

FCAT Science FAQs

Lee County Schools
Rick Tully, 2005 July, revised

- 1. What are the SSS?** The Sunshine State Standards are a series of statements established by the Florida Legislature that describe the knowledge and skills that students should have in a variety of disciplines. They are an attempt to define what students should know and be able to do in order to be capable and productive members of American society. These legislated standards are the basis for state-wide assessment of student performance which is used to define School Grades, teacher and administrator performance pay, and student advancement.
- 2. What are Benchmarks?** Benchmarks are individual statements within the Sunshine State Standards that describe specific competencies that students should meet. In Science there are 41 Benchmarks at Level 1 (Grades K-2), 58 Benchmarks at Level 2 (Grades 3-5), 73 Benchmarks at Level 3 (Grades 6-8), and 77 Benchmarks at Level 4 (Grades 9-12). Benchmarks are part of the Sunshine State Standards and they are therefore mandated by the Legislature and are the basis for specific test items on the FCAT Science.
- 3. What are GLEs?** Because the Benchmarks are written for clusters of grade levels, there needs to be some coordination among the grades within each cluster to assure that all Benchmarks are adequately covered. The Grade Level Expectations were written to more closely define the appropriate activities at each grade level. Because the GLEs are not established by the Florida Legislature, they do not carry the same weight as the SSSs. In Lee County, the elementary (SSS Level 1 and Level 2) GLEs are a fairly accurate description of the curriculum. At middle school (SSS Level 3), the GLEs have been reorganized to reflect a subject organized approach to curriculum. Over the 3 years of middle school experience, students will be experience all of the recommended GLEs. There are no GLEs at high school (SSS Level 4) because any particular course can be taken by students at a range of grade levels.
- 4. What is the FCAT Science?** The Florida Comprehensive Assessment Test in Science is designed to measure the performance of students in the range of disciplines we call science. It follows the same basic design format as the FCAT Math and FCAT Reading. The first census administration of the test was in 2003. It is given to all 5th, 8th, and 11th grade students in Florida.
- 5. What are AA Benchmarks?** Annually Assessed (AA) Benchmarks are the limited number of Benchmarks that will be assessed annually. Every year there will be at least one item on the FCAT Science that is designed to assess each of these Benchmarks. These are the only Benchmarks that will be assessed with performance items (short response, or extended response). The AA Benchmarks will account for approximately 60-70% of the final score. There are 15 AAs at Level 2 (5th grade), 14 at Level 3 (8th grade), and 15 at Level 4 (11th grade). These are clearly the most

important Benchmarks or concepts that our classroom activities need to address. Our students deserve repeated exposure to these concepts.

6. **What are CS Benchmarks?** The Content Sampled (CS) Benchmarks are all the other Benchmarks, after the AAs have been taken into account. They will represent approximately 30-40% of the final score. There are 43 CSs at Level 2 (5th grade), 59 at Level 3 (8th grade), and 62 at level 4 (10th grade). These individual Benchmarks will not be assessed every year but will be randomly selected each year for assessment. They will only be assessed by multiple choice or gridded response items, each of which carries only 1 point toward the final score.
7. **What are BB Benchmarks?** Because there is no FCAT for Level 1 (grades K-2) there are no AA Benchmarks. A team of teachers in Lee County has created a list of Building Block (BB) Benchmarks. These are considered to be the key Benchmarks that will best prepare students to perform well with the AA Benchmarks as they progress through the grades.
8. **What are MC, GR, SR, and ER items?** These are different kinds of test items:
 - MC – Multiple Choice (1 point, can be used on any Benchmark, 1 minute each)
 - GR – Gridded Response (1 point, only specific Benchmarks, only at 8th and 10th grade, 1.5 minutes each)
 - SR – Short Response (2 points, only specific AA Benchmarks, 3-5 minutes each)
 - ER – Extended Response (4 points, only specific AA Benchmarks, 5-15 minutes each)
9. **Are certain AA Benchmarks more important than others?** Each of the AA Benchmarks will be assessed by at least 1 item on every FCAT Science each year. There might be a situation where more than 1 MC item would be used with a particular Benchmark, so that Benchmark would carry more than 1 point toward the final score. Certain of the AA Benchmarks may also be assessed with GR items which are worth 1 point and SR items which are worth 2 points. These SR items obviously carry more weight than others on the final score. At 5th grade there are 3 Benchmarks while at 8th grade and 11th grade there are only 2 Benchmarks that can be assessed with an ER item. Since those items are worth 4 points each, those 2 or 3 Benchmarks are clearly of paramount importance. The list of AA Benchmarks was changed slightly in 2004, please be sure you use the updated list.
10. **How important are higher order thinking skills?** Higher order thinking skills will be needed for at least 50% of the items. On the 5th grade test, the lower levels (Level 1) of Bloom's taxonomy (Knowing, Comprehension, and Application) will account for 50% of the test items. The higher levels (Level 2) of Bloom's taxonomy (Application, Analysis, Synthesis, and Evaluation) will account for the remaining 50% of the score. With the 8th grade test, Level 1 will be 40% of the test and Level 2 will be 60%. On the 11th grade test the balance will be 30% at Level 1 and 70% at

