

FCAT Owners' Manual

Background Information for Florida Citizens about the Florida Comprehensive Assessment Test (FCAT)

December 1999

The purpose of this document is to provide information to assist the people of Florida in understanding the nature and purpose of the Florida Comprehensive Assessment Test (FCAT). The FCAT program was authorized by the Florida Legislature as part of the statewide student assessment program as a means of measuring student achievement in reading and mathematics.

The FCAT was field tested in 1997 and administered to all public school students in grades 4, 5, 8, and 10 in 1998 and 1999. The 1998 administration constituted a baseline against which future progress of Florida students could be measured. The FCAT was administered a second time in 1999 and is scheduled to be administered in 2000. (The FCAT will be expanded in 2000. A discussion of these plans appears later in this document.)

Following the 1998 FCAT administration, groups of educators, business leaders, and citizens met to consider student achievement level standards that could be used to report test results. The Commissioner of Education ultimately proposed five levels which were approved by the State Board of Education in November 1998. These achievement levels, from 1 (lowest) to 5 (highest), form the basis for reporting student results and are discussed in greater detail later in this document.

What does FCAT measure?

FCAT was designed to measure reading and mathematics content defined by the Sunshine State Standards. Development of the Sunshine State Standards began in 1993, and the Standards were adopted by the State Board of Education in May of 1996. The Sunshine State Standards include more challenging content for students to learn than previous state standards which emphasized minimum competencies.

The test questions on FCAT are written to measure benchmarks from the Sunshine State Standards that identify what students are expected to know and be able to do in reading and mathematics. For example, Grade 10 mathematics *Benchmark MA.B.3.4.1 states:*

The student solves real-world and mathematical problems involving estimates of measurements, including length, time, weight/mass, temperature, money, perimeter, area, and volume, and estimates the effects of measurement errors on calculations.

The following is an example of an actual FCAT performance task written to measure this benchmark:

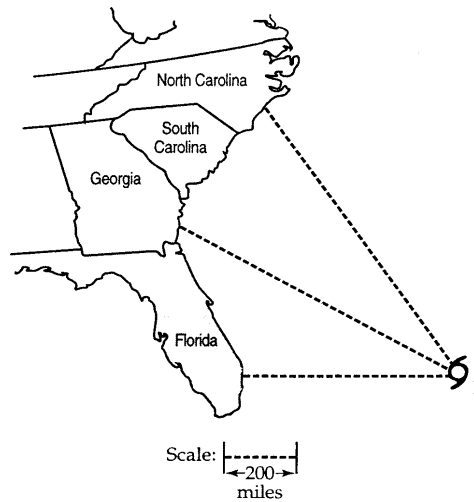
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For the following problem, you will be required to use ESTIMATION strategies.

THINK
SOLVE
EXPLAIN

On the map a tropical storm is located at point P. The storm is predicted to take one of the three paths toward the east coast of the United States as shown on the map. The storm is moving at a speed of 15 miles per hour.

ESTIMATE the least number of hours and the greatest number of hours before the tropical storm is predicted to make landfall. Consider all three possible paths. Show your work or explain in words how you determined your estimate.



Least time _____

Greatest time _____

How is FCAT different from other tests students take?

First, FCAT is the only test administered in Florida schools directly linked to the Sunshine State Standards. Second, FCAT was designed to represent the kinds of tasks and activities that parents and teachers expect as part of good instruction. This is accomplished in FCAT mathematics and reading tests by the type of information that students encounter on the test and the kinds of questions that students answer.

Third, the FCAT mathematics and reading tests are different from typical tests in that in both subjects the tests require students to analyze, synthesize, and evaluate the information presented and to apply strategies or procedures they have learned. The level of thinking required of students goes beyond the recall of facts and basic comprehension typical of many standardized test questions. To emphasize the thinking required, the performance tasks are labeled “Read, Think, and Explain” in reading, and “Think, Solve, and Explain” in mathematics. For these questions, students are required to write an answer that is later scored by teams of trained readers. About 20% of the test is comprised of these performance items; the remainder are multiple-choice questions.

FCAT Mathematics. Mathematics test questions at Grades 5, 8, and 10 are framed in the context of the Sunshine State Standards content areas: the arts, social studies, science, foreign language, and health/physical education. Students are asked to solve problems that incorporate actual situations and numerical values, such as the distance between planets in the solar system.

