

FOSS and SEEd Standards Alignment

Third Grade

Strand 3.1: WEATHER AND CLIMATE PATTERNS

Weather is a minute-by-minute, day-by-day variation of the atmosphere's condition on a local scale. Scientists record patterns of weather across different times and areas so that they can make weather forecasts. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over a long period of time. A variety of weather-related hazards result from natural processes. While humans cannot eliminate natural hazards, they can take steps to reduce their impact.

FOSS	STANDARDS
<p>Water and Climate</p> <p>Investigations 1: Water Observations</p> <p>Part 1: Drops of Water</p> <p>SEP: Developing and using models, Planning and carrying out investigations, Obtaining and communicating information</p> <p><u>CCC: Patterns</u></p> <p>Standard Content: Water forms beads on waterproof materials and soaks into absorbent materials.</p> <p>Part 2: Water on Slopes</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations, Obtaining, evaluating and communicating information</p> <p><u>CCC: Cause and effect</u></p> <p>Standard Content: Water moves downhill. Large water domes</p>	<p>3.1.3 Design a solution that reduces the effects of a weather-related hazard. Define the problem, identify criteria and constraints, develop possible solutions, analyze data from testing solutions, and propose modifications for optimizing a solution.</p> <p>Examples could include barriers to prevent flooding or wind-resistant roofs. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)</p>

<p>move faster down a slope than smaller domes. The steeper the slope of a surface, the faster a water dome moves.</p> <p>Part 3: Soaking Sponges</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations, Engaging in argument from evidence</p> <p><u>CCC:</u></p> <p>Standard Content: Water forms beads on waterproof materials and soaks into absorbent materials</p> <p>Part 4: Water in Nature</p> <p>SEP: Developing and using models, Constructing explanations</p> <p><u>CCC:</u></p> <p>Standard Content: Water forms beads on waterproof materials and soaks into absorbent materials.</p>	
<p>Water and Climate</p> <p>Investigations 2: Hot Water, Cold Water</p> <p>Part 1: Measuring Temperature</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Engaging in argument from evidence</p> <p><u>CCC:</u> Scale, proportion and quantity</p> <p>Standard Content: Temperature is a measure of how hot matter is. The metric unit for temperature is the degree Celsius. Water freezes at 0 C and boils at 100 C. Thermometers measure temperature.</p> <p>Part 2: Build a Thermometer</p> <p>SEP: Developing and using models, Constructing explanations</p>	<p>3.1.2 Obtain and communicate information to describe climate patterns in different regions of the world. Emphasize how climate patterns can be used to predict typical weather conditions. Examples of climate patterns could be average seasonal temperature and average seasonal precipitation. (ESS2.D)</p>

CCC:

Standard Content: Water expands when heated and contracts when cooled

Part 3: Sinking and Floating

SEP: Planning and carrying out investigations, Developing and using models, Constructing explanations.

CCC: Cause and effect

Standard Content: A material that floats in water is less dense than the water; a material that sinks is more dense. Cold water is more dense than warm water.

Part 4: Water as Ice

SEP: Asking questions, Analyzing and interpreting data, Constructing explanations, Obtaining, evaluating and communicating information

CCC:

Standard Content: Water expands when it freezes. Ice is less dense than liquid water.

Part 5: Ice Outdoors

SEP: Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations

CCC:

Standard Content: Ice melts when heated; water freezes when cooled.

