Science – Grade 8 Physical Science					
SC.8.1 Forces and Interactions			**Access Points**		
Standard / Indicator	**Extension**				
SC.8.1.1 Gather, analyze, and communicate evidence of forces and interactions.			**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.1.1.A Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. Assessment is limited to vertical or horizontal interactions in one dimension.	Participate in investigations to describe the cause-and-effect relationship between two colliding objects.		Participate in guided investigations to describe the relative motions (direction and speed) of two colliding objects.	Identify that the speed and/or direction of one object changes when two objects collide.	Recognize that an object changes direction or speed when a moving object and a stationary object collide.
	Points	**0-2**			
SC.8.1.1.C 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. Assessment is limited to forces and changes in motion in one-dimension in an inertial reference frame and to change in one variable at a time; does not include use of trigonometry.	Participate in investigations to explain that a change in the motion of a stationary object depends on the amount of force applied to the object and the mass of the object.		Participate in a guided investigation to explain that an object with a large mass requires more force to move than an object with a smaller mass.	Identify which object requires the least or most force to make it move when given objects of three different masses (small, medium, large).	Recognize there is a difference in force to move a small object versus a large object.
	Points	**0-2**			
SC.8.1.1.D Ask questions about data to determine the factors that affect the strength of electrical and magnetic forces. Assessment about questions that require quantitative answers is limited to proportional reasoning and algebraic thinking.	Participate in investigations to describe factors that affect the attraction and/or repulsion of a magnetic or static electric force on an object across a distance.		Participate in a guided investigation to describe how the pull or push of a magnetic or static electric force can be affected by the strength of the magnet or charge, the type of charge (positive/negative), or the distance between an object and the source of the attraction or repulsion.	Use a model to identify that changing the distance between the source of a magnetic or static electric force and an object affects the strength of the pull or push.	Recognize that magnets pull on magnetic objects.

SC.8.1.1.E Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. Assessment does not include Newton's Law of Gravitation or Kepler's Laws.	Use evidence to support the claim that each object on Earth is affected by the force of gravity and that the strength of the force is dependent on the object's mass.		Use evidence to explain that each object on Earth is pulled toward the ground by the force of gravity and that the strength of the pull is dependent on the object's mass.	Identify which of two objects with different masses experiences a stronger pull from gravity.	Recognize that dropped objects fall down/toward the ground.
	Points	**0-2**			

Science – Grade 8 Physical Science

SC.8.2 Waves and Electromagnetic Radiation			**Access Points**		
Standard / Indicator	**Extension**				
SC.8.2.2 Gather, analyze, and communicate evidence of waves and electromagnetic radiation.			**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.2.2.A 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. Assessment does not include electromagnetic waves and is limited to standard repeating waves.	Use models to investigate the relationship between the amplitude of waves and the amount of energy in waves.		Use models to describe the relationship between the amplitude of waves and the energy of waves.	When given the amplitude of two or more waves, identify the wave that is the largest or has the most energy.	Recognize a wave.
	Points	**0-2**			
SC.8.2.2.B Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. Assessment is limited to qualitative applications pertaining to light and mechanical waves.	Participate in investigations to identify when sound or light waves are reflected, absorbed, or transmitted through different materials.		Participate in a guided investigation to identify whether sound or light waves are reflected, absorbed, or transmitted through different materials.	When given an object or material, identify whether a sound or light wave is transmitted through or reflected by the object or material.	Recognize when light or sound passes through a material.
	Points	**0-2**			

SC.8.2.2.C 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. Assessment does not include binary counting. Assessment does not include the specific mechanism of any given device.	Use evidence to support the claim that information can be sent from one place to another using digital or analog signals (waves).		Use evidence to explain that waves (analog or digital signals) can be used to send information across a distance.	Identify familiar forms of analog or digital communication used to send information across a distance.	Recognize a communication device.
	Points	**0-2**			