On the mathematics tests, students respond to three kinds of questions.

- Traditional multiple-choice questions require students to choose the correct answer from four possible choices.
- Gridded-response questions require students to solve a problem and bubble their numerical answer into an answer grid. Students must solve these problems on their own without being able to guess, as they can with multiple-choice questions. In some cases, more than one answer can be correct, as can happen when one student solves a problem using decimals and another student uses fractions.
- Performance tasks require students to think about an answer to a question, develop a solution, and write their answer. There are two kinds of performance tasks: short-answer, requiring approximately five minutes to answer, and long-answer, requiring about ten minutes to answer.

The mathematics tests assess approximately twenty-five benchmarks in five Sunshine State Standards mathematics content strands: Number Sense, Concepts, and Operations; Measurement; Geometry and Spatial Sense; Algebraic Thinking; and Data Analysis and Probability.

The mathematics tests at Grades 5, 8, and 10 consist of approximately

- 43-48 multiple-choice and gridded-response questions,
- 6-8 short-answer performance tasks, and
- 2-3 long-answer performance tasks.

FCAT Reading. Reading tests at Grades 4, 8, and 10 contain passages taken from magazines, books, and other publications that students are expected to be able to read at their grade level. Reading selections are reproduced in the test books along with the kinds of pictures, captions, and graphics that are typically a part of published passages. Passage length varies from an

average of about 400 words at Grade 4 to an average of about 900 words at Grade 10. Individual passages at Grade 4 may be as long as 900 words and at tenth grade nearly twice as long.

The reading tests contain multiple-choice questions and long-answer and short-answer performance tasks. These performance tasks enable students to demonstrate in their own words their understanding of a reading passage. Performance tasks in reading require students to read and understand the question; develop an answer by rereading and thinking about information in the passage; and then plan and write their answer in their own words.

The reading tests assess approximately nine benchmarks at each grade level in the Sunshine State Standards Language Arts, Reading, and Literature strands. FCAT reading passages are grouped into two categories: Literature and Information. The Literature category contains passages written primarily for enjoyment, including short stories and selections from novels, poems and folk tales. The passages contained in the Information category are written primarily to provide information. Examples include magazine and newspaper articles, editorials, and biographies.

The reading tests at Grades 4, 8, and 10 each consist of approximately

- 6-7 reading passages,
- 40-45 multiple-choice questions,
- 6-8 short-answer performance tasks, and
- 2-3 long-answer performance tasks.

Examples of FCAT test questions and performance tasks for all grade levels are contained in sample test books, sample answer books, and sample test scoring guides for FCAT reading and mathematics tests which are distributed to all school districts annually.

When is the FCAT administered?

FCAT was administered during the first week in February of 1998 and 1999. At all grade levels, each mathematics and reading test required approximately 160 minutes of test administration time. At grades 4 and 5, each test was administered over a two-day period. At grades 8 and 10, districts had the option of administering both tests (mathematics and reading) over a two- or four-day period. In districts that opted for the two-day schedule, the complete mathematics test was administered on one day, and the complete reading test was administered on the following day. In districts that selected the four-day option, the mathematics test was administered over two days, and the reading test was administered over the following two days.

The number of FCAT tests administered to Standard Curriculum students by grade and subject in 1999 is given in Table 1 below.

Table 1

**Number of Standard Curriculum Students Participating
in the Annual FCAT Program**

Grade Level	1998		1999	
	Reading	Mathematics	Reading	Mathematics
4	150,246	none	154,948	none
5	none	145,734	none	150,526
8	136,011	136,637	142,125	141,361
10	117,023	117,693	119,991	120,342
Total			417,064	412,229

FCAT also was administered to exceptional education students and to limited English proficient students who had been receiving secondary language services for two years or less. These students are not included in the Standard Curriculum reporting groups.

How is FCAT scored?

FCAT scores are obtained from a combination of machine and handscoring. All of the answer documents that students complete are scanned using a process called “imaging,” which takes an electronic picture of the page including students’ answers in their own handwriting. Students’ multiple-choice and gridded-response answers are scored using computer programs that read the students’ bubbled answers and evaluate them based on an answer key. Students’ answers to the performance tasks, however, must be scored by trained evaluators using a process commonly called “handscoring.”