<p>Water and Climate</p> <p>Investigations 3: Weather and Water</p> <p>Part 1: Measuring Weather</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Obtaining, evaluating and communicating information</p> <p>CCC: Patterns</p> <p>Standard Content: Weather is measured using observation and tools such as thermometers, wind vanes and rain gauges.</p> <p>Part 2: Evaporation</p> <p>SEP: Developing and using models</p> <p>CCC:</p> <p>Standard Content: Evaporation is the process by which liquid (water) changes into gas (water vapor).</p> <p>Part 3: Surface Area</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Using mathematics and computational thinking, Constructing explanations, Engaging in argument from evidence, Obtaining, evaluating and communicating information</p> <p>CCC: Cause and effect</p> <p>Standard Content: The larger the surface area of a volume of water that is exposed to air, the greater the rate of evaporation. Moving air (wind) increases the rate of evaporation.</p> <p>Part 4: Evaporation Locations</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations, Engaging in</p>	<p>3.1.1 Analyze and interpret data to reveal patterns that indicate typical weather conditions expected during a particular season.</p> <p>Emphasize students gathering data in a variety of ways and representing data in tables and graphs. Examples of data could include temperature, precipitation, or wind speed. (ESS2.D)</p>
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<p>argument from evidence <u>CCC: Cause and effect</u></p> <p>Standard Content: As temperature increases, the rate of evaporation increases.</p> <p>Part 5: Condensation</p> <p>SEP: Asking questions, Developing and using models, Planning and carrying out investigations, Constructing explanations, Engaging in argument from evidence</p> <p><u>CCC: Scale, proportion and quantity,</u></p> <p>Standard Content: condensation is the process by which gas (water vapor) changes into liquid (water). Condensation occurs on a cool surface. Evaporation and condensation contribute to the movement of water through the water cycle.</p>	
<p>Water and Climate</p> <p>Investigations 4: Seasons and Climate</p> <p>Part 1: Seasonal Weather</p> <p>SEP: Analyzing and interpreting data, Constructing explanations</p> <p><u>CCC: Patterns</u></p> <p>Standard Content: Typical weather in a region often varies with seasons. High and low temperature and amount of precipitation are the main ways to describe seasonal weather.</p> <p>Part 2: Describing Climate</p> <p>SEP: Constructing explanations, Obtaining, evaluating and communicating information</p> <p><u>CCC: Patterns, Scale, proportion and quantity</u></p> <p>Standard Content: The Sun's energy drives weather. Climate is the</p>	<p>3.1.1 Analyze and interpret data to reveal <u>patterns</u> that indicate typical weather conditions expected during a particular season. Emphasize students gathering data in a variety of ways and representing data in tables and graphs. Examples of data could include temperature, precipitation, or wind speed. (ESS2.D)</p> <p>3.1.2 Obtain and communicate information to describe climate <u>patterns</u> in different regions of the world. Emphasize how climate patterns can be used to predict typical weather conditions. Examples of climate patterns could be average seasonal temperature and average seasonal precipitation. (ESS2.D)</p> <p>3.1.3 Design a solution that reduces the <u>effects</u> of a weather-related hazard. <i>Define the problem, identify criteria and constraints, develop possible solutions, analyze data from testing</i></p>

<p>average or typical weather that can be expected to occur in a region of Earth's surface, based on long-term observation and data analysis.</p> <p>Part 3: Weather- Related Natural Hazards</p> <p>SEP: Constructing explanations, Obtaining, evaluating and communicating information</p> <p><u>CCC:</u> Cause and effect</p> <p>Standard Content: Weather related natural hazards include tornadoes, hailstorms, blizzards, lightning, floods and drought. People often modify their homes and their way of life to deal with floods. Wetland protection and restoration is one way to prevent floods.</p>	<p><i>solutions, and propose modifications for optimizing a solution.</i> Examples could include barriers to prevent flooding or wind-resistant roofs. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)</p>
<p>Water and Climate</p> <p>Investigations 5: Water Works</p> <p>Part 1: Water in Earth Materials</p> <p>SEP: Asking questions, Planning and carrying out investigations, Constructing explanations, Obtaining, evaluating, and communicating information</p> <p><u>CCC:</u> Cause and effect</p> <p>Standard Content: Soils are rock particles mixed with organic material called humus. Soils retain more water than rock particles alone. Water drains more easily through some earth materials than through others.</p> <p>Part 2: Water in Soils</p> <p>SEP: Analyzing and interpreting data, Engaging in argument from evidence, Obtaining, evaluating and communicating information.</p>	<p>3.1.3 Design a solution that reduces the <i>effects</i> of a weather-related hazard. <i>Define the problem, identify criteria and constraints, develop possible solutions, analyze data from testing solutions, and propose modifications for optimizing a solution.</i> Examples could include barriers to prevent flooding or wind-resistant roofs. (ESS3.B, ETS1.A, ETS1.B, ETS1.C)</p>

CCC:

Standard Content: Water drains more easily through some earth materials than through others.

Part 3: Waterwheels

SEP: Defining problems, Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations and designing solutions, Obtaining, evaluating and communicating information

CCC: System and system models

Standard Content: The energy of flowing water can be used to do work. Waterwheels are machines powered by flowing water.