Science – Grade 8 Physical Science				
SC.8.4 Energy		**Access Points**		
Standard / Indicator	**Extension**			
SC.8.4.3 Gather, analyze, and communicate evidence of energy.		**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.4.3.A 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.	Use data to describe the relationships between kinetic (motion) energy and the mass and speed of an object.	Use data to describe that the speed and mass of a moving object affect the kinetic energy (motion) of the object.	Use data to identify that an object traveling at a greater speed will have more kinetic energy than an object with the same mass traveling at a slower speed. Use data to identify that an object with a greater mass will have more kinetic energy than an object with less mass that is traveling at the same speed.	Recognize that an object with greater mass or greater speed has more kinetic energy.
	Points **0-2**			

SC.8.4.3.B Develop a model to describe that when the arrangement of objects interacting at a distance changes, then different amounts of potential energy are stored in the system. Assessment is limited to two objects and electric, magnetic, and gravitational interactions.	Use data to describe the relationship between potential (stored) energy and the height of an object.		Use data to describe that the amount of potential (stored) energy in a stationary object increases with increasing height and decreases with decreasing height.	Use data to identify which object has more or less potential energy based on its distance from the bottom of a surface.	Recognize that an object has greater potential energy at a greater height.
	Points	**0-2**			

Science – Grade 8 Life Sciences				
SC.8.9 Heredity: Inheritance and Variation of Traits		**Access Points**		
Standard / Indicator	**Extension**			
SC.8.9.4 Gather, analyze, and communicate evidence of the inheritance and variation of traits.		**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.9.4.A Develop and use a model to describe why structural changes to genes (mutations) may result in harmful, beneficial, or neutral effects to structure and function of organisms. Assessment does not include specific changes at the molecular level, mechanisms for protein synthesis, or specific types of mutations.	Use models to observe that changes in the physical traits of organisms of the same species (caused by genetic mutation) may or may not affect their ability to survive.	Use models to identify changes in the physical traits of individuals of the same species and describe how changes may affect an organism's ability to survive or not.	Using a model of a typical organism and a changed organism of the same species; identify the physical trait that changed or whether the change is helpful or harmful.	Recognize the changed organism when given a model of a typical organism and a changed organism of the same species.
	Points **0-2**			
SC.8.9.4.B Gather and synthesize information about technologies that have changed the way humans influence inheritance of desired traits in organisms.	Use information to describe ways that humans have influenced the physical traits of plants and animals.	Describe physical traits that may be desirable or undesirable and identify a way humans select that trait for future generations of offspring.	Identify which individual would most likely produce offspring with a given desired trait.	Recognize an organism that has a trait that fits a given need.
	Points **0-2**			

Science – Grade 8 Life Sciences					
SC.8.10 Natural Selection and Adaptations			**Access Points**		
Standard / Indicator	**Extension**				
SC.8.10.5 Gather, analyze, and communicate evidence of natural selection and adaptations.			**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.10.5.A Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. Assessment does not include the names of individual species or geological eras in the fossil record.	Use data and evidence in Earth's fossil record (fossils found in rock or ice layers) to investigate changes in Earth's environments and life forms over time.		Use evidence of the fossil record (types of organisms) to identify that different environments and organisms existed at a given location over time.	Identify one or more fossils that would be found in an environment, or given one or more fossils, identify an environment in which the fossil or fossils could be found.	Recognize a fossil in its environment.
	Points	**0-2**			
SC.8.10.5.B Apply scientific ideas to construct an explanation for the anatomical similarities and differences among and between modern and fossil organisms to infer evolutionary relationships.	Use models and information about the physical traits of fossilized organisms and modern organisms to investigate the evolutionary relationships between organisms.		Describe one or more similarities or differences that show modern organisms are related to or unrelated to fossilized organisms.	Identify a physical trait of a modern organism that is most similar to a fossilized organism.	Recognize an organism that could have formed a given fossil.
	Points	**0-2**			

