ILLINOIS STATE BOARD OF EDUCATION

SCIENCE GRADES 6-7

Theory of Action: Academic standards represent a collective commitment around what students should learn each year. The state assessment asks students to demonstrate their knowledge, skills, and understanding related to these standards using a common measure. The resulting data allows us to see patterns in performance that should guide school and district improvement, helping identify areas of strength and opportunity.

Role of Performance Level Descriptors in Defining Proficiency: Performance level descriptors bridge the state assessment to classroom instruction and the systems of formative assessments that guide local instruction and choices about individual students. ***Academic proficiency represents a range of observable student performance characteristics***. There are multiple pathways to proficiency, and students rely upon their strengths differently within that range of performance.

Proficiency and Difficulty: A student's ability to demonstrate proficiency is influenced by the complexity of the texts or stimuli presented, tasks they're asked to complete, and the contexts in which they are engaged. As student performance improves, students are typically able to handle more challenging texts/stimuli, tasks, and contexts, and are able to demonstrate their skills and knowledge more accurately and consistently.

Earth and Space Science [i]	*Student performance indicates the ability to ...*
Level 4 **Above Proficient**	• Create detailed models, integrates data, and uses evidence to predict celestial events such as eclipses and planetary alignments. • Construct comprehensive explanations, integrates multiple sources of evidence, and creates predictive models for Earth system changes. • Design innovative solutions for sustainability, hazard mitigation, and resource conservation using scientific principles.
Level 3 **Proficient**	• Develop accurate models explaining celestial motions, lunar phases, eclipses, and gravitational interactions between celestial bodies. • Develop models explaining geoscience changes, weather patterns, and climate influences over time. • Construct arguments based on evidence regarding human impact on Earth's systems, including climate change and sustainability.
Level 2 **Approaching Proficient**	• Describe models with minor inaccuracies and explains basic gravitational effects that influence planetary motion. • Construct simple models illustrating Earth processes like plate tectonics and rock formation. • Use evidence to explain resource distribution, human reliance on natural resources, and the impact of pollution.
Level 1 **Below Proficient**	• Identify major celestial bodies such as the Sun, Moon, and planets, and understands basic seasonal changes due to Earth's tilt and orbit. • Recognize basic geoscience processes such as erosion, weathering, and the water cycle. • Identify basic resource formation, environmental impacts, and natural hazards like earthquakes and hurricanes.

Life Science[ii] *Student performance indicates the ability to ...*	
Level 4 **Above Proficient**	• Conduct investigations, synthesize data, and apply scientific reasoning to understand living organisms at the cellular level. • Evaluate biodiversity solutions, predicts ecosystem changes due to environmental disturbances, and apply conservation strategies. • Construct detailed models and explanations of genetic processes, including applications in biotechnology and medicine. • Use multiple evidence sources, such as DNA comparisons and embryological similarities, to support evolutionary relationships.
Level 3 **Proficient**	• Develop and use models to explain complex biological processes, such as photosynthesis and cellular respiration. • Develop models to explain ecosystem interactions, including nutrient cycling and population dynamics. • Develop explanations for inheritance, including the role of DNA and genetic recombination. • Construct explanations for natural selection, genetic variation, and species adaptation over time.
Level 2 **Approaching Proficient**	• Use models to describe how cells function and interact within larger biological systems. • Use data to analyze interactions within ecosystems, such as predator-prey relationships. • Use models to describe genetic variation, mutation effects, and how traits are passed through generations. • Analyze data on evolution, anatomical similarities, and environmental influences on species changes.
Level 1 **Below Proficient**	• Identify cell structures (nucleus, mitochondria, membrane) and explain basic functions of body systems. • Recognize patterns in ecosystems, including basic food chains and energy flow. • Identify inheritance patterns and basic genetic principles such as dominant and recessive traits. • Recognize fossil records and basic evolutionary concepts, including adaptation.

Physical Science[iii] *Student performance indicates the ability to ...*	
Level 4 **Above Proficient**	• Evaluate models, design experiments, and apply chemical principles to real-world applications. • Evaluate and refine models to predict motion outcomes and solve real-world physics problems. • Design, test, and evaluate devices to optimize energy transfer and efficiency. • Evaluate mathematical representations of waves, analyze signal transmission, and explore digital vs. analog communication technologies.
Level 3 **Proficient**	• Develop models explaining atomic composition, molecular structures, and chemical reactions. • Conduct experiments and construct models explaining forces, energy transfer, and Newton's Laws. • Construct explanations for kinetic, potential, and thermal energy, and their conservation in systems. • Develop models describing wave behavior, energy transfer, and real-world applications like sound and light waves.
Level 2 **Approaching Proficient**	• Use data to determine if chemical changes have occurred based on observable properties. • Design simple investigations to explore motion, acceleration, and force relationships. • Use models to describe how energy flows and transforms within systems. • Use models to explain wave interactions, including reflection, absorption, and transmission.
Level 1 **Below Proficient**	• Identify basic properties of substances and distinguish between physical and chemical changes. • Identify Newton's Laws and basic force interactions like gravity and friction. • Recognize different forms of energy and basic transfer processes like conduction and radiation. • Identify basic wave properties such as wavelength, amplitude, and frequency.

Engineering and Scientific Inquiry[iv] *Student performance indicates the ability to ...*	
Level 4 **Above Proficient**	• Precisely define a design problem, integrating scientific principles and real-world considerations. • Use a thorough and systematic evaluation process to compare and refine design solutions. • Conduct detailed data analysis, combining the best characteristics of different designs to create an optimized solution. • Develop, test, and continuously improve a model using iterative design to achieve an optimal result.
Level 3 **Proficient**	• Clearly define a design problem, considering scientific principles and real-world constraints. • Use a systematic method to evaluate design solutions and determine their effectiveness. • Analyze test data to identify the strongest aspects of each design. • Develop, test, and modify a model based on evidence to refine the design.
Level 2 **Approaching Proficient**	• Define a design problem with some criteria and constraints and consider how they impact the solution. • Compare design solutions using a structured approach, considering key factors. • Analyze test data to identify patterns and differences among solutions. • Develop and test a model, making some adjustments to improve the design.
Level 1 **Below Proficient**	• Identify a design problem and begin to recognize criteria and constraints. • Acknowledge different design solutions and start exploring ways to compare them. • Collect some test data and make initial observations. • Create a basic model and begin to understand how it can be used for testing.

[i] Includes standards MS-ESS-1, MS-ESS-2, MS-ESS-3
[ii] Includes standards MS-LS-1, MS-LS-2, MS-LS-3, MS-LS-4
[iii] Includes standards MS-PS-1, MS-PS-2, MS-PS-3, MS-PS-4
[iv] Includes standards MS-ETAS-1, MS-ETAS-2, MS-ETAS-3, MS-ETAS-4. Please note: these standards are integrated into the ESS, LS and PS standards as the primary means by which a student is able to demonstrate their understanding of the domain-specific content. They are not assessed independent of content on the state assessment.