Proficiency Scales

Science
GRADE 7
2020

SOUTHWESTERN UNION
EDUCATION

PROFICIENCY SCALES

Proficiency scales serve as a starting point for unit planning, creating assessments, delivering instruction, grading, and reporting progress, as well as making teaching visible to students and guiding their growth on the standards. Specifically, a proficiency scale is a continuum or learning progression that articulates distinct levels of knowledge and skills relative to specific standards. It shows teachers and students what proficiency looks like, what knowledge and skills students need to achieve proficiency, and how students might go beyond proficiency.

A proficiency scale is composed of a series of levels as follows:

Score 3.0—Heart of the proficiency scale; it defines the target content that teachers expect all students to know and be able to do. I CAN statements are provided for this level.

Score 2.0—Simpler content; it describes the foundational knowledge and skills that students will need to master before progressing to proficiency.

Score 4.0—Challenging content; it provides students the opportunity to go above and beyond expectations by applying their knowledge in new situations or demonstrating understanding beyond what the teacher teaches in class. A generic statement is provided for this level.

Scores 1.0 and 0.0—No specific content; 1.0 indicates that a student can demonstrate some knowledge or skill with help from the teacher, but not independently; 0.0 means that, even with help, a student cannot show any understanding. Generic statements are provided for these levels.

Half-point Scores—More precise measurement of knowledge and skills that is between two levels. Generic statements are provided for these levels.

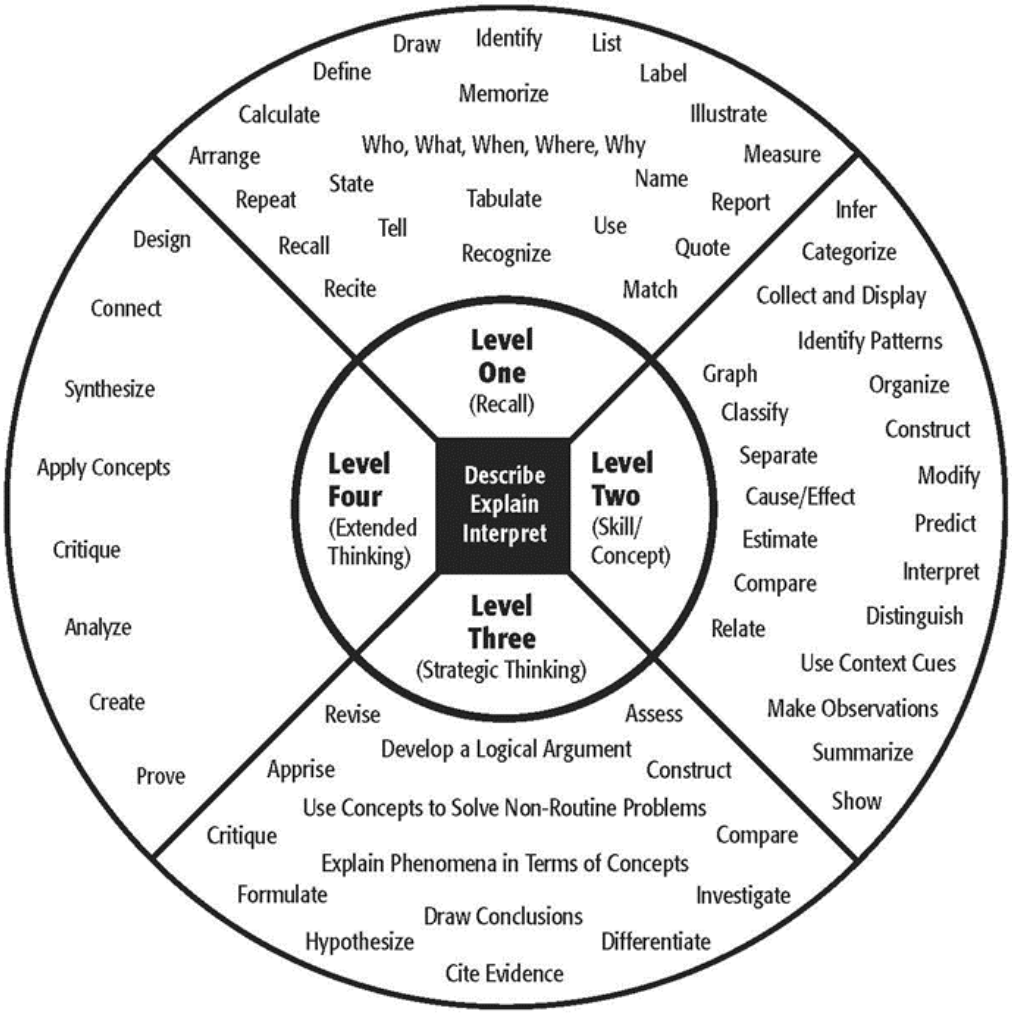
Proficiency scales become the centerpiece of communication and understanding in the classroom, as well as the common language for discussing learning between teacher and student.

