

# FCAT Cognitive Complexity

Cognitive complexity refers to the cognitive demand associated with an item. In the early years of the FCAT program, the DOE used Bloom's Taxonomy to classify test items; however, Bloom's Taxonomy is difficult to use because it requires an inference about the skill, knowledge, and background of the students responding to the item. Beginning in 2004, the DOE implemented a new cognitive classification system based upon Dr. Norman L. Webb's Depth of Knowledge (DOK) levels.

The rationale for classifying an item by its DOK level of complexity focuses on the *expectations made of the item*, not on the *ability of the student*. When classifying an item's demands on thinking (i.e., what the item requires the student to recall, understand, analyze, and do), it is assumed that the student is familiar with the basic concepts of the task. Items are chosen for the FCAT based on the Standards and their grade-level appropriateness, but the complexity of the items remains independent of the particular curriculum a student has experienced. On any given assessment, the cognitive complexity of a multiple-choice item may be affected by the distractors (incorrect answer options). The cognitive complexity of an item depends on the grade level of the assessment; an item that has a high level of cognitive complexity at one grade may not be as complex at a subsequent grade.

The categories—low complexity, moderate complexity, and high complexity—form an ordered description of the demands an item may make on a student. For example, low complexity items may require a student to solve a one-step problem. Moderate complexity items may require multiple steps. High complexity items may require a student to analyze and synthesize information. The distinctions made in item complexity ensure that items will assess the depth of student knowledge at each benchmark. The intent of the item writer weighs heavily in determining the complexity of an item.

Items may fit one or more descriptions; however, in most instances, these items are classified at the highest level of complexity demanded by the item. Caution must be used in referring to the table of descriptors that is provided for each cognitive complexity level. This table is provided for ease of reference, but the ultimate determination of item complexity should be made considering the overall cognitive demand placed on a student.

## Low Complexity

FCAT Reading low complexity items require students to recall, observe, question, or represent basic facts. For a low complexity item, the student would be expected to demonstrate simple skills or abilities. A low complexity item requires only a basic understanding of text—often verbatim recall from text or simple understanding of a single word or phrase.

Below is an example of a low complexity item:

In the author's opinion, who is the most important swing musician of all time?

- A. Glenn Miller ★
- B. Duke Ellington
- C. Benny Goodman
- D. Louis Armstrong

## Moderate Complexity

FCAT Reading moderate complexity items require two steps: comprehension and subsequent processing of text. Students are expected to make simple inferences within the text and may encounter items that include words such as *summarize*, *infer*, *classify*, *gather*, *organize*, *compare*, and *display*. Depending on the objective of a particular moderate-level item, students may also be required to explain, describe, or interpret.

Below is an example of a moderate complexity item

Which statement best expresses the main idea of this article?

- A. Art forms are fads that are enjoyed temporarily.
- B. Personal preferences influence musical appreciation. ★
- C. The value of music lies in how it enhances human lives.
- D. The success of an artist is measured by future generations.

## High Complexity

FCAT Reading high complexity items make heavy demands on student thinking. Students may be asked to explain, generalize, or make multiple connections. High complexity items require several steps involving abstract reasoning and planning. Students must be able to support their thinking. Items may involve identifying the theme and the implicit main idea and making complex inferences within or across texts. Students may also be asked to take information from at least one portion of the text and apply the information to a new task. They may be asked to perform complex analyses of the connections among texts.

Below is an example of a high complexity item

According to the passage, the client's most notable quality is his

- A. desire for a peaceful vacation.
- B. enthusiasm for a new experience.
- C. admiration for nature's array of colors.
- D. appreciation for life's simple pleasures.

The following table is provided for ease of reference; however, caution must be used in referring to this table of descriptors for each cognitive complexity level. The ultimate determination of an item’s cognitive complexity should be made considering the intent of the overall cognitive demand placed on a student.

<b>Low Complexity Reading</b>	<b>Moderate Complexity Reading</b>	<b>High Complexity Reading</b>
<ul style="list-style-type: none"> <li>• Identify the correct meanings of grade-level appropriate words.</li> <li>• Locate details in a text.</li> <li>• Locate details on a graph, chart, or diagram.</li> <li>• Recognize the correct order of events in a text.</li> <li>• Identify figurative language in a text.</li> </ul>	<ul style="list-style-type: none"> <li>• Use context clues to identify the meanings of unfamiliar words.</li> <li>• Determine how details support the main idea.</li> <li>• Interpret the information found in text features (e.g., graphs, charts, diagrams, subheadings).</li> <li>• Identify cause-and-effect relationships.</li> <li>• Determine an author’s main purpose or perspective.</li> <li>• Identify similarities and differences.</li> <li>• Demonstrate an understanding of plot development.</li> <li>• Recognize elements of plot.</li> <li>• Recognize text structures/ patterns of organization in a text.</li> <li>• Recognize summary statements pertaining to a text.</li> <li>• Compare word meanings.</li> <li>• Identify the main idea.</li> <li>• Draw conclusions; make inferences.</li> <li>• Determine the correct meaning of words with multiple meanings in context.</li> </ul>	<ul style="list-style-type: none"> <li>• Analyze the use of figurative language in a text.</li> <li>• Show how text features (e.g., graphs, charts, diagrams, subheadings) contribute to a text.</li> <li>• Determine an author’s purpose and/or perspective and describe how it affects the text.</li> <li>• Evaluate strong vs. weak arguments in a text.</li> <li>• Analyze similarities and differences.</li> <li>• Describe and analyze the characteristics of various types of literature.</li> <li>• Describe and illustrate how common themes are found across texts.</li> <li>• Analyze cause-and-effect relationships.</li> <li>• Determine the validity and reliability of information within/across texts.</li> </ul>

<b>FCAT Reading Percentage of Points by Cognitive Complexity Level</b>			
<b>Grade(s)</b>	<b>Low Complexity</b>	<b>Moderate Complexity</b>	<b>High Complexity</b>
3	25–35%	50–70%	5–15%
4	20–30%	50–70%	10–20%
5–7	15–25%	50–70%	15–25%
8	10–20%	50–70%	20–30%
9	10–20%	50–70%	20–30%
10	10–20%	45–65%	25–35%