	**Matter and Energy**	**Kindergarten**
Science / Engineering Practices	Content Standards (2017) (2021)	Recurring Themes and Concepts
	K.5 Matter and Energy. The student knows that objects have properties and patterns. K.6 Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified.	
	K.5A observe and record properties of objects, including bigger or smaller, heavier or lighter, shape, color, and texture. K.6A identify and record observable physical properties of objects, including shape, color, texture, and material, and generate ways to classify objects	
	K.5B observe, record, and discuss how materials can be changed by heating or cooling. (deleted)	

	**Matter and Energy**	**Grade 1**
Science / Engineering Practices	Content Standards (2017) (2021)	Recurring Themes and Concepts
	1.5 Matter and Energy. The student knows that objects have properties and patterns. 1.6 Matter and its properties. The student knows that objects have physical properties that determine how they are described and classified.	
	1.5A classify objects by observable properties such as larger and smaller, heavier and lighter, shape, color, and texture. 1.6A classify objects by observable physical properties, including, shape, color and texture, and attributes such as larger and smaller and heavier and lighter.	
	1.5B predict and identify changes in materials caused by heating and cooling. 1.6B explain and predict changes in materials caused by heating and cooling	
	1.5C classify objects by the materials from which they are made. 1.6C demonstrate and explain that a whole object is a system made of organized parts such as a toy that can be taken apart and put back together	

	**Matter and Energy**	**Grade 2**
Science / Engineering Practices	Content Standards	Recurring Themes and Concepts
	2.5 Matter and Energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed and used.	
	2.5A classify matter by physical properties, including relative temperature, texture, flexibility, and whether material is solid or liquid.	
	2.5B compare changes in materials caused by heating and cooling	
	2.5C demonstrate that things can be done to materials such as cutting, folding, sanding, and melting.	
	2.5D combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.	

	**Matter and Energy**	**Grade 3**
Science / Engineering Practices	Content Standards (2021)	Recurring Themes and Concepts
	Matter and Energy. The student knows that matter has measurable physical properties that determine how matter is identified, changed, and used. The student is expected to:	
	3.6A measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float in water	
	3.6B describe and classify samples of matter as solids, liquids, and gases and demonstrate that solids have a definite shape and that liquids and gases take the shape of their container.	
	3.6C predict, observe, and record changes in the state of matter caused by heating or cooling in a variety of substances such as ice becoming liquid water, condensation forming on the outside of a glass, or liquid water being heated to the point of becoming water vapor (gas).	
	3.6D demonstrate that materials can be combined based on their physical properties to create or modify objects such as building a tower or adding clay to sand to make a stronger brick and justify the selection of materials based on their physical properties.	

	**Matter and Energy**	**Grade 4**
Science / Engineering Practices	Content Standards (2021)	Recurring Themes and Concepts
	4.6 Matter and Energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used.	
	4.6A classify and describe matter using observable physical properties including temperature, mass,magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas)	
	4.6B investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids.	
	4.6C demonstrate that matter is conserved when mixtures such as soil and water or oil and water or formed	

	**Matter and Energy**	**Grade 5**
Science Engineering Practices	Content Standards (2021)	Recurring Themes and Concepts
	5.6 Matter and energy. The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used.	
	5.6A compare and contrast matter based on measurable, testable, or observable physical properties, including mass, magnetism, relative density (sinking and floating using water as a reference point), physical state (solid, liquid, and gas),volume, solubility in water, and the ability to conduct or insulate thermal energy or electric energy	
	5.6B demonstrate and explain that some mixtures maintain physical properties of their substances such as iron filings and sand or sand and water.	
	5.6C compare the properties of substances before and after they are combined into a solution and demonstrate that matter is conserved in solutions.	
	5.6D illustrate how matter is made up of particles that are too small to be seen such as air in a balloon	

	**Matter and Energy**	**Grade 6**
Science Engineering Practices	Content Standards(2021)	Recurring Themes and Concepts
	6.6 Matter and Energy. The student knows that matter is made of atoms, can be classified according to its properties, and can undergo changes.	
	6.6A compare solids, liquids, and gases in terms of their structure, shape, volume, and kinetic energy of atoms and molecules.	
	6.6B investigate the physical properties of matter to distinguish between pure substances, homogeneous mixtures (solutions), and heterogeneous mixtures	
	6.6C identify elements on the periodic table as metals, nonmetals, metalloids, and rare Earth elements based on their physical properties and importance to modern life	
	6.6D compare the density of substances relative to various fluids	
	6.6E identify the formation of a new substance by using the evidence of a possible chemical change, including production of a gas, change in thermal energy, production of a precipitate, and color change	

