

K – 5 Science Crosswalk

The intent of this crosswalk is to enhance understanding of the changes to the science expectations. The column on the left contains the newly adopted science expectations (2016). The column on the right contains the previous expectations (GLEs) which show some alignment. This document is intended to assist teachers with some of the issues associated with implementing new science standards: planning, pacing, professional development and curricular materials.

The crosswalk is separated by grade (K-5). Within each grade there are four strands: Physical Science (PS), Life Science (LS), Earth and Space Science (ESS) and Engineering, Technology and Application of Science (ETS). Within each strand there are Core Ideas: PS1 - *Matter and Its Interactions* or PS2 - *Motion and Stability: Forces and Interactions*. The Core Ideas are broken down to Component Ideas. Each Component Idea may have one or more performance expectations.

“A Framework for K-12 Science Educations: Practices, Concepts and Core Ideas” explains a “3 dimensional” learning model in which the instruction of phenomena are accompanied by specific lists of practices and concepts. Review chapters 3 and 4 as these chapters illustrate the additional dimensions of science education. This book or individual chapters can be downloaded for free from the National Academies Press website (<http://www.nap.edu/>).

Assessments for the new expectations are currently scheduled for the 2018 – 2019 school year.

Changes to the coding of science expectations:

3.PS1.A
↑ ↑ ↑ ↑
1 2 3 4

- 1. Grade: K, 1, 2, 3, 4, 5**
- 2. Strand: Physical Science (PS), Life Science (LS), Earth and Space Science (ESS), Engineering Technology and the Application of Science (ETS)**
- 3. Core Idea**
- 4. Component Idea**
- 5. Expectation: Some component ideas have more than one expectation.**

2.PS1.A.2 ← **5**

Missouri Learning Standards: Grade-Level Expectations (Adopted April 2016 for implementation in the 2016 – 2017 school year, assessed beginning in the 2018 – 2019 school year.) Kindergarten		Missouri Learning Standards (Revised edition 2008)	
	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
K.PS1.A	Make qualitative observations of the physical properties of objects (i.e., size, shape, color, mass).	ME.1.A.K.a	Describe physical properties of objects (i.e., size, shape, color, mass) by using the senses, simple tools (e.g., magnifiers, equal arm balances), and/or nonstandard measures (e.g., bigger/smaller; more/less)
		IN. 1.B.K.a	Make qualitative observations using the five senses
		ME.1.A.K.b	Identify materials (e.g., cloth, paper, wood, rock, metal) that make up an object and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility)
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
K.PS2.A.1	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.]	ME.2.A.K.a	Identify ways (push, pull) to cause some objects to move by touching them
		FM.1.A.1.b	Describe an object’s motion as straight, circular, vibrating (back and forth), zigzag, stopping, starting, or falling
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.K.b	Conduct a simple investigation (fair test) to answer a question
		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.K.c	Compare explanations with prior knowledge
K.PS2.A.2	Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop).	ME.2.A.1.a	Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop)

		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.D.K.a	Communicate observations using words, pictures, and numbers
	PS3 - Energy		
	A. Definitions of Energy		
K.PS3.A	Make observations to determine the effect of sunlight on Earth's surface.		n/a
		IN. 1.B.K.a	Make qualitative observations using the five senses
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
	B. Conservation of Energy and Energy Transfer		
K.PS3.B	With prompting and support, use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area		n/a
		IN.1.A.K.b	Conduct a simple investigation (fair test) to answer a question
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
	LS1 - From Molecules to Organisms: Structure and Processes		
	C. Organization for Matter and Energy Flow in Organisms		
K.LS1.C	Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]	EC.1.A.1.a	Identify ways man depends on plants and animals for food, clothing, and shelter

		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN. 1.B.K.a	Make qualitative observations using the five senses
	ESS1 - Earth's Place in the Universe		
	B. Earth and the Solar System		
K.ESS1.B	Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]	UN.2.C.K.a	Observe and describe the characteristics of the four seasons as they cycle through the year (summer, fall, winter, spring)
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN. 1.B.K.a	Make qualitative observations using the five senses
		IN.1.C.K.a	Use observations as support for reasonable explanations
	ESS2 - Earth's Systems		
	D. Weather and Climate		
K.ESS2.D	Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.]	ES.2.F.K.a	Observe and describe daily weather: precipitation (e.g., snow, rain, sleet, fog), wind (i.e., light breezes to strong wind), cloud cover, temperature
		ES.2.F.K.b	Observe and describe the general weather conditions that occur during each season
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN. 1.B.K.a	Make qualitative observations using the five senses

		IN.1.C.K.a	Use observations as support for reasonable explanations
	E. Biogeology		
K.ESS2.E	With prompting and support, construct an argument using evidence for how plants and animals (including but not limited to humans) can change the environment to meet their needs.	LO.3.D.K.a	Observe and compare the structures and behaviors of different kinds of plants and animals
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.K.c	Compare explanations with prior knowledge
		IN.1.D.K.a	Communicate observations using words, pictures, and numbers
	ESS3 - Earth and Human Activity		
	A. Natural Resources		
K.ESS.3.A	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.	LO.1.A.1.a	Identify the basic needs of most animals (i.e., air, water, food, shelter)
		LO.1.A.1.b	Identify the basic needs of most plants (i.e., air, water, light)
		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.D.K.a	Communicate observations using words, pictures, and numbers
	B. Natural Hazards		
K.ESS3.B	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	ES.3.A.2.a	Observe and describe ways humans use Earth's materials (e.g., soil, rocks) in a daily life
		IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.D.K.a	Communicate observations using words, pictures, and numbers