The proficiency scales are organized according to the domains and strands in the NAD standards.

The cognitive rigor or complexity of the 3.0 learning targets has also been included, for it impacts the selection of instructional activities as well as assessment tasks. The Depth of Knowledge (DOK) model is generally used for this purpose, which is a taxonomy of four levels of cognitive demand. The levels are:

- **Level 1**—Recall
- **Level 2**—Skill/Concept
- **Level 3**—Strategic Thinking
- **Level 4**—Extended Thinking

Depth of Knowledge (DOK) Levels



Level One Activities	Level Two Activities	Level Three Activities	Level Four Activities
Recall elements and details of story structure, such as sequence of events, character, plot and setting.	Identify and summarize the major events in a narrative.	Support ideas with details and examples.	Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/ solutions.
Conduct basic mathematical calculations.	Use context cues to identify the meaning of unfamiliar words.	Use voice appropriate to the purpose and audience.	Apply mathematical model to illuminate a problem or situation.
Label locations on a map.	Solve routine multiple-step problems.	Identify research questions and design investigations for a scientific problem.	Analyze and synthesize information from multiple sources.
Represent in words or diagrams a scientific concept or relationship.	Describe the cause/effect of a particular event.	Develop a scientific model for a complex situation.	Describe and illustrate how common themes are found across texts from different cultures.
Perform routine procedures like measuring length or using punctuation marks correctly.	Identify patterns in events or behavior.	Determine the author's purpose and describe how it affects the interpretation of a reading selection.	Design a mathematical model to inform and solve a practical or abstract situation.
Describe the features of a place or people.	Formulate a routine problem given data and conditions.	Apply a concept in other contexts.	
	Organize, represent and interpret data.		

Webb, Norman L. and others. "Web Alignment Tool" 24 July 2005. Wisconsin Center of Educational Research. University of Wisconsin-Madison. 2 Feb. 2006. <http://www.wcer.wisc.edu/WAT/index.aspx>.

DISCIPLINARY TRANSFER GOALS

There are a small number of overarching, long-term transfer goals in each subject area. They are meant to be integrated within and across grade-level instruction. Below are the transfer goals for science

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

ESSENTIAL QUESTIONS AND BIG IDEAS for SCIENCE DOMAINS

K-8

Life Sciences

Essential Question: How do living organisms give evidence of God as the Designer, Creator, and Sustainer of life?

Big Idea: The complexity, order, and design of living organisms provide strong evidence of God as the Designer, Creator and Sustainer of life.

Physical Sciences

Essential Question: How does the order and consistency of natural laws provide evidence of God as the Designer, Creator, and Sustainer of the physical world?

Big Idea: Matter and energy are organized and behave according to natural laws that cannot be explained by chance, but are consistent and give evidence of God as the Designer, Creator, and Sustainer.

Health Sciences

Essential Question: Why does God want human beings to choose to have a healthy mind and body?

Big Idea: God designed a plan for healthful living that leads to optimum spiritual, physical, mental, and emotional health.

Earth and Space Sciences

Essential Question: How do the structure and physical phenomena of Earth and space provide evidence of God as Designer, Creator, and Sustainer of the universe?