	**Matter and Energy**	**Grade 7**
Science Engineering Practices	Content Standards (2021)	Recurring Themes and Concepts
	7.6 Matter and Energy. The student distinguishes between elements and compounds, classifies changes in matter, and understands the properties of solutions.	
	7.6A compare and contrast elements and compounds in terms of atoms and molecules, chemical symbols, and chemical formulas	
	7.6B use the periodic table to identify the atoms and the number of each kind within a chemical formula	
	7.6C distinguish between physical and chemical changes in matter	
	7.6D describe aqueous solutions in terms of solute and solvent, concentration, and dilution	
	7.6E investigate and model how temperature, surface area, and agitation affect the rate of dissolution of solid solutes in aqueous solutions	

	**Matter and Energy**	**Grade 8**
Science Engineering Practices	Content Standards (2021)	Recurring Themes and Concepts
	8.6 Matter and Energy. The student understands that matter can be classified according to its properties and matter is conserved in chemical changes that occur within closed systems.	
	8.6A explain by modeling how matter is classified as elements, compounds, homogeneous mixtures, or heterogeneous mixtures	
	8.6B use the periodic table to identify the atoms involved in chemical reactions	
	8.6C describe the properties of cohesion, adhesion, and surface tension in water and relate to observable phenomena such as formation of droplets, transport in plants, and insects walking on water	
	8.6D compare and contrast the properties of acids and bases, including pH relative to water	
	8.6E investigate how mass is conserved in chemical reactions and relate conservation of mass to the rearrangement of atoms using chemical equations, including photosynthesis	

	**Cell Structure and Function**	**9 - Biology**
Science Engineering Practices	Content Standards	Recurring Themes and Concepts
	B.4 The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells.	
	B.4A compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity.	
	B.4C compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza.	
	B.9A compare the function of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids	
	B.10C analyze the levels of organization in biological systems and relate the levels to each other and to the whole system	

	**Properties of Matter**	**10 - Chemistry**
Science / Engineering Practices	Content Standards	Recurring Themes and Concepts
	C.4 The student knows the characteristics of matter and can analyze the relationships between chemical and physical changes and properties.	
	C.4A differentiate between physical and chemical changes and properties.	
	C.4B identify extensive properties such as mass and volume and intensive properties such as density and melting point.	
	C.4C compare solids, liquids, and gases in terms of compressibility, structure, shape and volume.	
	C.4D classify matter as pure substances or mixtures through investigation of their properties.	

	**Laws of Motion**	**11 - Physics**
Science / Engineering Practices	Content Standards	Recurring Themes and Concepts
	P.4 The student knows and applies the laws governing motion in a variety of situations.	
	P.4A generate and interpret graphs and charts describing different types of motion, including investigations using real-time technology such as motion detectors or photogates.	
	P.4B describe and analyze motion in one dimension using equations and graphical vector addition with the concepts of distance, displacement, speed, average velocity, instantaneous velocity, frames of reference, and acceleration	

	**Evidence collection/Integrity of Crime Scene**	**12 - Forensics**
Science / Engineering Practices	Content Standards	Recurring Themes and Concepts
	FS 6. The student recognizes the procedures of evidence collection while maintaining the integrity of a crime scene.	
	FS 6.C conduct a systematic search of a simulated crime scene for physical evidence following crime scene search patterns such as spiral, line, grid and strip.	
	FS6.F develop a crime scene sketch using coordinates/measurements from fixed points	
	FS6.H demonstrate proper techniques for collecting, packaging, and preserving physical evidence found at a crime scene.	

	**Aquatic Environments (Intro)**	**11 - Aquatics**
Science / Engineering Practices	Content Standards	Recurring Themes and Concepts
	AQ 4 Science concepts. Students know that aquatic environments are the product of Earth systems interactions	
	AQ 4A identify key features and characteristics of atmospheric, geological, hydrological, and biological systems as they relate to aquatic environments	
	AQ 4B apply systems thinking to the examination of aquatic environments, including positive and negative feedback cycles	
	AQ 4C collect and evaluate global environmental data using technology such as maps, visualizations, satellite data, GPS, GIS, weather balloons, buoys, etc	

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Science / Engineering Practices	Content Standards	Recurring Themes and Concepts