	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
K.ETS1.A	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	IN.1.A.K.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.B.K.a	Make qualitative observations using the five senses
		IN.1.B.K.b	Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)
		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.K.c	Compare explanations with prior knowledge
		ST.1.A.K.a	Observe and identify that some objects occur in nature (natural objects); others have been designed and made by people
		ST.3.A.K.a	Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)
	B. Developing Possible Solutions		
K.ETS1.B	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	IN.1.D.K.a	Communicate observations using words, pictures, and numbers
		IN.1.B.K.a	Make qualitative observations using the five senses
	C. Optimizing the Solution Process		
K.ETS1.C	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	IN.1.B.K.d	Compare amounts/measurements
		IN.1.C.K.a	Use observations as support for reasonable explanations
		IN.1.C.K.b	Use observations to describe relationships and patterns and to make predictions to be tested

		IN.1.C.K.c	Compare explanations with prior knowledge
		IN.1.D.K.a	Communicate observations using words, pictures, and numbers

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	Physical Science		
	PS3 - Energy		
	A. Definitions of Energy		
1.PS3.A	Identify the source of energy that causes an increase in the temperature of an object (e.g., Sun, stove, flame, light bulb).	ME.2.A.1.a	Identify the source of energy that causes an increase in the temperature of an object (e.g., Sun, stove, flame, light bulb)
		IN.1.B.1.a	Make qualitative observations using the five senses
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
1.PS4.A	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. [Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]	ME.2.A.K.a	Identify the sounds and their source of vibrations in everyday life (e.g., alarms, car horns, animals, machines, musical instruments)
		ME.2.A.2.b	Describe different ways to change the pitch of a sound (i.e., changes in size, such as length or thickness, and in tightness/tension of the source)
		ME.2.A.2.d	Describe how to change the loudness of a sound (i.e., increase or decrease the force causing vibrations)
		IN.1.A.1.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.1.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge

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		IN.1.D.1.a	Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, pictograph), writings
	C. Information Technologies and Instrumentation		
1.PS4.C	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. [Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string “telephones,” and a pattern of drum beats.]		
		ME.2.A.2.b	Describe different ways to change the pitch of a sound (i.e., changes in size, such as length or thickness, and in tightness/tension of the source)
		ME.2.A.2.d	Describe how to change the loudness of a sound (i.e., increase or decrease the force causing vibrations)
		IN.1.A.1.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.1.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
		IN.1.D.1.a	Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, pictograph), writings
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		
1.LS1.A	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them	LO.1.A.1.a	Identify the basic needs of most animals (i.e., air, water, food, shelter)

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	survive, grow, and meet their needs. [Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]		
		LO.1.A.1b	Identify the basic needs of most plants (i.e., air, water, light)
		LO.1.D.1.a	Identify and compare the physical structures of a variety of plants (e.g., stem, leaves, flowers, seeds, roots)
		LO.1.D.1.b	Identify and compare the physical structures of a variety of animals (e.g., sensory organs, beaks, appendages, body covering) (Do NOT assess terms: sensory organs, appendages)
		LO.1.D.1.c	Identify the relationships between the physical structures of plants and the function of those structures (e.g., absorption of water, absorption of light energy, support, reproduction)
		LO.1.D.1.d	Identify the relationships between the physical structures of animals and the function of those structures (e.g., taking in water, support, movement, obtaining food, reproduction)
		IN.1.A.1.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.1.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
		IN.1.D.1.a	Communicate simple procedures and results of investigations and explanations through: oral presentations, drawings and maps, data tables, graphs (bar, pictograph), writings

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	LS3 - Heredity: Inheritance and Variation of Traits		
	A. Inheritance of Traits		
1.LS3.A	Make observations to construct an evidence based account that young plants and animals are like, but not exactly like, their parents. [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.]	LO.3.D.2.a	Identify and relate the similarities and differences among animal parents and their offspring or multiple offspring
		LO.3.D.3.a	Identify and relate the similarities and differences between plants and their offspring (i.e., seedlings)
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
	ESS1 - Earth's Place in the Universe		
	A. The Universe and its Stars		
1.ESS1.A.1	Describe the presence of the Sun, Moon, and stars in the sky over time.	UN.1.A.k.a	Observe and describe the presence of the Sun, Moon, and stars in the sky
1.ESS1.A.2	Use observations of the sun, moon, and stars to describe patterns that can be predicted. [Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.]	UN.2.A.K.a	Describe the Sun as only being seen in the daytime and appears to move across the sky from morning to night
		UN.2.B.K.a	Observe the Moon can be seen sometimes at night and sometimes during the daytime
		UN.2.B.K.b	Observe that the Moon appears to change shape over the course of a month
		UN.2.B.3.b	Describe the pattern of change that can be observed in the Moon's appearance relative to time of day and month as it occurs over several months (Do NOT assess moon phases)

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		UN.3.C.3.a	Observe and identify there is a day/night cycle every 24 hours
		IN.1.B.1.a	Make qualitative observations using the five senses
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
	ESS2 - Earth's Systems		
	D. Weather and Climate		
1.ESS2.D	Identify patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation).	ES.2.F.K.a	Observe and describe daily weather: precipitation (e.g., snow, rain, sleet, fog), wind (i.e., light breezes to strong wind), cloud cover, temperature
		ES.2.F.K.b	Observe and describe the general weather conditions that occur during each season
		ES.2.F.1.a	Observe, measure, record weather data throughout the year (i.e., cloud cover, temperature, precipitation, wind speed) by using thermometers, rain gauges, wind socks
		ES.2.F.1.c	Compare weather data observed at different times throughout the year (e.g., hot vs. cold, cloudy vs. clear, types of precipitation, windy vs. calm)
		ES.2.F.1.d	Identify patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation)
		IN.1.B.1.a	Make qualitative observations using the five senses
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.B.1.b	Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)

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		IN.1.B.1.d	Compare amounts/measurements
	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
1.ETS1.A	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	IN.1.A.1.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.B.1.a	Make qualitative observations using the five senses
		IN.1.B.1.b	Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
		ST.1.A.1.a	Observe and identify that some objects occur in nature (natural objects); others have been designed and made by people
		ST.3.A.1.a	Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)
	B. Developing Possible Solutions		
1.ETS1.B	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	IN.1.D.1.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps

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			⇒ data tables ⇒ graphs (bar, pictograph) writings
		IN.1.B.1.a	Make qualitative observations using the five senses
	C. Optimizing the Solution Process		
1.ETS1.C	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	IN.1.B.1.d	Compare amounts/measurements
		IN.1.C.1.a	Use observations as support for reasonable explanations
		IN.1.C.1.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.1.c	Compare explanations with prior knowledge
		IN.1.D.1.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, pictograph) writings

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	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
2.PS1.A.1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]	ME.1.A.2.a	Describe and compare the physical properties of objects by using simple tools (i.e., thermometer, magnifier, centimeter ruler, balance, magnet)
		ME.1.A.K.b	Identify materials (e.g., cloth, paper, wood, rock, metal) that make up an object and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility)
		ME.1.A.K.c	Sort objects based on observable physical properties (e.g., size, material, color, shape, mass)
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.2.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.B.2.a	Make qualitative observations using the five senses
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through: oral presentations drawings and maps data tables graphs (bar, pictograph) writings
2.PS1.A.2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose. [Clarification Statement: Examples	ME.1.A.2.a	Describe and compare the physical properties of objects by using simple tools (i.e., thermometer, magnifier, centimeter ruler, balance, magnet)

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	of properties could include, strength, flexibility, hardness, texture, and absorbency.]		
		ME.1.A.K.b	Identify materials (e.g., cloth, paper, wood, rock, metal) that make up an object and some of the physical properties of the materials (e.g., color, texture, shiny/dull, odor, sound, taste, flexibility)
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.2.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.B.2.a	Make qualitative observations using the five senses
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through: oral presentations drawings and maps data tables graphs (bar, pictograph) writings
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
2.PS2.A	Analyze data to determine how the motion of an object changed by an applied force or the mass of an object.	FM.2.A.1.a	Identify the force (i.e., push or pull) required to do work (move an object)
		FM.2.D.1.a	Describe ways to change the motion of an object (i.e., how to cause an object to go slower, go faster, go farther, change direction, stop)
		FM.2.D.2.a	Describe the direction and amount of force (i.e., direction of push or pull, strong/weak push or pull) needed to change an object's motion (i.e., faster/slower, change in direction)

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		FM.2.D.2.b	Describe and compare the distances traveled by heavier/lighter objects after applying the same amount of force (i.e., push or pull) in the same direction
		FM.2.D.2.c	Describe and compare the distances traveled by objects with the same mass after applying different amounts of force (i.e., push or pull) in the same direction
		IN.1.B.2.d	Compare amounts/measurements
	PS4 - Waves and Their Applications in Technologies for Information Transfer		
	A. Wave Properties		
2.PS4.A	Plan and conduct investigations to provide evidence that changes in vibration create change in sound.	ME.2.A.d.	Describe how to change the loudness of a sound (i.e., increase or decrease the force causing vibrations)
		ME.2.A.b	Describe different ways to change the pitch of a sound (i.e., changes in size, such as length or thickness, and in tightness/tension of the source)
		ST.1.A.2.a	Design and construct a musical instrument using materials (e.g., cardboard, wood, plastic, metal) and/or existing objects (e.g., toy wheels, gears, boxes, sticks) that can be used to perform a task
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.A.2.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.B.2.a	Make qualitative observations using the five senses
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through:

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			oral presentations drawings and maps data tables graphs (bar, pictograph) writings
	LS2 - Ecosystems: Interactions, Energy, and Dynamics		
	A. Interdependent Relationships in Ecosystems		
2.LS2.A.1	Plan and conduct investigations on the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water).	LO.1.A.1.c	Predict and investigate the growth of plants when growing conditions are altered (e.g., dark vs. light, water vs. no water)
		IN.1.A.2.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.B.2.a	Make qualitative observations using the five senses
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through: oral presentations drawings and maps data tables graphs (bar, pictograph) writings
2.LS2.A.2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	EC.1.A.4.a	Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism)
		IN.1.A.2.b	Plan and conduct a simple investigation (fair test) to answer a question
		IN.1.B.2.a	Make qualitative observations using the five senses

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		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C..2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
ESS1 - Earth's Place in the Universe			
C. The History of Planet Earth			
2.ESS1.C	Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.]	ES.2.A.2.a	Observe and identify examples of slow changes in the Earth's surface and surface materials (e.g., rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind
		ES.2.A.4.c	Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water
		ES.2.A.4.d	Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C..2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
ESS2 - Earth's Systems			
A. Earth Materials and Systems			
2.ESS2.A	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. [Clarification Statement: Examples of solutions could include different designs of dikes and		N/A

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	windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.]		
		ES.2.A.2.a	Observe and identify examples of slow changes in the Earth’s surface and surface materials (e.g., rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind
		ES.2.A.4.c	Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth’s surface materials and/or landforms/ bodies of water
		ES.2.A.4.d	Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth’s surface materials and/or landforms/ bodies of water
		ST.3.A.2.a	Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
B. Plate Tectonics and Large-Scale Systems			
2.ESS2.B	Develop a model to represent the shapes and kinds of land and bodies of water in an area.		
		ES.2.A.4.c	Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth’s surface materials and/or landforms/ bodies of water
		ES.2.A.4.d	Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth’s surface materials and/or landforms/ bodies of water

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		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
	C. The Role of Water in Earth's Surface Processes		
2.ESS2.C	Obtain information to identify where water is found on Earth and that it can be solid or liquid.		N/A
		IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
2.ETS1.A	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	IN.1.A.2.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.B.2.a	Make qualitative observations using the five senses
		IN.1.B.2.b	Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		ST.1.A.2.a	Observe and identify that some objects occur in nature (natural objects); others have been designed and made by people
		ST.3.A.2.a	Identify a question that was asked, or could be asked, or a problem

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			that needed to be solved when given a brief scenario (fiction or nonfiction of individuals solving everyday problems or learning through discovery)
	B. Developing Possible Solutions		
2.ETS1.B	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, pictograph) writings
		IN.1.B.2.a	Make qualitative observations using the five senses
	C. Optimizing the Solution Process		
2.ETS1.C	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	IN.1.B.2.d	Compare amounts/measurements
		IN.1.C.2.a	Use observations as support for reasonable explanations
		IN.1.C.2.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.2.c	Compare explanations with prior knowledge
		IN.1.D.2.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, pictograph) writings