Strand 3.2: EFFECTS OF TRAITS ON SURVIVAL

Organisms (plants and animals, including humans) have unique and diverse life cycles, but they all follow a pattern of birth, growth, reproduction, and death. Different organisms vary in how they look and function because they have different inherited traits. An organism's traits are inherited from its parents and can be influenced by the environment. Variations in traits between individuals in a population may provide advantages in surviving and reproducing in particular environments. When the environment changes, some organisms have traits that allow them to survive, some move to new locations, and some do not survive. Humans can design solutions to reduce the impact of environmental changes on organisms.

FOSS	STANDARDS
<p><i>Structures of Life</i></p> <p>Investigations 1: Origin of Seeds</p> <p>Part 1: Seed Search</p> <p>SEP: Analyzing and interpreting data, Obtaining, evaluating and communicating information.</p> <p>CCC: Patterns</p> <p>Standard Content: Seeds develop in the plant part called fruit. Different kinds of fruits have different kinds and numbers of seeds. Seeds have a variety of properties.</p> <p>Part 2: The Sprouting Seed</p> <p>SEP: Planning and carrying out investigations</p> <p>CCC: Cause and effect, Patterns</p> <p>Standard Content: Seeds undergo developmental changes in the presence of water. A seed is an organism, a living thing.</p> <p>Part 3: Seed Soak</p> <p>SEP: Planning and carrying out investigations, Analyzing and</p>	<p>3.2.1 Develop and use models to describe <u>changes</u> that organisms go through during their life cycles. Emphasize that organisms have unique and diverse life cycles but follow a pattern of birth, growth, reproduction, and death. Examples of changes in life cycles could include how some plants and animals look different at different stages of life or how other plants and animals only appear to change size in their life. (LS1.B)</p> <p>3.2.2 Analyze and interpret data to identify <u>patterns</u> of traits that plants and animals have inherited from parents. Emphasize the similarities and differences in traits between parent organisms and offspring and variation of traits in groups of similar organisms. (LS3.A, LS3.B)</p>

<p>interpreting data, Using mathematics and computational thinking, Constructing explanations, Engaging in argument from evidence, Obtaining, evaluating and communicating information.</p> <p><u>CCC: Cause and effect, Structure and function</u></p> <p>Standard Content: A seed contains the embryo plant and a supply of food. A seed grows into a new plant (reproduction). Seeds undergo developmental changes in the presence of water.</p> <p>Part 4: Seed Dispersal</p> <p>SEP: Asking questions defining problem, Developing and using models, Constructing explanations</p> <p><u>CCC:</u></p> <p>Standard Content: Seeds move away from parent plants via a number of dispersal mechanisms including wind water, and animals.</p>	
<p>Structures of Life</p> <p>Investigations 2: Growing Further</p> <p>Part 1: Germination and Growth</p> <p>SEP: Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations, Obtaining, evaluating and communicating information.</p> <p><u>CCC: Structure and function, Patterns</u></p> <p>Standard Content: Germination is the onset of a seed's growth. Plants need water, light, space and nutrients to grow.</p> <p>Part 2: Life Cycle of the Bean</p>	<p>3.2.1 Develop and use models to describe <u>changes</u> that organisms go through during their life cycles. Emphasize that organisms have unique and diverse life cycles but follow a pattern of birth, growth, reproduction, and death. Examples of changes in life cycles could include how some plants and animals look different at different stages of life or how other plants and animals only appear to change size in their life. (LS1.B)</p> <p>3.2.2 Analyze and interpret data to identify <u>patterns</u> of traits that plants and animals have inherited from parents. Emphasize the similarities and differences in traits between parent organisms</p>

<p>SEP: Analyzing and interpreting data, Constructing explanations, Engaging in argument from evidence, Obtaining, evaluating and communicating information.</p> <p><u>CCC: Cause and effect, Patterns</u></p> <p>Standard Content: The life cycle is the sequence of stages during which a seed grows into an adult (mature) plant and produces seeds, which in turn produce new plants of the same kind. Plants need water, light, space and nutrients to grow. The fruit of the plant develops from a flower. Each kind of organism has inherited characteristics.</p> <p>Part 3: Roots and Shoots</p> <p>SEP: Asking questions, Analyzing and interpreting data, Constructing explanations.</p> <p><u>CCC: Cause and effect</u></p> <p>Standard Content: Roots are plant structures that serve several functions. One function is to take up water and nutrients so they can be transported to other parts of the plant. Different kinds of plants have different root systems. Each kind of organism has inherited characteristics. Some characteristics are a result of the environment.</p>	<p>and offspring and variation of traits in groups of similar organisms. (LS3.A, LS3.B)</p>
<p>Structures of Life</p> <p>Investigations 3: Meet the Crayfish</p> <p>Part 1: Crayfish Structures</p> <p>SEP: Asking questions, Analyzing and interpreting data, Constructing explanations, Obtaining, evaluating and communicating information.</p> <p><u>CCC:</u></p> <p>Standard Content: Crayfish have observable structures that serve</p>	<p>3.2.2 Analyze and interpret data to identify patterns of traits that plants and animals have inherited from parents. Emphasize the similarities and differences in traits between parent organisms and offspring and variation of traits in groups of similar organisms. (LS3.A, LS3.B)</p> <p>3.2.3 Construct an explanation that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that</p>