Handscoring. The handscoring of students’ written responses is conducted by professional readers who are trained to score papers using answer keys and criteria, called rubrics, that have been established and validated by teams of Florida educators. After each performance task is field tested with a group of over 2,000 Florida students, a team of Florida teachers and administrators work with Department staff to score a sample of these papers. A complete and correct response for each task is defined and then papers are identified that represent the possible scores for the task: 4, 3, 2, 1, and 0 for long-answer questions; and 2, 1, and 0 for short-answer questions. In this way, clear definitions of each score point are developed and model papers are selected to represent the range of responses for each possible score. Examples of FCAT scoring rubrics can be found in the sample test scoring guide and answer key booklets that are available for each grade and subject.

The papers scored by the team of Florida educators become the training materials for the professional readers. This process and the quality control measures (reliability and validity checks) implemented during actual scoring ensure that all performance tasks are scored using Florida’s standards. Each student response is read independently by at least two professional readers. For short-answer performance tasks, any difference in scores between the first two

readers is resolved by a third independent reader. For long-answer performance tasks, a third reader is used to resolve initial score differences of more than one point. In rare cases, a fourth reader is utilized.

For the 1999 FCAT administration, students wrote more than 7.5 million responses to FCAT performance tasks. Each of these responses was read by two readers, and about 12% of the responses received a third reading. Scoring was conducted at CTB/McGraw-Hill scoring facilities in Sacramento, California, and Indianapolis, Indiana. Images of students' responses in their own handwriting are contained in a data base and presented to readers on computer screens for scoring. More than 1,000 readers participated in scoring, which took about seven weeks to complete.

Combining Scores. The scores from the handscoring process are combined with the scores from the machine-scoring process to create a record of each student's scores. Each student's total score is placed on a scale using a computer-based analysis procedure that combines the scores from the various types of questions. Scale scores are used to report student scores because of their precision and because they can be equated from year to year. Equating scores ensures that the same standard of achievement is used each year. In this way, scores can be compared from year to year and the progress of students and schools can be evaluated fairly.

Who developed the FCAT tests?

FCAT was developed by the Assessment and Evaluation Section of the Florida Department of Education with involvement of classroom teachers, curriculum specialists, administrators, and citizens from across Florida. Work on FCAT began in May 1996, the same month the Sunshine State Standards were adopted by the State Board of Education. The Department developed and administered FCAT through a contract with CTB/McGraw-Hill, Inc., of Monterey, California. CTB/McGraw-Hill is a test publishing company selected by the Department through a competitive bidding process.

Before any items were developed for FCAT, the Department involved a group of educators in determining which Sunshine State Standards benchmarks to assess and which assessment formats would be most appropriate for each benchmark. The first meetings of this group, the Content Advisory Committee, were held during June and July of 1996. During this period, item specifications for the test were also developed. These specifications describe the range of content to be assessed for each benchmark and provide general guidelines for writing test questions and performance tasks. The Content Advisory Committee recommended the reporting categories to be used for mathematics and reading and the percentage of items to be used in assessing each mathematics strand and reading reporting category.

The Department selected professionals from Florida school districts and universities who have expertise in test development and administration to form a Technical Advisory Committee which has also been extensively involved in the development of FCAT. The committee's purpose is to advise the Department about the various psychometric issues related to FCAT. Committee members reviewed the methods of analysis for FCAT, the types of scores to be reported, the

measured by comparing the proportion of students in each achievement category from year to year.

The FCAT achievement levels range from level 1 (lowest) to level 5 (highest) and are based upon a student's total FCAT reading or mathematics score. The FCAT achievement levels are defined as follows:

- Level 5** Performance at this level indicates that the student has success with the most challenging content of the Sunshine State Standards. A Level 5 student answers most of the test questions correctly, including the most challenging questions.
- Level 4** Performance at this level indicates that the student has success with the challenging content of the Sunshine State Standards. A Level 4 student answers most of the test questions correctly but may have only some success with questions that reflect the most challenging content.
- Level 3** Performance at this level indicates that the student has partial success with the challenging content of the Sunshine State Standards, but performance is inconsistent. A Level 3 student answers many of the test questions correctly but is generally less successful with questions that are most challenging.
- Level 2** Performance at this level indicates that the student has limited success with the challenging content of the Sunshine State Standards.
- Level 1** Performance at this level indicates that the student has little success with the challenging content of the Sunshine State Standards.