Big Idea: The structure and processes of Earth and space are organized and governed by natural laws that give evidence of God as Designer, Creator, and Sustainer.

Engineering, Technology, and Applications of Science

Essential Question: How has God equipped humans to apply knowledge of science to solve problems for the benefit of His Creation?

Big Idea: God designed humans to wonder, question, and develop an attitude of inquiry as scientific principles are applied to the materials and forces of nature for the benefit of His Creation.

Subject: **Science**	Domain: **Physical Sciences** Strand: **Motion and Stability**	Grade: **7**

Standards: S.6-8.PS.7 Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects (e.g., two cars, car and stationary objects, meteor and space vehicle) (MS-PS2-1)

S.6-8.PS.8 Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object (MS-PS2-2)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	• Apply Newton's third law to design a solution to a problem involving the motion of two colliding objects *(e.g., design a solution to a practical problem—such as two moving cars colliding, a car colliding with a stationary object, or a meteor and a space vehicle colliding—using the knowledge that every action has an equal and opposite reaction)* **DOK 3** **I can apply Newton's third law to design a solution to a problem involving the motion of two colliding objects.** • Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object *(e.g., make qualitative comparisons of forces, masses, and changes in motion—changing only one variable at a time—to test Newton's first and third laws of motion)* **DOK 3** **I can plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Collision, equal and opposite reaction, force, impact, Isaac Newton, motion, Newton's third law of motion, opposite force* • *Balanced force, change in motion, comparison, constant speed, control (variable), deceleration, dependent variable, direction of a force, direction of a motion, force, force strength, independent variable, inertia, mass, Newton's first law of motion, Newton's third law of motion, sum, variable* The student will perform basic processes, such as: • Describe the key parts of Newton's third law of motion • Describe how a change in an object's motion depends on the sum of the forces on the object and the mass of the object	

	• Make qualitative observations of the forces acting on an object	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Physical Sciences** Strand: **Motion and Stability**	Grade: **7**

Standard: S.6-8.PS.10 Construct and present arguments using evidence (e.g., data generated from simulations or digital tools; charts displaying mass, strength of interaction, distance from the Sun, orbital periods of objects within the solar system) to support the claim that gravitational interactions exert attraction and depend on the masses of interacting objects (MS-PS2-4)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects *(e.g., use data generated from digital simulations or charts displaying mass, strength of interaction, distance from the sun, and orbital periods of objects within the solar system to defend the claim that gravitational interactions are attractive and dependent on the masses of interacting objects)* **DOK 3** **I can use evidence to support the idea that gravitational interactions are attractive and depend on the masses of interacting objects.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Attractive, direction of force, direction of motion, distance, gravitational force, gravitational interaction, interact, mass, orbital period, strength* The student will perform basic processes, such as: • Describe the effects of gravitational interactions • Describe the role of mass in gravitational interactions	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Physical Sciences** Strand: **Energy**	Grade: **7**

Standard: S.6-8.PS.13 Develop a model (e.g., representations, diagrams, pictures, written descriptions) to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system (e.g., the Earth and either a roller coaster cart at varying positions on a hill or objects at varying heights on shelves, changing direction/orientation of a magnet, balloon with static electrical charge brought close to a classmate's hair) (MS-PS3-2)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system *(e.g., create a representation, picture, or written description to show that when an electric, magnetic, or gravitational interaction changes an arrangement of objects—such as a roller coaster cart at varying positions on a slope, the direction or orientation of a magnet, or a balloon charged with static electricity moving toward someone's hair—then the relative amounts of potential energy stored in that system also change)* **DOK 3** **I can develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Arrangement, direction, distance, electric interaction, electrical charge, energy, interact, gravitational interaction, magnet, magnetic interaction, orientation, potential energy, static electricity, system* The student will perform basic processes, such as: • Describe how energy is stored in a system	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content

Score 0.0	Even with help, no success

Subject: **Science**	Domain: **Physical Sciences** Strand: **Energy**	Grade: **7**