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	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
3.PS1.A	Predict and investigate that water can change from a liquid to a solid (freeze), and back again (melt), or from a liquid to a gas (evaporation), and back again (condensation) as the result of temperature changes.	ME.1.D.3.e	Investigate and observe that water can change from a liquid to a solid (freeze), and back again to a liquid (melt), as the result of temperature changes
		ME.1.D.3.a	Compare the observable physical properties of solids, liquids, or gases (air) (i.e., visible vs. invisible, changes in shape, changes in the amount of space occupied)

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		ME.1.D.3.c	Observe and identify that water evaporates (liquid water changes into a gas as it moves into the air)
		ME.1.D.3.f	Describe the changes in the physical properties of water (i.e., shape, volume) when frozen or melted
		ME.1.D.5.b	Predict the effect of heat (thermal energy) on the physical properties of water as it changes to and from a solid, liquid, or gas (i.e., freezes/melts, evaporates/condenses/boils)
		IN.1.C.3.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.B.3.a	Make qualitative observations using the five senses
		IN.1.A.3.a	Pose questions about objects, materials, organisms, and events in the environment
		IN.1.B.3.b	Plan and conduct a fair test to answer a question
		IN.1.C.3.c	Evaluate the reasonableness of an explanation
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
PS1 - Matter and Its Interactions			
B. Chemical Reactions			
3.PS1.B	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.	ME.1.D.3.g	Predict and investigate the effect of heat (thermal energy) (i.e., change in temperature, melting, evaporation) on objects and materials
		IN.1.C.3.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.3.c	Evaluate the reasonableness of an explanation
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
PS2 - Motion and Stability: Forces and Interactions			

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	B. Types of Interaction		
3.PS2.B	Plan and conduct investigations to determine the cause and effect relationship of electric or magnetic interactions between two objects not in contact with each other. [Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.]	FM.2.A.2.a	Identify magnets attract and repel each other and certain materials
		FM2.A.2.b	Describe magnetism as a force that can push or pull other objects without touching them
		IN.1.A.3.a	Pose questions about objects, materials, organisms and events in the environment
		IN.1.B.3.a	Make qualitative observations using the five senses
		IN.1.B.3.b	Make observations using simple tools and equipment (e.g., magnifiers/hand lenses, magnets, equal arm balances, thermometers)
		IN.1.C.3.a	Use observations as support for reasonable explanations
		IN.1.C.3.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.3.c	Compare explanations with prior knowledge
	LS1 - From Molecules to Organisms: Structure and Processes		
	A. Structure and Function		

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	LS3 - Heredity: Inheritance and Variation of Traits		
	A. Inheritance of Traits		
3.LS3.A	Construct scientific arguments to support claims that some characteristics of organisms are inherited from parents and some are influenced by the environment. [Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.]	LO.1.B.3.a	Distinguish between plants and animals based on observable structures and behaviors
		LO.3.D.3.a	Identify and relate the similarities and differences between plants and their offspring (i.e., seedlings)
		LO.3.D.2.a	Identify and relate the similarities and differences among animal parents and their offspring or multiple offspring
		LO.3.C.4.a	Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves)
		LO.3.C.4.b	Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages)
		LO.3.C.4.c	Identify internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation)
		LO.3.C.4.d	Predict which plant or animal will be able to survive in a specific environment based on its special structures or behaviors.
		IN.1.B.3.a	Make qualitative observations using the five senses
		IN.1.C.3.a	Use observations as support for reasonable explanations
		IN.1.C.3.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.3.c	Compare explanations with prior knowledge
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
	B. Variation of Traits		

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3.LS3.B	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and finding mates. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]	LO.3.C.4.a	Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves)
		LO.3.C.4.b	Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages)
		IN.1.B.3.a	Make qualitative observations using the five senses
		IN.1.C.3.a	Use observations as support for reasonable explanations
		IN.1.C.3.b	Use observations to describe relationships and patterns and to make predictions to be tested
C. Adaptation			
3.LS3.C	Construct an argument with evidence that in a particular ecosystem some organisms -- based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]	EC.1.A.4.a	Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism)
		EC.3.C.4.d	Predict which plant or animal will be able to survive in a specific environment based on its special structures or behaviors.
		IN.1.C.3.a	Use observations as support for reasonable explanations
		IN.1.C.3.b	Use observations to describe relationships and patterns and to make predictions to be tested
D. Biodiversity and Humans			
3.LS3.D	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.	N/A	

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	[Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]		
		IN.1.B.3.a	Make qualitative observations using the five senses
		IN.1.C.3.a	Use observations as support for reasonable explanations
		IN.1.C.3.b	Use observations to describe relationships and patterns and to make predictions to be tested
		IN.1.C.3.c	Compare explanations with prior knowledge
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
	ESS2 - Earth's Systems		
	D. Weather and Climate		
3.ESS2.D.1	Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average temperature, precipitation, and wind direction.]	ES.2.F.5.a	Identify and use appropriate tools (i.e., thermometer, anemometer, wind vane, rain gauge, satellite images, weather maps) to collect weather data (i.e., temperature, wind speed and direction, precipitation, cloud type and cover.)
		ES.2.F.5.b	Identify and summarize relationships between weather data (e.g., temperature and time of day, cloud cover and temperature, wind direction and temperature) collected over a period of time.
		ES.2.F.1.a	Observe, measure, record weather data throughout the year (i.e., cloud cover, temperature, precipitation, wind speed) by using thermometers, rain gauges, wind socks
		ES.2.F.1.c	Compare weather data observed at different times throughout the year (e.g., hot vs. cold, cloudy vs. clear, types of precipitation, windy vs. calm)
		ES.2.F.1.d	Identify patterns indicating relationships between observed weather data and weather phenomena (e.g., temperature and types of precipitation, clouds and amounts of precipitation)
		IN.1.D.3.a	Communicate simple procedures and results of investigations and explanations through:

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			⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings
		IN.1.C.3.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.3.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
		IN.1.B.3.d	Compare amounts/measurements
		IN.1.B.3.e	Judge whether measurements and computation of quantities are reasonable
3.ESS2.D.2	Obtain and combine information to describe climates in different regions of the world.	N/A	
	ESS3 - Earth and Human Activity		
	B. Natural Hazards		
3.ESS3.B	Make a claim about the merit of an existing design solution (e.g. levees, tornado shelters, sea walls, etc.) that reduces the impacts of a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]	N/A	
	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
3.ETS1.A	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	ST.1.A.3.a	Observe and identify that some objects or materials (e.g., Sun, fire, ice, snow) occur in nature (natural objects); others (e.g., stoves, refrigerators, bulbs, candles, lanterns) have been designed and made by people to solve human problems and enhance the quality of life (human-made objects)

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	B. Developing Possible Solutions		
3.ETS1.B	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	ST.3.A.3.a	Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of people working alone or in groups solving everyday problems or learning through discovery)
		ST.3.A.3.a	Work with a group to solve a problem, giving due credit to the ideas and contributions of each group member (Assess Locally)
	C. Optimizing the Solution Process		
3.EST1.C	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved	ST.3.A.3.a	Identify a question that was asked, or could be asked, or a problem that needed to be solved when given a brief scenario (fiction or nonfiction of people working alone or in groups solving everyday problems or learning through discovery)
		IN.1.A.3.a	Pose questions about objects, materials, organisms, and events in the environment
		IN.1.A.3.b	Plan and conduct a fair test to answer a question
		IN.1.B.3.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.3.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.3.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.3.c	Evaluate the reasonableness of an explanation
		IN.1.C.3.d	Analyze whether evidence supports proposed explanations
		IN.1.D.3.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings

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	Physical Science		
	PS2 - Motion and Stability: Forces and Interactions		
	A. Forces and Motion		
4.PS2.A.1	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	FM.2.D.4.c	Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object
		FM.2.D.2.a	Describe the direction and amount of force (i.e., direction of push or pull, strong/weak push or pull) needed to change an object's motion (i.e., faster/slower, change in direction)
4.PS2.A.2	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. [Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.]	FM.2.D.4.a	Observe that balanced forces do not affect an object's motion (need to clarify that balanced forces means no change in forces acting on an object)
		FM.2.D.4.b	Describe how unbalanced forces acting on an object changes its speed (faster/slower), direction of motion, or both (need to clarify that unbalanced forces means any change in forces acting on an object)
		FM.2.D.4.c	Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object
		IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses

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		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	B. Types of Interaction		
4.PS2.B.1	Plan and conduct a fair test to compare and contrast the forces (measured by a spring scale in Newtons) required to overcome friction when an object moves over different surfaces (i.e., rough/smooth).	FM.2.A.4.c	Observe and identify friction as a force that slows down or stops a moving object that is touching another object or surface
		FM.2.A.5.a	Identify the forces acting on a load and use a spring scale to measure the weight (resistance force) of the load
		FM.2.D.5.a	Describe how friction affects the amount of force needed to do work over different surfaces or through different media
		FM.2.A.3.c	Measure (using non-standard units) and compare the force (i.e., push or pull) required to overcome friction and move an object over different surfaces (i.e., rough, smooth)
		IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question

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		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
4.PS2.B.2	Predict how changes in either the amount of force applied to an object or the mass of the object affects the motion (speed and direction) of the object.	FM.2.A.4.a	Identify the forces acting on the motion of objects traveling in a straight line (specify that forces should be acting in the same line as the motion, provide examples)
		FM.2.A.4.b	Describe and compare forces (measured by a spring scale in Newton's) applied to objects in a single line.
		FM.2.D.4.d	Predict the effects of an electrostatic force (static electricity) on the motion of objects (attract or repel)
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested

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		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	PS3 - Energy		
	A. Definitions of Energy		
4.PS3.A	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	FM.2.D.4.b	Describe how unbalanced forces acting on an object changes its speed (faster/slower), direction of motion, or both (need to clarify that unbalanced forces means any change in forces acting on an object)
		FM.2.D.4.c	Predict how the change in speed of an object (i.e., faster/slower/remains the same) is affected by the amount of force applied to an object and the mass of the object
		FM.1.A.4.b	Describe an object's motion in terms of distance and time
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	B. Conservation of Energy and Energy Transfer		
4.PS3.B.1	Provide evidence to construct an explanation of an energy transformation(e.g. temperature change, light, sound, motion, and magnetic effects)	ME.2.F.4.a	Identify the evidence of energy transformations (temperature change, light, sound, motion, and magnetic effects) that occur in electrical circuits

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		ME.2.A.4.a	Construct and diagram a complete electric circuit by using a source (e.g., battery), means of transfer (e.g., wires), and receiver (e.g., resistance bulbs, motors, fans)
		ME.2.A.4.b	Observe and describe the evidence of energy transfer in a closed series circuit (e.g., lit bulb, moving motor, fan)
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
4.PS3.B.2	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. [Clarification Statement: Examples of devices could include electric circuits that convert electrical energy into motion energy of a vehicle, light, or sound; and, a passive solar heater that converts light into heat. Examples of constraints could include the materials, cost, or time to design the device.]	ME.2.A.4.a	Construct and diagram a complete electric circuit by using a source (e.g., battery), means of transfer (e.g., wires), and receiver (e.g., resistance bulbs, motors, fans)
		ME.2.A.4.b	Observe and describe the evidence of energy transfer in a closed series circuit (e.g., lit bulb, moving motor, fan)
		ME.2.A.4.c	Classify materials as conductors or insulators of electricity when placed within a circuit (e.g., wood, pencil lead, plastic, glass, aluminum foil, lemon juice, air, water)
		ME.2.F.4.a	Identify the evidence of energy transformations (temperature change, light, sound, motion, and magnetic effects) that occur in electrical circuits
		IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)

