Depth of Knowledge — Cognitive Complexity

mn DEPARTMENT OF EDUCATION

Cognitive complexity refers to the cognitive demand associated with an item. The level of cognitive demand focuses on the type and level of thinking and reasoning required of the student on a particular item. Levels of cognitive complexity for the MCA-III are based on Norman L. Webb's Depth of Knowledge. To learn more about incorporating these levels of questions within your instruction, curriculum, or classroom discussions please refer to: Understanding Statewide Testing Resources: Depth of Knowledge.

Webb's Depth of Knowledge is only one method for understanding but the one used for the MCA-III.

Level 1	Level 2	Level 3	Level 4
Recall	**Skill/Concept**	**Strategic Thinking**	**Extended Thinking**
A Level 1 item specifies the operation or method of solution and the student is required to carry it out. A well-defined and straight algorithmic procedure is considered to be at this level.	A Level 2 item requires students to choose the operation or method of solution and then solve the problem. These questions are commonly found in textbooks.	A Level 3 item may be solved using routine skills but the student is not cued or prompted as to which skills to use.	Level 4 items are best assessed in the classroom, where the constraints of standardized testing are not a factor.
Items may require a student to: • recall of information, such as a fact, definition, term or simple procedure • perform a simple algorithm or applying a formula	**Item may require a student to:** • engage in some mental processing beyond a habitual response • make some decisions as to how to approach a problem or activity • read or interpret information from a graph	**Items may require a student to:** • reason, plan or use evidence to solve the problem • explain their thinking	**Items may require a student to:** • engage in complex reasoning, planning, developing and thinking • have an extended period of time to answer the item