<p>various functions in growth, survival, and reproduction. Crayfish have particular requirements for life, including clean, cool water with oxygen, food and space.</p> <p>Part 2: Adaptation</p> <p>SEP: Developing and using models, Analyzing and interpreting data, Using mathematics and computational thinking, Constructing explanations, Obtaining, evaluating and communicating information.</p> <p><u>CCC: System and system models</u></p> <p>Standard Content: Adaptations are structures and behaviors of an organism that help it survive and reproduce. Differences in characteristics between individuals of the same species may provide an advantage in surviving.</p> <p>Part 3: Crayfish Territory</p> <p>SEP: Planning and carrying out investigations, Developing and using models, Analyzing and interpreting data, constructing explanations, Engaging in argument from evidence, Obtaining, evaluating and communicating information</p> <p><u>CCC: Cause and effect, Patterns</u></p> <p>Standard Content: Behavior of organisms influenced by internal and external cues. Some animals claim a territory that they defend against others of their kind. Some organisms live in social groups. Diversity of organisms is related to the diversity of environments.</p> <p>Part 4: Compare Crayfish to Other Animals</p> <p>SEP: Developing and using models. Analyzing and interpreting data, Constructing explanations</p> <p><u>CCC: Cause and effect, Stability and change</u></p>	<p>pets given too much food and little exercise may become overweight. (LS3.B)</p> <p>3.2.4 Construct an explanation showing how variations in traits and behaviors can <u>affect</u> the ability of an individual to survive and reproduce. Examples of traits could include large thorns protecting a plant from being eaten or strong smelling flowers to attract certain pollinators. Examples of behaviors could include animals living in groups for protection or migrating to find more food. (LS2.D, LS4.B)</p> <p>3.2.5 Engage in argument from evidence that in a particular habitat (<u>system</u>) some organisms can survive well, some survive less well, and some cannot survive at all. Emphasize that organisms and habitats form systems in which the parts depend upon each other. Examples of evidence could include needs and characteristics of the organisms and habitats involved such as cacti growing in dry, sandy soil but not surviving in wet, saturated soil. (LS4.C)</p> <p>3.2.6 Design a solution to a problem caused by a <u>change</u> in the environment that impacts the types of plants and animals living in that environment. <i>Define the problem, identify criteria and constraints, and develop possible solutions.</i> Examples of environmental changes could include changes in land use, water availability, temperature, food, or changes caused by other organisms. (LS2.C, LS4.D, ETS1.A, ETS1.B, ETS1.C)</p>
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<p>Standard Content: Crayfish have observable structures that serve various functions in growth, survival and reproduction. When the environment changes, some plants and animals survive and reproduce, others decline and move to new locations and some die.</p> <p>Part 5: Food Chains</p> <p>SEP: Developing and using models, Analyzing and interpreting data, Constructing explanations</p> <p><u>CCC: System and system models, Stability and change</u></p> <p>Standard Content: Organisms are related in feeding relationships called food chains. Animals eat plants, and other animals eat those animals.</p>	
<p>Structures of Life</p> <p>Investigations 4: Human Body</p> <p>Part 1: Counting Bones</p> <p>SEP: Developing and using models, Analyzing and interpreting data, Constructing explanations and designing solutions, Obtaining, evaluating and communicating information.</p> <p><u>CCC: System and system models, Structure and function</u></p> <p>Standard Content: A skeleton is a system of interacting bones. There are about 206 bones in the human skeleton. Bones have several functions: support protection and movement. Each bone in the human body has an identifiable shape, position, orientation, and function.</p> <p>Part 2: Owl Pellets</p> <p>SEP: Planning carrying out investigations, Analyzing and interpreting data, Constructing explanations and designing</p>	<p>3.2.2 Analyze and interpret data to identify patterns of traits that plants and animals have inherited from parents. Emphasize the similarities and differences in traits between parent organisms and offspring and variation of traits in groups of similar organisms. (LS3.A, LS3.B)</p> <p>3.2.3 Construct an explanation that the environment can affect the traits of an organism. Examples could include that the growth of normally tall plants is stunted with insufficient water or that pets given too much food and little exercise may become overweight. (LS3.B)</p>

solutions, Engaging in argument from evidence, Obtaining, evaluating, and communicating information.