The State Board of Education adopted FCAT achievement levels to be implemented in a two-step process over the next several years. The following tables show the range of FCAT scores that defines each achievement level and the effective dates for each step of implementation.

Table 2

FCAT Mathematics Achievement Levels

Step 1 (for tests administered in 1999, 2000, and 2001)

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
5	100-287	288-325	326-354	355-394	395-500
8	100-279	280-309	310-346	347-370	371-500
10	100-286	287-314	315-339	340-374	375-500

Step 2 (for tests administered in 2002 and beyond)

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
5	100-300	301-338	339-367	368-407	408-500
8	100-292	293-322	323-359	360-383	384-500
10	100-299	300-327	328-352	353-387	388-500

Table 3

FCAT Reading Achievement Levels

Step 1 (for tests administered in 1999, 2000, and 2001)

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
4	100-274	275-298	299-338	339-385	386-500
8	100-270	271-309	310-349	350-393	394-500
10	100-286	287-326	327-354	355-371	372-500

Step 2 (for tests administered in 2002 and beyond)

Grade	Level 1	Level 2	Level 3	Level 4	Level 5
4	100-287	288-311	312-351	352-398	399-500
8	100-283	284-322	323-362	363-406	407-500
10	100-299	300-339	340-367	368-384	385-500

FCAT Subscores. In addition to achievement levels and total scores, subscores are reported for each reading and mathematics test. Subscores indicate a student's level of achievement on the five mathematics strands and two reading reporting categories. Subscores are percent scores that range from 0% to 99%. Each subscore represents an estimate of the percentage of content measured by the test that the student has achieved. An FCAT Mathematics test subscore of 75% for the measurement strand can be interpreted to mean that a student has achieved 75% of the measurement strand content. (This subscore is NOT a description of the percentage of questions that were answered correctly.)

Average subscores are an indication of the proportion of the strand and category content measured by the test that has been achieved by groups of students. Average subscores are reported for schools, districts, and the state.

How do Florida students perform on the FCAT?

The 1998 FCAT scores provided some indication of how students performed; however, without the achievement level data it was impossible to tell the degree to which achievement was satisfactory or unsatisfactory. For 1999, student achievement on FCAT can be evaluated by looking at achievement levels, total scores, and subscores for the state, districts, schools, and students.

State Results by Achievement Levels. The percentages of Standard Curriculum students by racial/ethnic category scoring at each achievement level on the 1998 and 1999 FCAT reading and mathematics tests are presented in the tables on the following pages.

The 1999 FCAT statewide results, in both reading and mathematics, show a relatively large decrease in the percentage of students scoring in Level 1 when compared to 1998. In reading, Grade 8 and 10 students showed the greatest movement from the lowest achievement level to the higher levels. In mathematics, the same trend can be seen for students in Grades 5 and 10. These trends were evident across all ethnic groups.

Table 4**FCAT 1998 and 1999****Percent of Students Scoring at Each Achievement Level in Reading**

Grade		Level 1		Level 2		Level 3		Level 4		Level 5	
		<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>
4	All	32	31	18	17	32	31	17	18	2	3
	Black	58	56	19	18	18	20	4	6	0	0
	Hispanic	43	40	20	19	27	27	10	12	1	1
	White	18	17	17	16	39	37	24	25	2	4
8	All	26	22	30	29	30	34	12	13	1	1
	Black	49	44	31	33	17	19	3	4	0	0
	Hispanic	35	30	32	33	25	29	7	8	1	0
	White	16	12	30	27	37	41	16	18	2	2
10	All	36	29	35	39	19	21	6	7	4	5
	Black	60	53	29	34	8	9	2	2	1	1
	Hispanic	47	38	33	39	14	15	4	4	2	3
	White	25	18	38	41	24	26	8	9	5	7

Table 5**FCAT 1998 and 1999****Percent of Students Scoring at Each Achievement Level in Mathematics**

Grade		Level 1		Level 2		Level 3		Level 4		Level 5	
		<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>	<u>98</u>	<u>99</u>
5	All	36	28	32	33	21	23	10	14	1	2
	Black	65	53	25	32	8	11	2	4	0	0
	Hispanic	46	35	32	35	16	20	6	9	0	1
	White	22	16	34	33	28	29	15	19	2	3
8	All	30	27	24	24	30	30	11	12	5	7
	Black	58	55	24	25	15	16	3	3	1	1
	Hispanic	39	35	28	27	25	27	6	8	2	3
	White	17	15	24	22	36	36	15	17	7	10
10	All	33	23	25	27	20	25	17	20	4	4
	Black	62	48	24	30	10	15	4	6	0	0
	Hispanic	43	32	28	31	17	22	11	13	2	2
	White	21	12	26	25	25	30	23	27	5	6

State Results by Average Scale Scores. FCAT 1998 and 1999 performance also can be viewed in terms of the statewide average scores as shown in Table 6 below.

