Unit 1 Topic/Storyline:	Grade 4	Days
Question		
Essential Questions:		
1.		
Enduring Understandings		
-		
Storyline Narrative / Big Ideas:		
Key Words:		

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts

Consolidated Supply List -

Episode 1
Engage/Elicit Ideas
Days:

Instructional Goals:
Motivates students Phenomena - short video, text, picture, gifs, song, demonstration, maps
Notice and Wonder Statements (10 observations and 10 Questions)
Model
Students draw a model to explain or predict. Then write about what they drew or label the model.
Claim - make a claim about the phenomena.

Lessons	Resources

Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate	Episode Supply List:

Episode 2
Explore
Days:

Instructional Goals:
Experience - Students explore and carry out investigations from wonder statements or claims from the first episode.
Data - Collect data from the investigations.
Research - obtain information.
Model - Students revise their models

Lessons	Resources
Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate Lesson 3: Gather Reason Communicate	Episode Supply List:

Episode 3
Explain
Days:

Instructional Goals:
Learn information to make sense of their science explorations from the explore phase.
Analyze and interpret the data (SP4) .
How does the Evidence support this claim?
Reading, listening and/or discussing text, articles, videos

Vocabulary Instruction Teacher directed lessons.	
Lessons	Resources
Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate Lesson 3: Gather Reason Communicate Lesson 4: Gather Reason Communicate	Episode Supply List:
Episode 4 **Elaborate/Build New Content/Apply new Content** Days: Instructional Goals: Students have the opportunity to practice what they have learned in the introduction section to consolidate learning and develop understanding. Use what they learned to apply to another experience. Back to phenomena to explain the Reasoning Independent Activities STEM projects Choice Boards Debates	
Activity	Resources
	Episode Supply List:
Episode 5 **Evaluate**	

Days: Instructional Goals: Assessment -problem solving, system analysis, decision making, rubrics, project, student self assessment, journal writing Reflect	
Assessment	Resources
	Episode Supply List:

Unit 2 Topic/Storyline: From Molecules to Organisms	Grade 4	Days 16
Question:		
How do plants and animals use their internal and external structures for survival, growth, and reproduction?		
Essential Questions:		
1. How does an organism's structure fit its function? 2. How do structures support the survival of plants and animals? 3. How are instincts and learned behaviors beneficial to organisms? 4. How do senses function to help an animal's survival?		
Enduring Understandings		
- Animals respond to different types of information through their senses (smell, touch, taste, hear and feel) to help them survive. - There are internal and external factors that affect human, plant, and animal processes of survival. - Instincts and learned behaviors are beneficial to organisms.		
Storyline Narrative / Big Ideas In this unit, students begin by watching a video of a wilted tomato plant "coming back to life." Students conduct investigations on plant and animal structures, animal adaptations, and animal senses. In the explain episode, students will watch videos and read texts about plants and animals' various internal and external structures that support survival, growth, and reproduction. They will also learn how animals use their senses for survival and how plants and animals adapt to improve their chances of		

survival. The unit will culminate with students creating their own animal or plant and describing how its internal and external structures help it to survive, grow, or reproduce. Students will take a final assessment by looking at pictures of animals and plants and identifying the external and internal structures and how it helps the animal survive, grow, or reproduce.

Key Words: internal structure, external structure, adaptation, senses, behavior, instinct, stamen, pistil, pollination, seeds, roots, stem, senses, reaction, xylem, phloem, brain, neurons, reproduce

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. • Use a model to test interactions concerning the functioning of a natural system. (4-LS1-2) **Engaging in Argument from Evidence** Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Construct an argument with evidence, data, and/or a model. (4-LS1-1)	**LS1.D: Information Processing** Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions. **LS1.A: Structure and Function** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	**Systems and System Models** A system can be described in terms of its components and their interactions. (4-LS1-1),(4-LS1-2)

