ten system.
- Understand the relative size of numbers and order 2-digit decimals.
- Add and subtract both 1- and 2-digit decimals.
- Model multiplication and division of decimals by whole numbers.
- Multiply and divide both 1- and 2-digit decimals by whole numbers.
- Understand representations of simple equivalent common fractions and/or decimal fractions.
- Add and subtract fractions and mixed numbers with common denominators. (Denominators should not exceed twelve.)
- Use mixed numbers and improper fractions interchangeably.
- Describe situations in which the four operations may be used and the relationships among them.
- Compute using the order of operations, including parentheses.
- Compute using the commutative, associative, and distributive properties.
- Use mental math and estimation strategies to compute.

Mathematics
Grade: 4
Domain: Measurement

Domain Description
Measurement refers to students' skill in measuring weight, using appropriate metric and standard units, and in measuring angles.

Standards Associated with Domain
M4M1 M4M2

Associated Concepts, Skills, and Abilities
- Use standard and metric units to measure the weight of objects.
- Know units used to measure weight (gram, kilogram, ounce, pound, and ton).
- Compare one unit to another within a single system of measurement.
- Use tools, such as a protractor or angle ruler, and other methods, such as paper folding or drawing a diagonal in a square, to measure angles.
- Understand the meaning and measure of a half rotation (180°) and a full rotation (360°).
- Determine that the sum of the three angles of a triangle is always 180°.

Mathematics
Grade: 4
Domain: Geometry

Domain Description
Geometry refers to students' understanding of and ability to build plane and solid geometric figures. This domain also refers to students' skill in graphing points on the coordinate plane.

Standards Associated with Domain
M4G1 M4G2 M4G3

Associated Concepts, Skills, and Abilities
- Examine and compare angles in order to classify and identify triangles by their angles.
- Describe parallel and perpendicular lines in plane geometric figures.
- Examine and classify quadrilaterals (including parallelograms, squares, rectangles, trapezoids, and rhombi) by their properties.
- Compare and contrast the relationships among quadrilaterals.
- Compare and contrast a cube and a rectangular prism in terms of the number and shape of their faces, edges, and vertices.
- Describe parallel and perpendicular lines and planes in connection with rectangular prisms.
- Build/collect models for solid geometric figures (cubes, prisms, cylinders, pyramids, spheres, and cones) using nets and other representation.
- Understand and apply ordered pairs in the first quadrant of the coordinate system.
- Locate a point in the first quadrant in the coordinate plane and name the ordered pair.
- Graph ordered pairs in the first quadrant.

Mathematics
Grade: 4
Domain: Algebra

Domain Description
Algebra refers to students' skill in understanding and representing mathematical relationships between quantities using mathematical expressions in problem-solving situations.

Standard Associated with Domain
M4A1

Associated Concepts, Skills, and Abilities
- Understand and apply patterns and rules to describe relationships and solve problems.
- Represent unknowns using symbols, such as □ and Δ.
- Write and evaluate mathematical expressions using symbols and different values.

Mathematics
Grade: 4
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 comparing features of graphs.

Standard Associated with Domain
M4D1

Associated Concepts, Skills, and Abilities
- Construct and interpret line graphs, line plot graphs, pictographs, Venn diagrams, and bar graphs.
- Investigate the features and tendencies of graphs.
- Compare different graphical representations for a given set of data.
- Identify missing information and duplications in data.
- Determine and justify the range, mode, and median of a set of data.

Mathematics
Grade: 4
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
M4P1 M4P2 M4P3 M4P4 M4P5

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.