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		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
		IN.1.D.4.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings
	C. Relationship Between Energy and Forces		
4.PS3.C	Use models to explain that simple machines change the amount of effort force and/or direction of force. [Clarification Statement: memorization of a simple machine is not the focus, concept builds on the application of force and motion.]	FM.2.F.5.b	Identify the simple machines in common tools and household items
		FM.2.F.5.d	Observe and explain that simple machines change the amount of effort force and/or direction of force

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		FM.2.F.5.a	Explain how work can be done on an object (force applied and distance moved) (No formula calculations at this level)
		FM.2.F.5.c	Compare the measures of effort force (measured using a spring scale to the nearest Newton) needed to lift a load with and without the use of simple machines
		FM.2.F.3.a	Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height, with or without using inclined planes (ramps) of different slopes
		FM.2.F.3.b	Compare and describe the amount of force (i.e., more, less, or same push or pull) needed to raise an object to a given height, with or without using levers
		FM.2.F.3.c	Apply the use of an inclined plane (ramp) and/or lever to different real life situations in which objects are raised
PS4 - Waves and Their Applications in Technologies for Information Transfer			
A. Wave Properties			
4.PS4.A	Develop a model of waves to describe patterns in terms of amplitude or wavelength and that waves can cause objects to move. (Boundary: The terms amplitude and wavelength should not be assessed.) [Clarification Statement: Examples of models could include diagrams, analogies, and physical models using wire to illustrate wavelength and amplitude of waves.]	N/A	
LS1 - From Molecules to Organisms: Structure and Processes			
A. Structure and Function			
4.LS1.A	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and plant reproduction. [Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin.]	EC.3.C.4.a	Identify specialized structures and describe how they help plants survive in their environment (e.g., root, cactus needles, thorns, winged seed, waxy leaves)
		EC.3.C.4.b	Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages)

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		EC.3.C.4.c	Identify internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation)
		EC.3.C.4.d	Predict which plant or animal will be able to survive in a specific environment based on its special structures or behaviors.
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	D. Information Processing		
4.LS1.D	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. [Clarification Statement: Emphasis is on systems of information transfer.]	EC.3.C.4.b	Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages)
	ESS1 - Earth's Place in the Universe		
	C. The History of Planet Earth		
4.ESS1.4	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.]	ES.1.A.3.a	Observe and describe the physical properties (e.g., odor, color, appearance, relative grain size, texture, absorption of water) and different components (i.e., sand, clay, humus) of soils
		ES.1.A.3.b	Observe and describe the physical properties of rocks (e.g., size, shape, color, presence of fossils)

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		ES.1.A.4.b	Compare the physical properties (i.e., size, shape, color, texture, layering, presence of fossils) of rocks (mixtures of different Earth materials, each with observable physical properties)
	ESS2 - Earth's Systems		
	A. Earth Materials and Systems		
4.ESS2.A	Plan and conduct scientific investigations or simulations to provide evidence how natural processes (e.g. weathering and erosion) shape Earth's surfaces.	ES.2.A.3.a	Observe and identify examples of slow changes in the Earth's surface and surface materials (e.g., rock, soil layers) due to processes such as decay (rotting), freezing, thawing, breaking, or wearing away by running water or wind
		ES.2.A.4.a	Observe and describe the breakdown of plant and animal material into soil through decomposition processes (i.e., decay/rotting, composting, digestion)
		ES.2.A.4.c	Describe how weathering agents (e.g., water, chemicals, temperature, wind, plants) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water
		ES.2.A.4.d	Describe how erosion processes (i.e., action of gravity, waves, wind, rivers, glaciers) cause surface changes that create and/or change Earth's surface materials and/or landforms/ bodies of water
		ES.2.A.4.e	Relate the type of landform/water body to the process by which it was formed
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	B. Plate Tectonics and Large-Scale Systems		
4.ESS2.B	Analyze and interpret data from maps to describe patterns of Earth's features. [Clarification Statement: Maps can include	ES.2.A.4.b	Identify the major landforms/bodies of water on Earth (i.e., mountains, plains, river valleys, coastlines, canyons)

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	topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.]		
		ES.2.A.4.e	Relate the type of landform/water body to the process by which it was formed
		ES.1.B.5.a	Classify major bodies of surface water (e.g., rivers, lakes, oceans, glaciers) as fresh or salt water, flowing or stationary, large or small, solid or liquid, surface or groundwater
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
		IN.1.D.4.a	Communicate simple procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings
	ESS3 - Earth and Human Activity		
	A. Natural Resources		
4.ESS3.A	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans. [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.]	ES.3.A.4.a	Identify the ways humans affect the erosion and deposition of Earth's materials (e.g., clearing of land, planting vegetation, paving land construction of new buildings)
		ES.3.A.4.b	Propose ways to solve simple environmental problems (e.g., recycling, composting, ways to decrease soil erosion) that result from human activity
		ES.3.A.5.a	Explain how major bodies of water are important natural resources for human activity(e.g., food recreation, habitat, irrigation, solvent, transportation)

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		ES.3.A.5.b	Describe how human needs and activities (e.g., irrigation damming of rivers, waste management, sources of drinking water) have affected the quantity and quality of major bodies of fresh water
		ES.3.A.5.c	Propose solutions to problems related to water quality and availability that result from human activity
		IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
4.ETS1.A	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)

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		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	B. Developing Possible Solutions		
4.ETS1.B	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements

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		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
	C. Optimizing the Solution Process		
4.ETS1.C	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	IN.1.A.4.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.4.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.4.c	Conduct a fair test to answer a question
		IN.1.B.4.a	Make qualitative observations using the five senses
		IN.1.B.4.d	Compare amounts/measurements
		IN.1.B.4.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.4.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.4.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.4.b	Use data as support for observed patterns and relationships, and to make predictions to be tested