Consolidated Supply List - Copy of book *Feathers: Not just for flying* by Melissa Stewart, 2 White Carnation Flowers, 2 Clear Drinking Glasses, Red and blue food coloring, Celery stalks with leaves still attached, Glass/vase/beaker, 16 oz. clear plastic cups, cotton balls, Tape, Essential Oils, Small cups, Box of breakfast cereal, Wooden craft sticks,Cookie sheets or cafeteria trays, Plastic wrap, Rubber bands, Sheets of thin paper, Paper plates, Marbles, Raisins, Small bits of sponge, drinking straws, Clothespins, Scissors, Paper towels, metric ruler,

Episode 1 Engage/Elicit Ideas Days: 1	
Lessons	Resources
Lesson 1: Phenomena - Wilted Plant Recovers **Gather:** Tell students you will be showing them a time-lapse video of a tomato plant that was very dry. Show students the video of the tomato plant recovering. **Reason:** Students will write down 10 notice and wonder statements in their notebooks and share these ideas with a partner or small group. Students will then draw a model to explain how the tomato plant came "back to life." **Communicate:** Gather the class back together for a whole class discussion. On chart paper, create a class model of how the tomato plant came back to life.	Video Link: *Engage Tomato Plant*
Episode 2 **Explore** Days: 5	
Lessons	Resources
Lesson 1: Color Changing Celery Part 1 (Structure And Survival) **Note To Teachers: 24-48 hours before this lesson, be sure to put a white carnation in a plastic cup with food coloring. You will be using it as a model before students conduct their investigation with the celery stalks.*** **Gather:** Show students the white carnation that has been in the food coloring for 24 hours. Ask: How do you think the color from the water got to the petals? Explain that they will be conducting their own investigation using celery stalks and food coloring. Split students into small groups or partners. Students will place the celery into the **Reason:** Students draw models of what their celery looks like now and write down their hypotheses about what will happen to the celery after 24 hours. Have each team draw a model of their prediction on chart paper. Use guided questions to help them make their models as detailed as possible like: -What plant parts have you included in your model that you would not be able to see if you were looking at the plant growing in the ground?	Lesson 1 Supply List: *For Teacher Demo* ● 2 White Carnation Flowers ● 2 Clear Drinking Glasses ● Water ● Red Food Coloring *For Student Investigation* ● Celery stalks with leaves still attached (will not work with leafless stems), one stalk per team ● Red and blue food coloring ● Glass/vase/beaker/16 oz. clear plastic cup large enough to hold a celery stalk, one per team ● One piece of chart paper per group *Teacher Resource:* Video

-How do you think the plant will change by tomorrow? -How does your model show and explain your predicted changes? -Can you use arrows to show how the changes will take place over time? -Which parts of the plant do you think will work together in order for your predicted changes to happen? **Communicate:** Students do a gallery walk and look at each other's models. **Lesson 2: Observe Celery (after 24 hours) (Structure And Survival)** **Gather**- Students observe celery and notice what changes occurred. Then instruct students that they will add what structures they think are inside the celery's stem that caused the plant to move the water. **Reason-** Students compare the results to their model. They will revise their models to add details about the internal structures of the celery's stem and how it moved the water. Students will then break the celery in half. (See the video under resources to help with this step). They will observe the internal structure of the celery stem. **Communicate-** Students do a gallery walk of the revised models and place questions or comments on each other's model with sticky notes. **Lesson 3: The Nose Knows (Senses)** **Gather:** Explain the directions for the activity (listed under resources to the link). Give each student a cotton ball with their scent and tape it to their shoulder. **Reason:** Students walk around sniffing each other's cotton balls, trying to find their matching scent. See link for more information. Once all students have found their match, students write down their observations in their science notebooks. Ask the guiding question- "How do you think animals use their sense of smell to help them survive?" **Communicate:** Come together as a whole class and share their experiences with the activity and possible answers to the question about animals' sense of smell. **Lesson 4: Feeding Frenzy (Animal Adaptations)** **Note To Teachers: This investigation asks students to*	that explains what happens to celery Lesson 2 *Teacher Resource:* Video that explains what happens to the celery ● Celery stalks with food coloring after 24 hours ● Group models of celery Lesson 3 -Link to "The Nose Knows" Activity -Video on "The Nose Knows" -Short Wild Kratts video on animal scent Materials: ● Cotton balls (one for each student) ● Tape (or cups for each student's cotton ball) ● Essential Oils ● Recording sheet to keep track of which students has which oil Lesson 4 -Link to activity Materials: ● "What's in Your Mouthpart?" handout for each student ● "Feeding Frenzy" activity sheet for each student ● Small cups ● Box of breakfast cereal ● Wooden craft stick for each student ● Cookie sheets or cafeteria trays ● Water ● Plastic wrap ● Rubber bands ● Sheets of thin paper