Standard: S.6-8.PS.12 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and the speed of an object (e.g., riding a bicycle at different speeds, rolling different sizes of rock downhill, getting hit by a Wiffle ball versus a tennis ball) (MS-PS3-1)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object (*e.g., create graphs that describe the difference between the relationship of kinetic energy and mass and the relationship of kinetic energy and speed, such as riding a bicycle at different speeds, rolling differently sized rocks downhill, or being hit by a Wiffle ball versus a tennis ball)* **DOK 3** **I can construct and use graphs to describe the relationships of kinetic energy to the mass and the speed of an object.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Kinetic energy, mass, relationship, speed* The student will perform basic processes, such as: • Describe the relationship between the kinetic energy of an object and the mass of an object • Describe the relationship between the kinetic energy of an object and the speed of an object	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Physical Sciences** Strand: **Energy**	Grade: **7**

Standards: S.6-8.PS.14 Apply scientific principles to design, construct, and test a device (e.g., insulated box, solar cooker, Styrofoam cup) that either minimizes or maximizes thermal energy transfer (MS-PS3-3)

S.6-8.PS.15 Plan an investigation (e.g., comparing final water temperatures after different masses of ice are melted in the same volume of water with the same initial temperature) to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample (MS-PS3-4)

S.6-8.PS.16 Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object (MS-PS3-5)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer *(e.g., design and build a device that minimizes or maximizes thermal energy transfer—such as an insulated box, a solar cooker, or a polystyrene cup—and then assess the success of the device)* **DOK 3** **I can apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.** • Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample *(e.g., design and conduct an experiment that compares the temperature change of samples of different materials with the same mass as they cool or heat in an environment or of objects of the same material with different masses when a specific amount of energy is added—such as by comparing final water temperatures after different masses of ice have melted in the same volume of water with the same initial temperature—to investigate the relationships between energy transfer, type of matter, mass, and change in average kinetic energy)* **DOK 3** **I can plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.** • Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object *(e.g., use empirical evidence—such as an inventory or other representation of*	

		energy before and after a transfer in the form of a change in temperature or motion of an object—to support the claim that when kinetic energy changes, energy is transferred) **DOK 3** **I can support the idea that when the kinetic energy of an object changes, energy is transferred to or from the object.**
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Device, energy transfer, insulated, maximize, minimize, temperature, thermal energy* • *Average, change, cool, energy, environment, heat, heat convection, heat energy, heat radiation, heat retention, initial, kinetic energy, mass, material, matter, particles, relationship, sample, temperature, transfer, volume* • *Change, conservation of energy, energy, inventory, kinetic energy, motion, motion energy, representation, temperature, transfer* The student will perform basic processes, such as: • Describe thermal energy transfer • State accurate information about energy transfer, types of matter, mass, and changes in the average kinetic energy of particles • Describe how motion energy is transferred to and from an object	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Physical Sciences** Strand: **Waves and Their Applications**	Grade: **7**

Standards: S.6-8.PS.17 Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave (MS-PS4-1)
S.6-8.PS.18 Develop and use a model (e.g., drawings, simulations, written descriptions) to describe that waves are reflected, absorbed, or transmitted through various materials (MS-PS4-2)

<table>
<tr><td>Score 4.0</td><td colspan="2">In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught</td></tr>
<tr><td></td><td>Score 3.5</td><td>In addition to score 3.0 performance, partial success at score 4.0 content</td></tr>
<tr><td>Score 3.0</td><td colspan="2">The student will:
Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave (e.g., use mathematical formulas and qualitative thinking to describe standard repeating waves, including how the amplitude of a wave relates to the energy in a wave) DOK 3
I can use math to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.
Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials (e.g., create a drawing, simulation, or written description that explains—qualitatively—how light waves and mechanical waves are reflected, absorbed, or transmitted through various materials) DOK 3
I can develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.</td></tr>
<tr><td></td><td>Score 2.5</td><td>No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content</td></tr>
<tr><td>Score 2.0</td><td colspan="2">The student will recognize or recall vocabulary such as:
Amplitude, energy, relate, standard, wave
Absorb, frequency, light wave, matter wave, mechanical wave, reflect, sound wave, transmit, water wave, wave
The student will perform basic processes, such as:
Describe the relationship between the amplitude and energy of a wave
Describe the reflection, absorption, and transmission of waves</td></tr>
<tr><td></td><td>Score 1.5</td><td>Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content</td></tr>
<tr><td>Score 1.0</td><td colspan="2">With help, partial success at score 2.0 content and score 3.0 content</td></tr>
</table>

