**Cognitive Skill Level Descriptions for the Grade 5 Science & Tech/Eng (STE) MCAS Test**

Below are examples of cognitive skill level descriptions for the Grade 5 STE MCAS test. The examples are not an exhaustive list. How an item is written, including the stem and the options (key and distractors), may contribute to the cognitive skill assigned to the item. The cognitive skill may also depend on student experiences, such as certain investigations they are familiar with. In addition, the grade level at which the question is being asked is also a consideration.

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| **Cognitive Skill** | **Description** |
| ***Remembering*** | **Students identify or define a concept with no context.** *Note: These should not be on STE MCAS tests.* |
| ***Understanding/***  ***Level 1*** | **Students show an understanding of scientific and engineering concepts and skills by:**   * Ordering events or quantities for a simple phenomenon, such as ordering the age of rock layers. * Completing a simple model, such as labeling some parts of the water cycle or adding an arrow to complete a model showing the path that light takes for an object to be seen. * Identifying a scientific or engineering process, such as erosion or encoding, in a given model or based on a description. * Identifying or describing basic characteristics of an organism, substance, object, event, or environment such as the function of a plant’s roots or that a desert receives only small amounts of rain. * Interpreting information to determine a straightforward conclusion, such as where volcanoes occur on a map with plate boundaries. * Determining the materials and tools needed for a basic investigation or to build a prototype, such as a ruler for measuring length or a thermometer for measuring temperature. * Describing the purpose of a design feature for a given design solution, such as a plastic being used because it is waterproof, or glass being used because it is see-through. |
| ***Applying/***  ***Level 2*** | **Students apply their science and engineering knowledge and skills by:**   * Interpreting data from a graph or table to draw a conclusion, such as the amount of fresh water available for use by humans and other organisms. * Interpreting a model to draw a conclusion, such as determining the flow of energy in a food web. * Completing an unfamiliar or complex model, such as adding an arrow representing a force on an object to show the object is changing speed. * Setting up a data table for an investigation, given certain criteria. * Providing evidence that supports a claim about a scientific or engineering phenomenon, such as using masses of substances to support a claim that the amount of matter stays the same during a phase change of chemical reaction. * Explaining a scientific or engineering concept when given an unfamiliar context, such as how water changes and moves through several steps of the water cycle for a certain watershed. * Interpreting a diagram of a design solution to draw a straightforward conclusion, including using a ruler to determine if a design solution meets certain criteria. * Determining what scientific question to ask given certain data and criteria. * Determining which variables should be controlled in an investigation and those that may change, such as amount of water, sunlight, or air in a photosynthesis investigation. * Writing a testable question that can be asked for an investigation. (CR items only) |
| ***Analyzing & Evaluating/***  ***Level 3*** | **Students analyze or evaluate data and information using their science and engineering knowledge and skills by:**   * Analyzing data from multiple sources or from a complex graph or table to draw a conclusion or develop an explanation, such as comparing weather or climate data from two or more locations. * Drawing a conclusion from a complex model or multiple models using scientific or engineering knowledge, such as analyzing two life cycles and drawing conclusions about the two organisms. * Evaluating two models or prototypes and explaining why one is better than the other. (CR items only) * Revising a complex model to make it more accurate, such as determining an error in a food web and describing how to correct the error. * Explaining how a design can be changed to address several criteria and constraints. (CR items only)   Note: Some items will reach this level due to students needing to construct an explanation in a constructed response (CR) based on an application of their knowledge. |