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		IN.1.C.4.c	Evaluate the reasonableness of an explanation
		IN.1.C.4.d	Analyze whether evidence supports proposed explanations
		ST.1.A.4.a	Design and construct an electrical device, using materials and/or existing objects, that can be used to perform a task (Assess Locally)

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	Physical Science		
	PS1 - Matter and Its Interactions		
	A. Structure and Properties of Matter		
5.PS1.A.1	Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.]	ME.1.C.5.a	Describe how changes in state (i.e., freezing/melting, condensation/evaporation/boiling) provide evidence that matter is made of particles too small to be seen
		ME.1.D.3.a	Compare the observable physical properties of solids, liquids, or gases (air) (i.e., visible vs. invisible, changes in shape, changes in

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			the amount of space occupied
		ME.1.D.3.c	Observe and identify that water evaporates (liquid water changes into a gas as it moves into the air)
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.c	Use a variety of tools and equipment to gather data (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scales)
		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
		ST.1.B.5.a	Describe how new technologies have helped scientists make better observations and measurements for investigations (e.g., telescopes, electronic balances, electronic microscopes, x-ray technology, computers, ultrasounds, computer probes such as thermometers)
5.PS1.A.2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.]	ME.1.I.4.a	Observe that the total mass of a material remains constant whether it is together, in parts, or in a different state
		ME.1.I.5.a	Observe the mass of water remains constant as it changes state (as evidenced in a closed container)

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		IN.1.A.c	Recognize the characteristics of a fair and unbiased test
		IN.1.B.5.b	Determine the appropriate tools and techniques to collect data
		IN.1.B.5.c	Use a variety of tools and equipment to gather data (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scales)
		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
		IN.1.D.5.a	Communicate the procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings
	PS1 - Matter and Its Interactions		
	B. Chemical Reactions		
5.PS1.B.1	Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting, filtration, magnets, screening).	ME.1.B.4.d	Describe ways to separate the components of a mixture/solution by their properties (i.e., sorting, filtration, magnets, screening)
		ME.1.B.3.b	Describe ways to separate the components of a mixture by their physical properties (e.g., sorting, magnets, screening)

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		ME.1.B.3.a	Observe and describe how mixtures are made by combining solids
		IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question
		IN.1.A.5.d	Make suggestions for reasonable improvements or extensions of a fair test
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.b	Determine the appropriate tools and techniques to collect data
		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
5.PS1.B.2	Conduct an investigation to determine whether the combining of two or more substances results in new substances.	ME.1.B.4.b	Observe and describe how mixtures are made by combining solids or liquids, or a combination of these
		ME.1.B.4.c	Distinguish between the components in a mixture/solution (e.g., trail mix, conglomerate rock, salad, soil, salt water)
		ME.1.B.4.d	Describe ways to separate the components of a mixture/solution by their properties (i.e., sorting, filtration, magnets, screening)
		IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question
		IN.1.A.5.d	Make suggestions for reasonable improvements or extensions of a fair test
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.b	Determine the appropriate tools and techniques to collect data

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		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
PS2 - Motion and Stability: Forces and Interactions			
B. Types of Interaction			
5.PS2.B	Support an argument that the gravitational force exerted by Earth on objects is directed toward the planet's center. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.]	FM.2.B.4.a	Determine the gravitational pull of the Earth on an object (weight) using a spring scale
		FM.2.B.2.a	Describe Earth's gravity as a force that pulls objects on or near the Earth toward the Earth without touching the object
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
PS3 - Energy			
D. Energy in Chemical Process and Everyday			
5.PS3.D	Use models to describe that energy stored in food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun. [Clarification Statement: Examples of models could include diagrams, and flow charts.]	ME.2.C.5.a	Identify the Sun as the primary source of energy for temperature change on Earth
		ME.2.C.3.a	Identify the Sun as the primary source of light and food energy on Earth

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		LO.1.E.5.b	Distinguish between plants (which use sunlight to make their own food) and animals (which must consume energy-rich food)
		EC.2.A.3.c	Sequence the flow of energy through a food chain beginning with the Sun
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
PS4 - Waves and Their Applications in Technologies for Information Transfer			
A. Wave Properties			
5.PS4.A	Develop a model to describe that objects can be seen only when light is reflected off them or when they produce their own light.	ME.2.A.5.b	Observe and explain how an object (e.g., moon, mirror, objects in a room) can only be seen when light is reflected from that object to the receiver (eye)
		ME.2.A.5.a	Observe and explain light being transferred from the source to the receiver (eye) through space in straight lines
		ME.2.A.3.c	Observe light being transferred from the source to the receiver (eye) through space
		UN.1.A.3.b	Observe and identify the Moon as a reflection of light
		IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question

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		IN.1.A.5.d	Make suggestions for reasonable improvements or extensions of a fair test
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.b	Determine the appropriate tools and techniques to collect data
		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
LS1 - From Molecules to Organisms: Structure and Processes			
A. Structure and Function			
5.LS1.A.1	Compare and contrast the major organs/organ systems (e.g. support, reproductive, digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes.	LO.2.C.5.a	Compare the major organs/organ systems (e.g. support, reproductive, digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes
		LO.1.D.5.a	Compare structures (e.g., wings vs. fins vs. legs; gills vs. lungs; feathers vs. hair vs. scales) that serve similar functions for animals belonging to different vertebrate classes
C. Organization for Matter and Energy Flow in Organisms			
5.LS1.A.2	Support an argument that plants get the materials (i.e. carbon dioxide, water, sunlight) they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil. Clarification Statement: [Do not assess photosynthesis.]	EC.2.A.3.a	Identify sunlight as the primary source of energy plants use to produce their own food
		LO.1.E.5.b	Distinguish between plants (which use sunlight to make their own food) and animals (which must consume energy-rich food)