	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Physical Sciences** Strand: **Waves and Their Applications**	Grade: **7**

Standard: S.6-8.PS.19 Investigate qualitative scientific and technical information to support the claim that digitized signals (e.g., fiber optic cable transmits light pulses, radio wave pulses in Wi-Fi devices, conversion of stored binary patterns to make sound or text on a computer screen) are a more reliable way to encode and transmit information than analog signals (MS-PS4-3)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals *(e.g., make and defend the claim that using digitized signals—such as fiber-optic cables transmitting light pulses, Wi-Fi devices using radio wave pulses, or the conversion of stored binary patterns making sound or text on a computer screen—are more reliable than analog signals when it comes to communicating information)* **DOK 3** **I can integrate information to support the idea that digitized signals are a more reliable way to encode and transmit information than analog signals.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Analog signal, binary pattern, conversion, digitized signal, encode, fiber-optic cable, information, light pulse, radio wave, reliable, transmit, wave pulse, Wi-Fi device* The student will perform basic processes, such as: • Describe how digitized signals encode and transmit information • Describe the advantages and disadvantages of communicating using digitized and analog signals	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content

Score 0.0	Even with help, no success

Subject: **Science**	Domain: **Physical Sciences** Strand: **Matter and Its Interactions**	Grade: **7**

Standard: S.6-8.PS.4 Develop a model (e.g., drawings, diagrams) that predicts and describes changes in particle (e.g., molecules, inert atoms) motion, temperature, and state of a pure substance (e.g., water, carbon dioxide, helium) when thermal energy is added or removed (MS-PS1-4)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed *(e.g., create a qualitative, molecular-level drawing or diagram of a solid, liquid, or gas [such as water, carbon dioxide, or helium] to show that adding or removing thermal energy increases or decreases the kinetic energy of particles [such as molecules or inert atoms] until a change of state occurs)* **DOK 3** **I can develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Atom, atomic motion, change, change of state, decrease, gas, increase, inert atom, kinetic energy, liquid, molecular level, molecular motion, molecule, particle, particle motion, pure substance, solid, state, temperature, thermal energy* The student will perform basic processes, such as: • Describe the changes that occur in particle motion, temperature, and state when thermal energy is added or removed	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content

Score 0.0	Even with help, no success

Subject: **Science**	Domain: **Life Sciences** Strand: **Heredity, Life: Origins, Unity, and Diversity**	Grade: **7**

Standards: S.6-8.LS.15 Develop and use a model (e.g., Punnett squares, diagrams, simulations) to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation (MS-LS3-2)
S.6-8.LS.21 Apply scientific principles to construct and share a personal model that explains origins of life on earth and acknowledges God as the Creator

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation *(e.g., create and use models such a Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and the resulting genetic variation)* **DOK 3** **I can develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Asexual reproduction, cause, effect, gene transmission, genetic, genetic variation, genotype, identical, offspring, parent, Punnett square, relationship, sexual reproduction, transmission* The student will perform basic processes, such as: • Describe sexual and asexual reproduction • Use Punnett squares or other representations to describe possible genotype outcomes • Apply scientific principles to construct and share a personal model that explains origins of life on earth and acknowledges God as the Creator	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score	With help, partial success at score 2.0 content but not at score 3.0 content

	0.5	
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Life Sciences** Strand: **Heredity**	Grade: **7**

Standard: S.6-8.LS.14 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organisms (MS-LS3-1)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organisms *(e.g., create and use a model to explain that general changes in genetic material may result in the creation of different proteins, which can affect the structure and function of any organism, thereby changing its traits)* **DOK 3** **I can develop a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Beneficial, change, chromosome, function, gene, genetic material, harmful, mutation, neutral, organism, protein, structure, trait* The student will perform basic processes, such as: • Describe harmful, beneficial, and neutral effects of mutations • Describe the relationship between genes, chromosomes, and proteins	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Life Science** Strand: **Life: Origins, Unity, and Diversity**	Grade: **7**