CCC: Structure and function, System and system models, Scale proportion and quantity

Standard Content: The skeletons of humans and other mammals have many similarities. Bones have different shapes depending on where they are and what their purpose is. The number and kinds of bones in an organism are characteristics inherited from the parents of the organism. Fossils are important evidence about extinct organisms and past environments.

Part 3: Joints Muscles

SEP: Developing and using models, Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations and designing solutions.

CCC: System and system models

Standard Content: The place where two bones meet is called a joint. The human skeleton has different types of joints. Muscles contract when they work. Muscles attach across joints to move bones.

Part 4: Fingerprints

SEP: Analyzing and interpreting data, Constructing explanations.

CCC:

Standard Content: Fingerprints can be sorted into three groups based on basic patterns. No two people have the same fingerprints.

Strand 3.3: FORCE AFFECTS MOTION

Forces act on objects and have both a strength and a direction. An object at rest typically has multiple forces acting on it, but they are balanced, resulting in a zero net force on the object. Forces that are unbalanced, can cause changes in an object's speed or direction of motion. The patterns of an object's motion in various situations can be observed, measured, and used to predict future motion. Forces are exerted when objects come in contact with each other, however some forces can act on objects that are not in contact. The gravitational force of Earth, acting on an object near Earth's surface pulls that object toward the planet's center. Electric and magnetic forces between a pair of objects can act at a distance. The strength of these non-contact forces depends on the properties of the objects and the distance between the objects.

FOSS	STANDARDS
<p>Motion and Matter</p> <p>Investigations 1: Forces</p> <p>Part 1: Two Forces</p> <p>SEP: Asking questions, Planning and carrying out investigations, Developing and using models, Constructing explanations, Obtaining, evaluating and communicating information</p> <p>CCC: Cause and effect</p> <p>Standard Content: Magnetic interactions between a pair of objects do not require that the objects can be in contact. The</p>	<p>3.3.1 Plan and carry out investigations that provide evidence of the <u>effects</u> of balanced and unbalanced forces on the motion of an object. Emphasize investigations where only one variable is tested at a time. Examples could include an unbalanced force on one side of a ball causing it to move and balanced forces pushing on a box from both sides producing no movement. (PS2.A, PS2.B)</p> <p>3.3.2 Analyze data from observations and measurements of an object's motion to identify <u>patterns</u> in its motion that can be used to predict future motion. Examples of motion with a predictable pattern</p>