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		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
	LS2 - Ecosystems: Interactions, Energy, and Dynamics		
	B. Cycles of matter and Energy Transfer in Ecosystems		
5.LS2.B	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. [Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.]	EC.2.A.3.a	Identify sunlight as the primary source of energy plants use to produce their own food
		EC.2.A.3.b	Classify populations of organisms as producers or consumers by the role they serve in the ecosystem
		EC.2.A.3.c	Sequence the flow of energy through a food chain beginning with the Sun
		EC.2.A.3.d	Predict the possible effects of removing an organism from a food chain
		EC.2.A.4.a	Classify populations of organisms as producers and consumers by the role they serve in the ecosystem
		EC.2.A.4.b	Differentiate between the types of consumers (herbivore, carnivore, omnivore, and detritivore/decomposer)
		EC.2.A.4.c	Categorize organisms as predator or prey in a given ecosystem
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations

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		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
	ESS1 - Earth's Place in the Universe		
	A. The Universe and its Stars		
5.ESS1.A	Support an argument that relative distances from Earth affects the apparent brightness of the sun compared to other stars.	UN.1.A.3.a	Describe our Sun as a star because it provides light energy to the solar system
		UN.1.A.5.a	Observe and identify the Earth is one of several planets within a solar system that orbits the Sun
		UN.1.C.7.a	Explain that stars are separated from one another by vast and different distances, which causes stars to appear smaller than the Sun
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
	B. Earth and the Solar System		
5.ESS1.B.1	Make observations during different seasons to relate the amount of daylight to the time of year. [Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.]	UN.2.A.7.b	Describe the pattern that can be observed in the changes in number of hours of visible sunlight, and the time and location of sunrise and sunset, throughout the year
		UN.2.A.7.c	Describe how, in the Northern Hemisphere, the Sun appears lower in the sky during the winter and higher in the sky during the summer

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		UN.2.A.7.d	Describe how, in winter, the Sun appears to rise in the Southeast and set in the Southwest, accounting for a relatively short day length, and, in summer, the Sun appears to rise in the Northeast and set in the Northwest, accounting for a relatively long day length
		IN.1.B.5.a	Make qualitative observations using the five senses
5.ESS1.B.2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.]	UN.2.C.5.b	Relate changes in the length and position of a shadow to the time of day and apparent position of the Sun in the sky, as determined by Earth's rotation
		UN.2.C.5.c	Relate the apparent motion of the Sun, Moon, and stars in the sky to the rotation of the Earth
		UN.2.C.3.b	Describe the changes in length and position (direction) of shadows from morning to midday to afternoon
		UN.2.C.3.c	Describe how the Sun's position in the sky changes the length and position of shadows
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.b	Determine the appropriate tools and techniques to collect data
		IN.1.B.5.e	Compare amounts/measurements
		IN.1.B.5.f	Judge whether measurements and computation of quantities are reasonable
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations

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		IN.1.D.5.a	Communicate the procedures and results of investigations and explanations through: oral presentations drawings and maps data tables graphs (bar, single line, pictograph) writings
	ESS2 - Earth's Systems		
	A. Earth Materials and Systems		
5.ESS2.B	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.]	ES.1.C.5.a	Recognize the atmosphere is composed of a mixture of gases, water, and minute particles
		ES.2.E.5.a	Describe and trace the path of water as it cycles through the hydrosphere, geosphere, and atmosphere (i.e., the water cycle: evaporation, condensation, precipitation, surface run-off/ groundwater flow)
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
	C. The Role of Water in Earth's Surface Processes		
5.ESS2.C	Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	ES.1.B.5.a	Classify major bodies of surface water (e.g., rivers, lakes, oceans, glaciers) as fresh or salt water, flowing or stationary, large or small, solid or liquid, surface or groundwater

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		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
		IN.1.D.5.a	Communicate the procedures and results of investigations and explanations through: ⇒ oral presentations ⇒ drawings and maps ⇒ data tables ⇒ graphs (bar, single line, pictograph) writings
	ESS3 - Earth and Human Activity		
	C. Human Impacts on Earth's Systems		
5.ESS3.C	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	ES.3.A.5.c	Propose solutions to problems related to water quality and availability that result from human activity
		ES.3.A.5.b	Describe how human needs and activities (e.g., irrigation damming of rivers, waste management, sources of drinking water) have affected the quantity and quality of major bodies of fresh water
		ES.3.A.5.a	Explain how major bodies of water are important natural resources for human activity(e.g., food recreation, habitat, irrigation, solvent, transportation)
		ES.3.A.4.b	Propose ways to solve simple environmental problems (e.g., recycling, composting, ways to decrease soil erosion) that result from human activity
		ES.3.A.4.a	Identify the ways humans affect the erosion and deposition of Earth's materials (e.g., clearing of land, planting vegetation, paving land construction of new buildings)
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations

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		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
	ETS1 - Engineering Design		
	A. Defining and Delimiting Engineering Problems		
5.ETS1.A	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.d	Compare amounts/measurements
		IN.1.B.5.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.5.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
	B. Developing Possible Solutions		

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5.ETS1.B	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.d	Compare amounts/measurements
		IN.1.B.5.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.5.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
C. Optimizing the Solution Process			
5.ETS1.C	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	IN.1.A.5.a	Formulate testable questions and explanations (hypotheses)
		IN.1.A.5.b	Recognize the characteristics of a fair and unbiased test
		IN.1.A.5.c	Conduct a fair test to answer a question
		IN.1.B.5.a	Make qualitative observations using the five senses
		IN.1.B.5.d	Compare amounts/measurements

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		IN.1.B.5.e	Judge whether measurements and computation of quantities are reasonable
		IN.1.B.5.b	Make observations using simple tools and equipment (e.g., hand lenses, magnets, thermometers, metric rulers, balances, graduated cylinders, spring scale)
		IN.1.C.5.a	Use quantitative and qualitative data as support for reasonable explanations
		IN.1.C.5.b	Use data as support for observed patterns and relationships, and to make predictions to be tested
		IN.1.C.5.c	Evaluate the reasonableness of an explanation
		IN.1.C.5.d	Analyze whether evidence supports proposed explanations
		ST.1.A.5.a	Design and construct an electrical device, using materials and/or existing objects, that can be used to perform a task (Assess Locally)