Standard: S.6-8.LS.19 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms (MS-LS4-5)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms *(e.g., research and summarize the influence of humans on genetic outcomes in artificial selection—such as genetic modification, animal husbandry, or gene therapy—and the influence these technologies have had on society as well as the technologies that led to these scientific discoveries)* **DOK 3** **I can gather and integrate information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Animal husbandry, artificial selection, gene therapy, genetic modification, genetic outcome, influence, inheritance, organisms, society, technology, trait* The student will perform basic processes, such as: • Describe technologies that allow humans to influence the inheritance of desired traits • Describe the impacts these technologies have had on society	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Earth and Space Sciences** Strand: **Earth's Place in the Universe**	Grade: **7**

Standards: S.6-8.ES.12 Develop and use a model (physical, graphical, or conceptual) of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons (MS-ESS1-1)

S.6-8.ES.13 Develop and use a model (physical or conceptual) to describe the role of gravity in the motions within galaxies and the solar system (MS-ESS1-2)

S.6-8.ES.14 Analyze and interpret data (e.g., statistical information, drawings and photographs, models) to determine scale properties (e.g., size, surface features, orbital radius) of objects in the solar system (MS-ESS1-3)

<table>
<tr><td>Score 4.0</td><td colspan="2">In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught</td></tr>
<tr><td></td><td>Score 3.5</td><td>In addition to score 3.0 performance, partial success at score 4.0 content</td></tr>
<tr><td>Score 3.0</td><td colspan="2">The student will:
• Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons (e.g., create and use a physical, graphical, or conceptual model to describe the cycling of lunar phases, solar and lunar eclipses, and the seasons) DOK 3
I can develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
• Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system (e.g., create and use a physical model [such as an analogy of distance along a football field or a computer visualization of elliptical orbits] or a conceptual model [such as a mathematical proportion relative to the size of a familiar object such as a student's school or state] to explain that gravity is the force that holds together the solar system and Milky Way galaxy and that gravity controls the orbital motions within both) DOK 3
I can develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
• Analyze and interpret data to determine scale properties of objects in the solar system (e.g., analyze and interpret statistical information, drawings, photographs, and models from Earth-based instruments, space-based telescopes, and spacecrafts to determine similarities and differences based on scale properties among solar system objects, such as the sizes of an object's orbital radius, its volcanoes and other surface features, and its crust, atmosphere, and other layers) DOK 3
I can interpret data to determine scale properties of objects in the solar system.</td></tr>
<tr><td></td><td>Score</td><td>No major errors or omissions regarding score 2.0 content and partial success</td></tr>
</table>

	2.5	at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Cycle, cyclic, Earth-sun-moon system, eclipse, lunar eclipse, lunar phase, motion, pattern, season, solar eclipse* • *Asteroid movement pattern, comet, comet movement pattern, elliptical orbit, force, galaxy, gravity, meteor movement pattern, Milky Way, motion, orbit, orbital motion, planet orbit, solar system* • *Atmosphere, crust, Earth-based, instrument, layer, orbital radius, planet composition, planet orbit, planet size, scale property, solar system, space-based, spacecraft, surface feature, telescope* The student will perform basic processes, such as: • Describe the lunar phases • Describe solar and lunar eclipses • Describe how the seasons are created • Describe the role of gravity in the motions within galaxies and the solar system • Describe the scale properties of various objects in the solar system	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Earth and Space Sciences** Strand: **Earth's Systems**	Grade: **7**

