



CRCT Content Descriptions

based on the Georgia Performance Standards

Mathematics

Grades 1 - 8



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: 3

Domain: Number and Operations

Domain Description

Number and Operations refers to students' skill in using decimal fractions and common fractions to represent parts of a whole. This domain also refers to students' skill in understanding the four arithmetic operations for whole numbers, using them in basic calculations, and applying them in problem-solving situations.

Standards Associated with Domain

M3N1

M3N2

M3N3

M3N4

M3N5

Associated Concepts, Skills, and Abilities

- Identify place values from tenths through ten thousands.
- Understand the relative sizes of digits in place value notation (10 times, 100 times, $1/10$ of a single digit whole number) and ways to represent them including word name, standard form, and expanded form.
- Use the properties of addition and subtraction to compute and verify the results of computation.
- Use mental math and estimation strategies to add and subtract.
- Solve problems requiring addition and subtraction.
- Model addition and subtraction by counting back change using the fewest number of coins.
- Describe the relationship between addition and multiplication, i.e., multiplication is defined as repeated addition.
- Know the multiplication facts with understanding and fluency to 10×10 .
- Use arrays and area models to develop understanding of the distributive property and to determine partial products for multiplication of 2- or 3-digit numbers by a 1-digit number.
- Understand the effect on the product when multiplying by multiples of 10.
- Apply the identity, commutative, and associative properties of multiplication and verify the results.
- Use mental math and estimation strategies to multiply.
- Solve problems requiring multiplication.
- Understand the relationship between division and multiplication and between division and subtraction.
- Recognize that division may be two situations: the first is determining how many equal parts of a given size or amount may be taken away from the whole as in repeated subtraction, and the second is determining the size of the parts when the whole is separated into a given number of equal parts as in a sharing model.
- Recognize problem-solving situations in which division may be applied, and write corresponding mathematical expressions.
- Explain the meaning of a remainder in division in different circumstances.
- Divide a 2- or 3-digit number by a 1-digit divisor.
- Solve problems requiring division.
- Use mental math strategies to divide.
- Identify fractions that are decimal fractions and/or common fractions.
- Understand that a decimal fraction (i.e., $3/10$) can be written as a decimal (i.e., 0.3).
- Understand the fraction a/b represents a equal sized parts of a whole that is divided into b equal sized

parts.

- Know and use decimal fractions and common fractions to represent the size of parts created by equal divisions of a whole.
- Understand the concept of addition and subtraction of decimal fractions and common fractions with like denominators.
- Model addition and subtraction of decimal fractions and common fractions with like denominators.
- Use mental math and estimation strategies to add and subtract decimal fractions and common fractions with like denominators.
- Solve problems involving decimal fractions and common fractions with like denominators.

Mathematics

Grade: 3

Domain: Measurement

Domain Description

Measurement refers to students' skill in understanding and measuring time and length. This domain also refers to students' skill in modeling and calculating perimeters and areas of simple geometric figures.

Standards Associated with Domain

M3M1

M3M2

M3M3

M3M4

Associated Concepts, Skills, and Abilities

- Students will further develop their understanding of the concept of time by determining elapsed time of a full, half, and quarter hour.
- Use the units kilometer (km) and mile (mi) to discuss the measure of long distances.
- Measure to the nearest $\frac{1}{4}$ inch, $\frac{1}{2}$ inch, and millimeter (mm) in addition to the previously learned inch, foot, yard, centimeter, and meter.
- Estimate length and represent it using appropriate units.
- Compare one unit to another within a single system of measurement.
- Understand the meaning of the linear unit and measurement in perimeter.
- Understand the concept of perimeter as being the boundary of a geometric figure.
- Determine the perimeter of a geometric figure by measuring and summing the lengths of the sides.
- Understand the meaning of the square unit and measurement in area.
- Model (by tiling) the area of a simple geometric figure using square units (square inch, square foot, etc.).
- Determine the area of squares and rectangles by counting, addition, and multiplication with models.

Mathematics**Grade: 3****Domain: Geometry****Domain Description**

Geometry refers to students' skill in further understanding of characteristics of previously studied geometric figures.

Standard Associated with Domain

M3G1

Associated Concepts, Skills, and Abilities

- Draw and classify previously learned fundamental geometric figures as well as scalene, isosceles, and equilateral triangles.
- Identify and compare the properties of fundamental geometric figures.
- Examine and compare angles of fundamental geometric figures.
- Identify the center, diameter, and radius of a circle.

Mathematics**Grade: 3****Domain: Algebra****Domain Description**

Algebra refers to students' skill in understanding how to express mathematical relationships as mathematical expressions.

Standard Associated with Domain

M3A1

Associated Concepts, Skills, and Abilities

- Describe and extend numeric and geometric patterns.
- Describe and explain a quantitative relationship represented by a formula (such as the perimeter of a geometric figure).
- Use a symbol, such as \square and Δ , to represent an unknown, and find the value of the unknown in a number sentence.

Mathematics**Grade: 3****Domain:** Data Analysis**Domain Description**

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

Standard Associated with Domain

M3D1

Associated Concepts, Skills, and Abilities

- Solve problems by organizing and displaying data in charts, tables, and graphs.
- Construct and interpret line plot graphs, pictographs, Venn diagrams, and bar graphs using scale increments of 1, 2, 5, and 10.

Mathematics

Grade: 3

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

M3P1

M3P2

M3P3

M3P4

M3P5

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.