SC.8.10.5.C Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.	Use evidence to identify physical traits of organisms that help them survive and reproduce in a specific environment.		Identify one or more physical traits of an organism or organisms that will be helpful or harmful to the survival and/or reproduction of the organism or organisms in a specific environment.	Identify one or more physical traits that would help organisms survive and reproduce in a specific environment.	Recognize the organism that would best survive in a specific environment.
	Points	**0-2**			
SC.8.10.5.D Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. Assessment does not include Hardy Weinberg calculations.	Use data to explain that individual organisms with a beneficial physical trait are better able to survive and reproduce than individuals without the trait, which increases the number of individuals with that trait.		Use data to determine whether the number of individuals with or without a specific physical trait will increase or decrease within a population over time.	Identify that the number of individuals with a beneficial physical trait will increase within a population over time.	Recognize whether a given organism has a specific physical trait.
	Points	**0-2**			

Science – Grade 8 Earth and Space Sciences					
SC.8.11 Space Systems			**Access Points**		
Standard / Indicator	**Extension**				
SC.8.11.6 Gather, analyze, and communicate evidence of the interactions among bodies in space.			**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.11.6.A 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.	Use models of the Earth-sun-moon system to investigate cycles that cause observable monthly lunar patterns and yearly seasonal patterns on Earth.		Use models of the Earth-sun-moon system to observe and describe the cycles that cause the illumination of the moon (new, quarter, half, full), and the seasons (winter, spring, summer, autumn) on Earth.	Identify moon phases (new, half, full) or seasons (winter, spring, summer, autumn) and recognize that they occur in a recurring pattern.	Recognize the moon when it is lit by the sun, or recognize summer and winter as recurring seasons.
	Points	**0-2**			
SC.8.11.6.B Develop and use a model to describe the role of gravity in the motions within the galaxy and the solar system. Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of planets as viewed from Earth.	Use simple models of the solar system to investigate the motion of the moon around Earth and Earth around the sun due to the pull of gravity.		Use models of the sun, Earth, and the moon to describe that these bodies are kept in predictable orbits by the pull of gravity.	Use a model to identify the sun, Earth, and the moon as parts of the solar system or that they orbit together.	Recognize the sun or Earth as parts of the solar system.
	Points	**0-2**			
SC.8.11.6.C Analyze and interpret data to determine scale properties of objects in the solar system. Assessment does not include recalling facts about properties of the planets and other solar system bodies.	Use scaled models to compare and describe the size of the sun, planets, and moons in the solar system.		Use scaled models to compare and describe the sizes of the sun, Earth, and the moon.	Use scaled objects or pictures representing the sun, Earth, and the moon to identify which is largest or smallest.	Recognize which of two objects in the Earth-sun-moon system is larger.
	Points	**0-2**			

Science – Grade 8 Earth and Space Sciences					
SC.8.14 History of Earth			**Access Points**		
Standard / Indicator	**Extension**				
SC.8.14.7 Gather, analyze, and communicate evidence to explain Earth's history.			**A** DOK 2_4	**B** DOK 1_3	**C** DOK 1_2
SC.8.14.7.A Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. Assessment does not include recalling the names of specific periods or epochs and events within them.	Participate in making or using models of Earth's rock strata to explain that rock layers are very old and that their age is relative to their position within rock strata.		Participate in making or using models to explain that Earth's surface is made of rock layers that are very old and that older rock layers are found below younger rock layers.	Identify which layers are the oldest and the youngest when using a model of rock strata with more than two layers.	Recognize the bottom layer as older when using a model of rock strata with two distinct layers.
	Points	**0-2**			

Table 3.2 NSCAS-AAS Points* per Content Domain

Grade	Number of Points	Physical Science Points	Life Science Points	Earth and Space Sciences Points
5	25	6-10	6-10	8-12
8	25	8-12	8-12	6-10
HS	28	8-14	10-14	8-14