Level 2. Higher order thinking skills become more and more important. The State is transitioning from use of Blooms taxonomy to Webb's Levels of Complexity but the percentages of use of each of Webb's levels has not been established.

11. **What are reporting clusters?** The results of the FCAT Science are not reported in reference to any particular Benchmark, rather the results reflect performance in clusters of Strands. The eight Strands in the science standards are grouped into four clusters.

- Physical and Chemical Sciences Cluster - Strand A: The Nature of Matter, Strand B: Energy, and Strand C: Force and Motion.
- Earth and Space Sciences Cluster - Strand D: Processes that Shape the Earth, and Strand E: Earth and Space.
- Life and Environmental Sciences Cluster - Strand F: Processes of Life, and Strand G: How Living Things Interact with the Environment.
- Scientific Thinking Cluster - Strand H: The Nature of Science.

Each Strand is represented on every edition of the FCAT Science. Each reporting cluster will represent approximately 25% of each edition of the test. Clearly, Strand H: The Nature of Science carries a tremendous weight, compared to any other single Strand.

12. **What is most important?** Every Benchmark is important and we have a legislative mandate to address every Benchmark. Some Benchmarks, however, are clearly more inclusive and more important than others. Some skills are more significant; some concepts deserve more attention.

- Higher order thinking skills (60% of FCAT Science)
- AA Benchmarks (60-70% of FCAT Science)
- SR item Benchmarks (worth 2 points each)
- ER item Benchmarks (worth 4 points each)
- Scientific Thinking Cluster, Strand H: The Nature of Science (25% of FCAT Science)

13. **What are item specifications?** Every Benchmark has been further defined to help assure that each test item is appropriate to the Benchmark and appropriate to the students being tested. These refinements or restrictions describe the range of concepts that can be tested, the measurement scales that can be used, the terminology that is allowable, the form the test item can take, and other concepts. The item specifications are used by the test writers as they create new test items. The *Science Test Item and Performance Task Specifications* documents can be viewed online. You can access them at: <http://www.fldoe.org>.

14. **What is rangefinding?** MC and GR items have specific answers and can be scored by machine, but each of the SR and ER performance items need to be read and scored by a live human being. To assure that each reader uses the same criteria to evaluate each student response, generic rubrics have been created for each type of performance item and reference sets of student responses have been assembled to define the point

values of responses for each particular item. Rangefinding is the process of establishing the reference set for each performance item.

15. **When does all this count?** It counts now! We should already be using the FCAT Science results to monitor our progress and effectiveness. The results of the 2004 FCAT Science will be used for Standards Setting. Achievement Levels will be reported for SY 2005-2006. FCAT Science will be included in school grade calculations in SY 2006-2007. FCAT Science will be included in AYP analysis in SY 2007-2008.
16. **Why is this stuff important?** For some politicians this is important because it has been established by the legislature. For some principals this is important because school grades are partially based on FCAT scores. For some teachers this is important because performance pay is often based on FCAT scores. For some students this is important because promotion may ultimately include FCAT Science performance. More importantly, though, this is an attempt to see just how well our science instruction is faring, to help us find the weaknesses in our curriculum, and to point the way to better schooling. One of our difficult jobs is to use this tool for the betterment of our students and not fall into the trap of using it just as a punitive goad to shallow performance.
17. **Where can we find more information?** Much information is available at the Florida Department of Education web site. You can find the Sunshine State Standards, the GLEs, the AA Benchmarks, sample test items, and much, much more. Go to <http://www.fldoe.org>. Click on *K12 Public Schools* and navigate to the information you need.
18. **What can we do?** Have fun with science! Get kids involved! Pay attention to the Sunshine State Standards. Give your students some extra exposure to the AA Benchmarks. Remember that inquiry not only engages students, but is an effective way to build competence with Strand H: The Nature of Science. But most importantly, get kids to observe the world around them and get them engaged in scientific thinking and inquiry.