Table 6

FCAT Statewide Average Total Scores

Grade	Reading			Mathematics		
	<u>1998</u>	<u>1999</u>	<u>change</u>	<u>1998</u>	<u>1999</u>	<u>change</u>
4	294	296	+2	-	-	
5	-	-		300	310	+10
8	298	302	+4	299	304	+5
10	299	306	+7	302	312	+10

For both reading and mathematics, and at all grade levels, the statewide average scale scores increased in 1999 compared to 1998. The largest gains were made in mathematics at grades 5 and 10.

State Results – Subscores. The FCAT score reports for an individual student include subscores for the broad content areas being measured, two in reading and five in mathematics. For 1998 and 1999, these subscores were reported with an index number that varied from 0 to 100 representing the strength of the student’s performance. This index number should not be interpreted as a percentage of items answered correctly.

Table 7

FCAT 1998 and 1999 Statewide Subscore Averages

Grade	Reading						Mathematics							
	Information		Literature		Number Sense		Measurement		Geometry		Algebraic Thinking		Data Analysis	
	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>	<u>1998</u>	<u>1999</u>
4	49	52	56	59	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	56	54	40	53	56	50	48	57	58	55
8	54	59	57	62	47	47	45	43	42	41	53	51	40	46
10	54	59	65	65	62	59	43	40	41	42	47	51	41	58

It is not possible to equate these subscores from year to year because there are too few items within each content subarea. Therefore, changes in the index numbers reported above must be interpreted with caution.

The content subscores as shown above clearly reflect the nature of FCAT as a challenging test. FCAT tests were designed to ensure that the achievement of all students, from the lowest to the highest achieving students, could be measured on the total score scales. Therefore, each test contains questions that are likely to be answered correctly by the majority of students as well as some that can be answered correctly only by more capable students. As a result, the index numbers are generally in the mid-range from the low 40's to the high 60's.

In this respect, FCAT is a much different test than minimal skills tests like the High School Competency Test (HSCT) that have had a prominent role in Florida schools in the past. A minimum competency test is composed of questions that are fairly easy, and on which the majority of students will perform well. FCAT was not created to be a minimum competency test, so students will be challenged by the content.

District and School Results. District results are reported in the 1999 FCAT State Report of District Scores and the State Report of District Achievement Levels. Schools and districts may review the 1999 FCAT results to identify areas of relative strength and weakness in achievement in Sunshine State Standards areas for reading and mathematics. Review of the 1999 results will assist schools and districts in continuing to implement the Standards.

In general, schools vary more widely in their average scores than do school districts. The ranges of total test performance for districts and schools is shown in Table 8. Table 9 shows the range of performance for districts and schools in terms of the subtest average scores. Scores for specific districts and schools can be obtained by contacting the district state assessment coordinator or by viewing the data on the Department of Education's Internet home page at: <www.doe.sas.sass.home.htm>.

Table 8
Range of Total Test Average Scores for the 1999 FCAT

Grade / Subject	Districts	Schools
4 Reading	267-320	219-369
5 Mathematics	267-329	223-370
8 Reading	273-323	194-369
8 Mathematics	259-332	185-378
10 Reading	272-321	209-374
10 Mathematics	275-327	214-380

The range of average subscores for districts and for schools with more than 20 Standard Curriculum students is given below.

Table 9
Range of Subscores for Reading

Grade / Subject	Districts	Schools
<u>4 Reading</u>		
Information	43-61	29-79
Literature	48-68	33-83
<u>8 Reading</u>		
Information	48-66	26-81
Literature	49-69	28-83
<u>10 Reading</u>		
Information	46-64	29-81
Literature	51-70	31-85

Individual Student Scores. For the 1998 and 1999 FCAT, students and parents received Individual Profile Reports that included a student’s achievement level, total score, and subscores for each FCAT test taken by the student. Grade 4 students received reading scores; Grade 5 students received mathematics scores; and Grade 8 and Grade 10 students received both reading and mathematics scores. The Individual Profile Reports issued in 1999 also informed students whether their total score was in the lower third, middle third, or upper third of students who took the test in 1999.