<p>strength of magnetic force depends on properties of the objects and their distance apart. How magnets interact depends on their orientation (sometimes they attract and sometimes they repel). Gravity is the force that pulls masses toward the center of Earth.</p> <p>Part 2: Magnetic-Force Investigation</p> <p>SEP: Asking questions, Planning and carrying out investigations, Analyzing and interpreting data, Using mathematics and computational thinking, Obtaining, evaluating, and communicating information</p> <p><u>CCC: Patterns, Cause and effect</u></p> <p>Standard Content: Magnetic interactions between a pair of objects does not require that the objects be in contact. The strength of the magnet force depends on the properties of the objects and their distance apart.</p> <p>Part 3: More about Forces</p> <p>SEP: Constructing explanations, Obtaining, evaluating and communicating information</p> <p><u>CCC: Cause and effect</u></p> <p>Standard Content: A force is a push or a pull. Each force acting on an object has both strength and direction. When an object is at rest, the sum of the forces acting on the object is zero; the forces are balanced. Unbalanced forces (pushes and pulls) cause and change of motion.</p>	<p>could include a child swinging on a swing or a ball rolling down a ramp. (PS2.A, PS2.C)</p> <p>3.3.3 Construct an explanation that the gravitational force exerted by Earth <u>causes</u> objects to be directed downward, toward the center of the spherical Earth. Emphasize that “downward” is a local description depending on one’s position on Earth. (PS2.B)</p>
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<p>Motion and Matter</p> <p>Investigations 2: Patterns of Motion</p> <p>Part 1: Wheel and Axle Systems</p> <p>SEP: Asking questions, defining problems, Planning and carrying out investigations, Analyzing and interpreting data.</p> <p><u>CCC:</u> Patterns, Cause and effect, System and system models</p> <p>Standard Content: The patterns of an object's motion in various situations can be observed and measured. A wheel-and-axle system with two sizes of wheels described a curved path when rolled down a slope. The system of curves towards smaller wheels.</p> <p>Part 2: Predicting Motion of a New System</p> <p>SEP: Planning and carrying out investigations, Constructing explanations and designing solutions, Obtaining, evaluating, and communicating information</p> <p><u>CCC:</u> Cause and effect, System and system models, Patterns</p> <p>Standard Content: A wheel-and-axle system with two sizes of wheels described a curved path when rolled down a slope. The system curves towards the smaller wheel. When past motions exhibit a regular pattern, future motion can be predicted from it.</p> <p>Part 3: Twirly Birds</p> <p>SEP: Asking questions, Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations, Obtaining, evaluating and communicating information.</p> <p><u>CCC:</u> Patterns, Cause and effect</p>	<p>3.3.1 Plan and carry out investigations that provide evidence of the effects of balanced and unbalanced forces on the motion of an object. Emphasize investigations where only one variable is tested at a time. Examples could include an unbalanced force on one side of a ball causing it to move and balanced forces pushing on a box from both sides producing no movement. (PS2.A, PS2.B)</p> <p>3.3.2 Analyze data from observations and measurements of an object's motion to identify patterns in its motion that can be used to predict future motion. Examples of motion with a predictable pattern could include a child swinging on a swing or a ball rolling down a ramp. (PS2.A, PS2.C)</p>
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<p>Standard Content: A twirly bird is a simple winged system that spins when it interacts with air. Twirler performance is affected by variables, including wing size, shape and angle.</p> <p>Part 4: Tops</p> <p>SEP: Asking questions and defining problems, Constructing explanations and designing solutions, Obtaining, evaluating and communicating information</p> <p><u>CCC: Cause and effect</u></p> <p>Standard Content: Tops exhibit rotational motion (spinning) when torque is applied to the axial shaft. Top performance is affected by variables including speed, disk mass, and diameter.</p>	
<p>Motion and Matter</p> <p>Investigations 3: Engineering</p> <p>Part 1: From Here to There</p> <p>SEP: Planning and carrying out investigations, constructing explanations and designing solutions, Obtaining, evaluating and communicating information</p> <p><u>CCC: System and system models</u></p> <p>Standard Content: Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Compare different proposals for solutions on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account.</p> <p>Part 2: Distance Challenge</p>	<p>3.3.1 Plan and carry out investigations that provide evidence of the effects of balanced and unbalanced forces on the motion of an object. Emphasize investigations where only one variable is tested at a time. Examples could include an unbalanced force on one side of a ball causing it to move and balanced forces pushing on a box from both sides producing no movement. (PS2.A, PS2.B)</p> <p>3.3.2 Analyze data from observations and measurements of an object's motion to identify patterns in its motion that can be used to predict future motion. Examples of motion with a predictable pattern could include a child swinging on a swing or a ball rolling down a ramp. (PS2.A, PS2.C)</p>

SEP: Planning and carrying out investigations, Analyzing and interpreting data, Using mathematics and computational thinking, Constructing explanations and designing solutions

CCC:

Standard Content: Research on a problem should be carried out before beginning to design a solution. Testing a solution involves evaluating how well it performs under a range of likely conditions. Communicating with peers about proposed design solutions can lead to improved designs.

Part 3: Investigating Start Position

SEP: Asking questions and defining problems, Planning and carrying out investigations, Analyzing and interpreting data, Constructing explanations and designing solutions, Engaging in argument from evidence

CCC: Cause and effect, Patterns

Standard Content: The pattern of an object's or a system's motion in various situations can be observed and measured. When past motion exhibits a regular pattern, it can be used to predict future motion.

Part 4: Cart Tricks

SEP: Asking questions and defining problems, Planning and carrying out investigations, Constructing explanations and designing solutions, Obtaining, evaluating and communicating information

CCC: System and system models

Standard Content: Possible solutions to a problem are limited by available materials and resources (constraints). The success

of a designed solution is determined by considering the desired features of a solution (criteria).