Standard: S.6-8.ES.6 Develop and use a model (e.g., diagrams, maps and globes, digital representations) to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates (MS-ESS2-6)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates *(e.g., create a diagram, map, globe, or digital representation to explain how patterns of atmospheric circulation [such as sunlight-driven latitudinal banding, the Coriolis effect, and resulting prevailing winds] and oceanic circulation [such as the transfer of heat by the global ocean convection cycle, which is constrained by the Coriolis effect and the outlines of continents] vary by latitude, altitude, and geographic land distribution)* **DOK 3** **I can develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Altitude, atmospheric circulation, climate, climate pattern, constrain, continent, Coriolis effect, Earth's climate, geographic, global ocean convection cycle, heat, land distribution, latitude, latitudinal banding, oceanic circulation, prevailing, regional, rotation, sunlight-driven, unequal, unequal heating of air, unequal heating of land mass, unequal heating of oceans* The student will perform basic processes, such as: • Describe the relationship between heating of the Earth, rotation of the Earth, and climate	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content

Score 0.0	Even with help, no success

Subject: **Science**	Domain: **Engineering** Strand: **Engineering Design**	**Grade: 7**

Standard: S.6-8.ET.2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem (MS-ETS1-2)

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem (*e.g., use systematic processes for evaluating solutions, with respect to how well they meet the criteria and constraints of a problem to evaluate competing solutions)* **DOK 3** **I can evaluate design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Competing constraint, criteria, design solution, determine, evaluate, problem, process, solution, systematic* The student will perform basic processes, such as: • Describe the constraints and criteria of a problem • Describe the systematic process used for evaluating solutions	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Health Sciences** Strand: **Health Promotion and Disease Prevention, Healthy Lifestyle Choices**	**Grade: 7**

Standards: S.6-8.HS.1 Collect data from family members to compile evidence that supports the claim that personal health is influenced by the environment and genetics
S.6-8.HS.11 Analyze and interpret data that provides evidence to support the claim that traditional Adventist health practices promote optimal health

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Collect data from family members to compile evidence that supports the claim that personal health is influenced by the environment and genetics *(e.g., use a survey to collect data from family members to gather evidence that supports the idea that personal health is influenced by the environment and genetics)* **DOK 3** **I can collect data from my family to support the idea that personal health is influenced by the environment and genetics.** • Analyze and interpret data that provides evidence to support the claim that traditional Adventist health practices promote optimal health *(e.g., use data from https://adventisthealthstudy.org/studies to gather evidence that supports the idea that traditional Adventist health practices promote optimal health)* **DOK 3** **I can use data to support the idea that traditional Adventist health practices promote optimal health.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Analyze, claim, data, environment, evidence, genetics, health, influence, interpret, practices* The student will perform basic processes, such as: • Identify ways the environment influences personal health • Identify ways genetics influences personal health • Identify traditional Adventist health practices	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	

	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content
Score 0.0	Even with help, no success	

Subject: **Science**	Domain: **Health Sciences** Strand: **Health Promotion and Disease Prevention**	**Grade: 7**

Standards: S.6-8.HS.4 Construct an evidenced-based argument that demonstrates the importance of assuming responsibility for personal health behaviors
S.6-8.HS.5 Evaluate behaviors in relation to the degree to which they benefit or harm personal health and the health of others

Score 4.0	In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught	
	Score 3.5	In addition to score 3.0 performance, partial success at score 4.0 content
Score 3.0	The student will: • Construct an evidenced-based argument that demonstrates the importance of assuming responsibility for personal health behaviors *(e.g., develop an argument that demonstrates the importance of assuming responsibility for personal health behaviors)* **DOK 3** **I can develop an argument that demonstrates the importance of assuming responsibility for personal health behaviors.** • Evaluate behaviors in relation to the degree to which they benefit or harm personal health and the health of others *(e.g., classify a list of behaviors in relation to the degree to which they benefit or harm personal health and the health of others)* **DOK 3** **I can determine whether behaviors benefit or harm personal health and the health of others.**	
	Score 2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0 content
Score 2.0	The student will recognize or recall vocabulary such as: • *Argument, behavior, evidence, health* The student will perform basic processes, such as: • Identify ways in which students can assume responsibility for their personal health • Identify behaviors that benefit and behaviors that harm personal health and the health of others	
	Score 1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
Score 1.0	With help, partial success at score 2.0 content and score 3.0 content	
	Score 0.5	With help, partial success at score 2.0 content but not at score 3.0 content

Score 0.0	Even with help, no success