Most FCAT total scores fall between 200 and 400, with small percentages of students scoring between 100 and 200 and between 400 and 500. Statewide, small numbers of students achieved the highest possible score of 500. Grade 10 mathematics was the test with the most students achieving a score of 500; 66 of 120,342 students achieved 500. Only two students achieved a total score of 500 for Grade 4 reading.

The FCAT results for individual students may be reviewed by teachers and parents to identify overall strengths and weaknesses in achieving the Sunshine State Standards for reading and mathematics. This information, together with information derived from other standardized assessments and classroom assessments, helps to form a complete picture of a student’s academic achievement.

Grade / Subject	Range of Subscore Averages for Mathematics	
	Districts	Schools
<u>5 Math</u>		
Number Sense	39-62	27-81
Measurement	35-62	22-82
Geometry	36-57	24-73
Algebra	38-66	24-88
Data Analysis	40-63	27-79
<u>8 Math</u>		
Number Sense	30-60	17-84
Measurement	25-57	9-83
Geometry	28-50	17-71
Algebra	30-66	13-90
Data Analysis	32-57	17-79
<u>10 Math</u>		
Number Sense	40-68	25-93
Measurement	21-49	12-84
Geometry	24-51	14-85
Algebra	31-60	17-90
Data Analysis	40-65	24-88

What happens next?

The assessment of the Sunshine State Standards in reading and mathematics has been put into place and Florida has established the achievement level standards that more clearly indicate how much progress students will be expected to make by the 4th, 5th, 8th, and 10th grades.

The Department of Education conducted a competition for the FCAT test development and administration contracts in early 1999. The development contract was awarded to Harcourt Educational Measurement in San Antonio, Texas. The administration contract was awarded to National Computer Systems, Iowa City, Iowa.

Beginning with the test administration in February/March 2000, the FCAT program will be expanded to include the testing of students in grades 3 through 10. In addition to the program as it currently exists, a new multiple-choice FCAT will be developed to assess the Sunshine State Standards in reading for students in grades 3, 5, 6, 7, and 9. Students in grades 3, 4, 6, 7, and 9 will be assessed by a multiple-choice version of FCAT that measures the Sunshine State Standards in mathematics. The new tests will be field tested in 2000 and implemented full-scale in 2001.

In addition, a national norm-referenced test component will be added to the FCAT at grades 3 through 10 so that the performance of Florida students may be compared to the performance of students throughout the nation. The norm-referenced test is an existing commercial product, so it does not have to be field tested and can be fully implemented in 2000.

Students entering ninth grade in the fall of 1999 will be required to pass the grade ten FCAT as a high school graduation requirement. They will take the test for the first time in the school year 2000-2001 and, if they do not earn a passing score, will have additional opportunities to take the test during their eleventh and twelfth grades.

Interpreting FCAT Performance Levels

The following tables have been created to provide a better understanding of FCAT scores across the possible score ranges. For each of several sample test scores, the tables give descriptions of test questions along with the Sunshine State Standards benchmark that was measured by the questions. The questions are arranged in order of difficulty from hardest to easiest on the total score scales. A student with a score similar to one given in the table was likely to be successful on the questions described and those that are easier.

