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| **LG #** | **AF05** | **Standards:** | **F-BF.1.1, F-BF.2.4, F-BF.2.5** |
| **4.0** | **In addition to Score 3.0, in-depth inferences and applications that go beyond instruction to the standard.**  **The student will be able to:**   * Decompose a composite function into three or more functions. * Prove the inverse relationship between exponents and logarithms both algebraically and geometrically.   **No major errors or omissions regarding the score 4.0 content.** | | |
| **3.5** | In addition to 3.0, in-depth inferences and applications with partial success. | | |
| **3.0** | **Students will be able to build functions that model relationships between quantities, and new functions (inverse/composite) from existing functions**.  **The student will be able to:**   * Verify by composition that one function is the inverse of another (F-BF.2.4b) * Produce an invertible function from a non-invertible function by restricting the domain (F-BF.2.4d) * Combine standard function types using arithmetic operations. (For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model) (F-BF.1.1b) * Compose functions (For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time) (F-BF.1.1c) * Determine an explicit expression, a recursive process, or steps for calculation from a context (BF.1.1a) * Understand the inverse relationship between exponents and logarithms (F-BF.2.5) * Use the relationship between exponents and logarithms to solve problems (F-BF.2.5)   **No major errors or omissions regarding the score 3.0 content (simple or complex).** | | |
| **2.5** | No major errors or omissions regarding 2.0 content and partial knowledge of 3.0 content. | | |
| **2.0** | **The student recognizes and describes specific terminology such as:**   |  |  |  | | --- | --- | --- | | * Function | * Explicit | * Recursive | | * Logarithms | * Inverse Function | * Invertible Function | | * Exponents | * Composition of Functions |  |   **The student will be able to:**   * Solve an equation for a simple function f that has an inverse and write an expression for the inverse(F-BF.2.4a) * Read values of an inverse function from a graph or a table, given that the function has an inverse (F-BF.2.4c) | | |
| **1.5** | Partial knowledge of the score 2.0 content, but major errors or omissions regarding score 3.0 content. | | |
| **1.0** | With partial understanding of some of the simpler details and processes and some of the more complex ideas and processes. | | |
| **0.5** | With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes. | | |
| **0.0** | Even with help, no understanding or skill is demonstrated | | |