The tables that follow are designed to provide information about the SEEd benchmark cluster assessments by grade. Each SEEd benchmark includes one cluster. In the table you will find the name of the benchmark cluster, a brief description of the skills the cluster assesses, and the number of scoring assertions for the cluster.

Benchmark Modules: Science Grade 6

Test Name	Standard Description	Number of Assertions
Benchmark Cluster: Science Standard 6.1.1	**Develop and use a model o**f the Sun-Earth-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons. Examples of models could be physical, graphical, or conceptual.	10
Benchmark Cluster: Science Standard 6.1.2	**Develop and use a model** to describe the role of gravity and inertia in orbital motions of objects in our solar system.	6
Benchmark Cluster: Science Standard 6.2.2	**Develop a model** to predict the effect of heat energy on states of matter and density. Emphasize the arrangement of particles in states of matter (solid, liquid, or gas) and during phase changes (melting, freezing, condensing, and evaporating).	11
Benchmark Cluster: Science Standard 6.2.4	**Design** an object, tool, or process that minimizes or maximizes heat energy transfer. Identify criteria and constraints, develop a prototype for iterative testing, analyze data from testing, and propose modifications for optimizing the design solution. Emphasize demonstrating how the structure of differing materials allows them to function as either conductors or insulators.	5
Benchmark Cluster: Science Standard 6.4.2	**Construct an explanation** that predicts patterns of interactions among organisms across multiple ecosystems. Emphasize consistent interactions in different environments, such as competition, predation, and mutualism.	12

Benchmark Modules: Science Grade 7

Test Name	What This Test Measures	Number of Assertions
Benchmark Cluster: Science Standard 7.1.1	**Carry out an investigation** which provides evidence that a change in an object's motion is dependent on the mass of the object and the sum of the forces acting on it. *Various experimental designs should be evaluated to determine how well the investigation measures an object's motion.* Emphasize conceptual understanding of Newton's First and Second Laws. Calculations will focus on one dimension; the use of vectors will be introduced in high school.	8
Benchmark Cluster: Science Standard 7.2.1	**Develop and use a model** of the rock cycle to describe the relationship between energy flow and matter cycling that create igneous, sedimentary, and metamorphic rocks. Emphasize the processes of melting, crystallization, weathering, deposition, sedimentation, and deformation, which act together to form minerals and rocks.	11
Benchmark Cluster: Science Standard 7.2.5	**Ask questions and analyze and interpret data** about the patterns between plate tectonics and: (1) the occurrence of earthquakes and volcanoes, (2) continental and ocean floor features (3) the distribution of rocks and fossils. Examples could include identifying patterns on maps of earthquakes and volcanoes relative to plate boundaries, the shapes of the continents, the locations of ocean structures (including mountains, volcanoes, faults, and trenches), and similarities of rock and fossil types on different continents.	7
Benchmark Cluster: Science Standard 7.3.3	**Construct an explanation** using evidence to explain how body systems have various levels of organization. Emphasize understanding that cells form tissues, tissues form organs, and organs form systems specialized for particular body functions. Examples could include relationships between the circulatory, excretory, digestive, respiratory, muscular, skeletal, and nervous systems. Specific organ functions will be taught at the high school level.	12
Benchmark Cluster: Science Standard 7.4.1	**Develop and use a model** to explain the effect that different types of reproduction have on genetic variation, including asexual and sexual reproduction.	6
Benchmark Cluster: Science Standard 7.4.2	**Obtain, evaluate and communicate** information about specific animal and plant adaptations and structures that affect the probability of successful reproduction. Examples of adaptations could include nest building to protect young from cold, herding of animals to protect young from predators, vocalization of animals and colorful plumage to attract mates for breeding, bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.	11
Benchmark Cluster: Science Standard 7.4.3	**Develop and use a model** to describe why genetic mutations may result in harmful, beneficial, or neutral effects to the structure and function of the organism. Emphasize the conceptual idea that changes to traits can happen. Specific changes of genes at the molecular level, mechanisms for protein synthesis or specific types of mutations will be introduced at the high school level.	8

Benchmark Modules: Science Grade 8

Test Name	What This Test Measures	Number of Assertions
Benchmark Cluster: Science Standard 8.1.6	**Develop a model** to describe how the total number of atoms does not change in a chemical reaction, indicating that matter is conserved. Emphasize demonstrations of an understanding of the law of conservation of matter. Balancing equations and stoichiometry will be learned at the high school level.	11
Benchmark Cluster: Science Standard 8.2.4	**Use computational thinking** to describe a simple model for waves that shows the pattern of wave amplitude being related to wave energy. Emphasize describing waves with both quantitative and qualitative thinking. Examples could include using graphs, charts, computer simulations, or physical models to demonstrate amplitude and energy correlation.	9
Benchmark Cluster: Science Standard 8.4.4	**Analyze and interpret data** on the factors that change global temperatures and their effects on regional climates. Examples of factors could include agricultural activity, changes in solar radiation, fossil fuel use, and volcanic activity. Examples of data could include graphs of the atmospheric levels of gases, seawater levels, ice cap coverage, human activities, and maps of global and regional temperatures.	10