FCAT Tasks Representing Selected Mathematics Total Scores¹

Grade 5 - Mathematics

Benchmark	Total Score	Sample Question
<p>A421: The student uses and justifies different estimation strategies in a real-world problem situation</p> <p>B321 The student solves real-world problems involving estimates of measurements</p>	<p>(Difficult)</p> <p>438</p>	<p>Short Response: The student estimates the round-trip distance of a trip using a map and a scale. (A421/B321)</p>
<p>C321: The student represents and applies a variety of strategies and geometric properties and formulas for two- and three-dimensional shapes to solve real-world mathematical problems.</p>	<p>411</p>	<p>Extended Response: The student applies geometric properties to arrange different sized quadrilaterals to fill a larger square space. (C321)</p>
<p>A122: The student understands the relative size of whole numbers, commonly used fractions, decimals, and percents.</p>	<p>365</p>	<p>Multiple Choice: When given specific areas of land formations, the student identifies the one that has an area about one-third the size of another. (A122)</p>
<p>D222: The student uses informal methods, such as physical models and graphs to solve real-world problems involving equations and inequalities.</p>	<p>347</p>	<p>Gridded Response: The student uses informal methods to solve a word problem that involves an equation. (D222)</p>
<p>A221: The student uses place-value concepts of grouping based upon powers of ten (thousandths, hundredths, tenths, ones, tens, hundreds, thousands) within the decimal number system.</p>	<p>327</p>	<p>Gridded Response: The student uses place value concepts to arrange four numbers and create the greatest possible 4-digit number. (A221)</p>
<p>E121: The student solves problems by generating, collecting, organizing, displaying, and analyzing data using histograms, bar graphs, circle graphs, line graphs, pictographs, and charts. (Also assesses E123.)</p>	<p>294</p>	<p>Multiple Choice: The student identifies the bar graph that displays the same data as a circle graph. (E121)</p>
<p>B422: The student selects and uses appropriate instruments and technology, including scales, rulers, thermometers, measuring cups, protractors, and gauges, to measure in real-world situations.</p>	<p>236 (Easy)</p>	<p>Multiple Choice: The student identifies the correct instrument for measuring a liquid. (B422)</p>

¹ A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.

FCAT Tasks Representing Selected Mathematics Total Scores²

Grade 8 - Mathematics

Benchmark	Total Score	Sample Question
E231: The student compares experimental results with mathematical expectations of probabilities.	(Difficult) 428	Short Response: The student compares actual election results with the results of a pre-election survey to determine the accuracy of the survey in predicting the outcome of the election. (E231)
A231: The student understands and uses exponential and scientific notation.	380	Multiple Choice: The student identifies correct scientific notation for a number in billions. (A231)
C331: The student represents and applies geometric properties and relationships to solve real-world and mathematical problems.	358	Extended Response: The student applies geometric properties to find the area of a fractional part of a given region and draws a figure with an area equivalent to the fractional part. (C331)
B232: The student solves problems involving units of measure and converts answers to a larger or smaller unit within either the metric or customary system.	326	Gridded Response: The student solves a problem involving the number of minutes it takes to run a specific number of meters, given a set rate of speed. (B232)
D232: The student uses algebraic problem-solving strategies to solve real-world problems involving linear equations and inequalities.	331	Multiple Choice: The student identifies the inequality that represents the possible values of an item after its original value is increased over time. (D232)
D132: The student creates and interprets tables, graphs, equations and verbal descriptions to explain cause-and-effect relationships. (Also assesses A531.)	286	Gridded Response: The student interprets a verbal description of an equation to find the total cost for one month of a given service. (D132)
C232: The student predicts and verifies patterns involving tessellations (a covering of a plane with congruent copies of the same pattern with no holes and no overlaps, like floor tiles).	122 (Easy)	Multiple Choice: The student verifies the different figures used to construct a tessellation and identifies the shape not included in the tessellation. (C232)

² A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.

FCAT Tasks Representing Selected Mathematics Total Scores³

Grade 10 - Mathematics

Sample Task	Total Score	Sample Question
E141: The student interprets data that has been collected, organized and displayed in charts, tables, and plots. (Also assesses E131 and E143.)	(Difficult) 429	Extended Response: The student creates scatter plots of given data to reflect different interpretations. (E141)
D141: The student describes, analyzes, and generalizes relationships, patterns, and functions using words, symbols, variables, tables, and graphs.	350	Gridded Response: The student generalizes the pattern of side lengths for a two-dimensional figure that is repeatedly reduced by the same percentage. (D141)
C242: The student analyzes and applies geometric relationships involving planar cross-sections (the intersection of a plane and a three-dimensional figure).	329	Multiple Choice: The student identifies the shape of the original solid three-dimensional figures when given the two-dimensional figures that result from planar cross-sections of the original figures. (C242)
C141: The student uses properties and relationships of geometric shapes to construct formal and informal proofs.	316	Short Response: The student explains the geometric properties that are used to find the measure of one angle of a triangle when two sides are congruent and the measure of one angle is given. (C141)
B242: The student solves real-world problems involving rated measures (miles per hour, feet per second).	288	Gridded Response: The student solves a problem involving rated measures, gallons of water flowing per day. (B242)
A343: The student adds, subtracts, multiples, and divides real numbers, including square roots and exponents, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator. (Also assesses A242.)	251	Gridded Response: The student multiplies (or adds) several items at the same price, and adds all items together, and then subtracts to determine change. (A343).
C241: The student understands geometric concepts such as perpendicularity, parallelism, tangency, congruency, similarity, reflections, symmetry, and transformations including flips, slides, turns, enlargements, rotations, and fractals. (Also assesses C141 and C341.)	201 (Easy)	Multiple Choice: The student identifies how to complete a pattern using a transformation of one of the two pieces used in the pattern. (C241)

