



**CRCT Content Descriptions
based on the Georgia Performance Standards**

**Science
Grades 3 - 8**



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Criterion-Referenced Competency Tests (CRCT)
Content Descriptions
Science

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 Science

Grades 3 through 8 are mandated to participate in the Science 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, its 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>.

Science 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 Science are:

Grade 3–5

Earth Science

Physical Science

Life Science

Grade 6: Earth Science

Astronomy

Hydrology and Meteorology

Geology

Grade 7: Life Science

Cells and Genetics

Interdependence of Life

Evolution

Grade 8: Physical Science

Structure of Matter

Force and Motion

Energy and its Transformations

The GPS in science requires that content be taught in conjunction with process skills identified as the Characteristics of Science. Characteristics of Science refers to the process skills used in the learning and practice of science, such as testing a hypothesis, record keeping, using correct safety procedures, using appropriate tools and instruments, applying math and technology, analyzing data, interpreting results, and communicating scientific information. It also refers to understanding how science knowledge grows and changes and the processes that drive those changes. The concepts and skills inherent in Characteristics of Science are integrated in items across the three content domains.

Using the Science CRCT Content Descriptions

The Science 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.

Science

Grade: 3

Domain: Earth Science

Domain Description

Earth Science refers to explaining the differences between rocks and minerals and the physical characteristics of each, comparing and contrasting types of soils, and recognizing how wind and water can change them over time. This domain also refers to describing how fossils are formed and distinguishing fossils as evidence of organisms that lived long ago.

Standards Associated with Domain

S3E1

S3E2

Associated Concepts, Skills, and Abilities

- Differentiate between a rock and a mineral
- Recognize the physical attributes of rocks and minerals through investigations, such as:
 - observation (shape, color, and texture)
 - measurement
 - simple tests (hardness)
- Compare and contrast top soils (clay, loam or potting soil, and sand) by observable properties, such as:
 - texture
 - particle size
 - color
- Determine using observation and research how water and wind can change rocks and soil over time
- Distinguish fossils as evidence of organisms that lived long ago by using investigations, such as:
 - identifying authentic fossils
 - analyzing models of fossils
 - using information resources about fossils
- Describe how a fossil is formed

Science**Grade: 3****Domain: Physical Science****Domain Description**

Physical Science refers to categorizing ways to produce heat and explaining how heat can be transferred. This domain also refers to recognizing materials that are attracted to magnets and understanding the behavior of magnets.

Standards Associated with Domain

S3P1

S3P2

Associated Concepts, Skills, and Abilities

- Categorize different ways to produce heat energy, such as:
 - burning
 - rubbing (friction)
 - mixing one thing with another
- Determine how insulation affects heating and cooling
- Recognize the transfer of heat energy from the Sun to various materials
- Measure using thermometers the changes in temperature over time of water samples (hot, warm, and cold)
- Identify common objects that are attracted by magnets
- Recognize that magnets attract and repel each other

Science

Grade: 3

Domain: Life Science

Domain Description

Life Science refers to differentiating between habitats of Georgia and the features of plants and animals that live there, and recognizing how changes to habitats affect these organisms. This domain also refers to describing the effects of pollution and ways to protect the environment.

Standards Associated with Domain

S3L1

S3L2

Associated Concepts, Skills, and Abilities

- Differentiate between the habitats of Georgia (including the organisms that live there), such as:
 - mountains
 - marsh/swamp
 - coast
 - Piedmont
 - Atlantic Ocean
- Determine which features of green plants allow them to live and thrive in different regions of Georgia
- Determine which features of animals allow them to live and thrive in different regions of Georgia
- Predict what will happen to an organism if its habitat is changed
- Describe the effects of pollution (such as littering) on the habitats of plants and animals
- Describe ways to protect the environment, such as:
 - conservation of resources
 - recycling of materials

Science

Grade: 3

Characteristics of Science

Characteristics of Science items are integrated across the three content domains.

Characteristics of Science refers to understanding the process skills used in the learning and practice of science. These skills include testing a hypothesis, record keeping, using correct safety procedures, using appropriate tools and instruments, applying math and technology, analyzing data, interpreting results, and communicating scientific information. Characteristics of Science also refers to understanding how science knowledge grows and changes and the processes that drive those changes.

Standards Associated with Characteristics of Science

S3CS1	S3CS2	S3CS3	S3CS4
S3CS5	S3CS7	S3CS8	

Associated Concepts, Skills, and Abilities

- Demonstrate understanding that records of investigations and observations should not be altered
- Offer reasons for findings and consider reasons suggested by others
- Add, subtract, multiply, and divide whole numbers through different means, such as:
 - mentally
 - on paper
 - with a calculator
- Compute scientific calculations using commonly encountered fractions, such as:
 - halves
 - thirds
 - fourths
- Evaluate measurements and computations of quantities and decide if they are reasonable answers to scientific problems by comparing them to typical values in dimensions, such as:
 - length
 - weight
 - time
- Determine appropriate common materials for making simple mechanical constructions and repairing things
- Explain when to use computers, cameras, and recording devices for capturing information
- Implement accepted safety procedures while manipulating science materials and equipment
- Observe and describe how parts influence one another in things with many parts

- Represent features of objects, events, and processes in the real world by constructing representations, such as:
 - geometric figures
 - number sequences
 - graphs
 - diagrams
 - sketches
 - number lines
 - maps
 - stories
- Contrast ways in which representations do not match their original counterparts
- Construct instructions that others can follow in carrying out a scientific procedure
- Recognize when to use a sketch to aid in explaining scientific procedures or ideas
- Use numerical data to describe and compare objects and events, and to explore scientific or technological matters
- Evaluate sources of scientific information, such as:
 - reference books
 - back issues of newspapers and magazines
 - CD-ROMs
 - computer databases
- Explain that similar scientific investigations seldom produce exactly the same results due to circumstances, such as:
 - unexpected differences in what is being investigated
 - unrecognized differences in the methods or circumstances of the investigation
 - observational uncertainties
- Demonstrate understanding that although some scientific knowledge is very old, it is still applicable today
- Determine that scientific investigations may take many different forms, such as:
 - surveying what things are like
 - observing what is happening
 - collecting specimens for analysis
 - doing experiments
- Justify the reasons why clear and active communication is an essential part of doing science, such as:
 - enabling scientists to inform others about their work
 - allowing scientists to expose their ideas to criticism by other scientists
 - helping scientists to stay informed about scientific discoveries around the world
- Describe ways scientists use technology to increase their acuity in such activities as:
 - observing
 - measuring
 - comparing
- Demonstrate understanding that science involves many different kinds of work and engages men and women of all ages and backgrounds