³ A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.

FCAT Tasks Representing Selected Reading Total Scores

Grade 4 - Reading

Benchmark	Total Score	Sample Question
LA.A.2.2.8 Selects and uses a variety of appropriate reference materials... (Includes LAA 225 Reads, organizes information for a variety of purposes).	466 (Difficult)	Extended Response: The student uses textual information and a picture to describe what he or she would see when visiting a natural landmark described in an article.
LA.A.2.2.6 Recognizes the difference between fact and opinion presented in a text.	333	Short Response: The student rereads a paragraph from a passage and writes one FACT and one OPINION from the passage.
LA.E.1.2.3 Knows the similarities and differences among the characters, settings, and events presented in various texts.	290	Multiple Choice: The student identifies the way in which a character changes from the beginning to the end of a story.
LA.E.2.2.1 Recognizes cause-and-effect relationships in literary texts. [Applies to fiction, nonfiction, poetry, and drama.]	267	Multiple Choice: The student identifies the reason that a person described in an article must do his job in a certain way.
LA.A.2.2.1 Determines the main idea or essential message, identifies relevant supporting details and facts, and arranges events in chronological order.	231 (Easy)	Multiple Choice: The student identifies the sequence of actions taken by an animal that is described in an article.

⁴A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.

FCAT Tasks Representing Selected Reading Total Scores

Grade 8 - Reading

Benchmark	Total Score	Sample Question
LA.A.2.3.5 Locates, organizes, and interprets written information...	422 (Difficult)	Extended Response: The student summarizes the main points of a science article about a natural phenomenon.
LA.A.2.3.2 Identifies the author’s purpose and/or point of view...	358	Multiple Choice: The student identifies a statement that indicates that the author of an article had doubts about the benefits of a national policy.
LA.A.2.3.1 Determines the main idea or essential message and identifies relevant details, facts, and patterns of organization.	291	Multiple Choice: The student selects the most appropriate title for a book containing two poems on related topics.
LA.A.2.3.8 Checks the validity and accuracy of information obtained from research...	255	Extended Response: The student describes how a biographical sketch gives credibility to the author of an article.
LA.A.2.2.7 Recognizes the use of comparison and contrast...	224 (Easy)	Multiple Choice: The student identifies the comparison a poem’s author makes between an animal and an object.

⁵A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.

FCAT Tasks Representing Selected Reading Total Scores

Grade 10 - Reading

Benchmark	Total Score	Sample Question
LA.A.2.4.8 Synthesizes information from multiple sources to draw conclusions.	433 (Difficult)	Extended Response: The student describes how the author of an editorial uses statistics to support his argument in favor for a public policy.
LA.E.2.4.1 Analyzes the effectiveness of complex elements of plot such as setting, major events, problems, conflicts, and resolutions.	325	Short Response: The student reaches a conclusion regarding the reward a person would receive for doing a good deed.
LA.A.2.4.1 Determines the main idea and identifies relevant details, methods of development, and their effectiveness.	288	Multiple Choice: The student correctly pairs the title of an editorial with its main idea.
LA.A.2.4.7 Analyzes the validity and reliability of primary source information and uses the information appropriately.	257	Multiple Choice: The student identifies the statement that correctly states a conclusion based on research presented in an article.
LA.A.1.4.2 Selects, uses strategies to understand words and text and to make and confirm inferences...	215 (Easy)	Multiple Choice: The student identifies the way the narrator in a story views another character based on the words she uses to describe that character.

⁶A student with a score similar to one given in the table was likely to be successful on the question described and tasks that are easier.