*eat certain foods. Instead of having students eat the food, have them just pick up the food.** **Gather:** Conduct the "hook" part of the lesson by giving each student a small cup of cereal. First have them pick up cereal with their fingers and then have them try to gather cereal with the popsicle stick. Bring students together and define "adaptation" and how different animals have developed different mouth parts to eat certain foods. See pages 2-3 of the activity for more detail. **Reason:** In either small groups or as a whole class, conduct the investigation. The different materials represent animal mouth parts and animal food. Students try to gather as much "food" as they can with their assigned "mouth part." See pages 3-5 of the activity for more detail. Students should record their findings after the investigation. Print pages 8-10 from the activity so that students can record their findings. **Communicate**: In small groups, ask students to share their findings and answer these questions: -Which insects were the most successful with what food sources? Why? -Were any insects able to get nourishment from more than one food source? Why? -Do they think that some insects are adapted to eat a larger variety of foods than others? **Lesson 5: Reaction Time (Instincts and Learned Behaviors)** *Mystery Science Investigation Human Machine Unit Lesson 4 of 4- How does your brain control your body?* **Gather:** Conduct the "exploration" part of the Mystery Science video. Play through each slide, and stop and discuss where the video indicates. Continue onto the "hands-on activity" portion of the video and answer any questions about the directions. **Reason**: After students conduct the investigation in their small groups, ask students to answer the follow questions from step 10 of 10 from the Mystery Science slides in their science notebooks: -What, if anything, surprised you about this investigation? -What changes did you notice as you repeated the experiment? Can you explain those changes? **Communicate:** Students come back to the whole group	● Paper plate ● Marbles ● Raisins ● Small bits of sponge ● Plain drinking straws ● Drinking straws cut diagonally to create a pointed tip ● Clothespins ● Scissors ● Paper towels Lesson 5 Mystery Science Link ● Metric ruler, one per pair ● Blank piece of paper (one per student) ● Data Table (can be found from Mystery Science link under

and share what they learned. Play the final video from Mystery Science.	
Episode 3 **Explain** Days: 5	
Lessons	Resources
Lesson 1:- Vocabulary Splash **Gather** - display all the unit's vocabulary words on the board. Read each word to the class with a brief explanation of the words. **Reason -** partners sort these words in an open sort using their prior knowledge. Label each group of words. **Communicate** - share how they sorted these words to the class. **Lesson 2: Plant Growth** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather:** Explain to students that they will be watching two Brain Pop videos on parts of a plant and plant growth. They will be using the video to gather information about the different parts of plants and each part's function. If the Brain Pop Jr. video seems too basic, you can have students skip right to the plant growth video. **Reason:** Students will take notes from each video using the note-taking template provided or their own note-taking structure of choice. **Communicate:** Students will use the information they learned from the videos to explain how the celery changed color in the investigation from lessons 1 and 2 of the "explore episode." Students should write their findings in their science notebook and share ideas with partners. **Lesson 3: Animal Structures- Feathers** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather:** Either use the video link on the right or read the hard copy version of the book *Feathers: Not Just for Flying* by Melissa Stewart.	Lesson 1 -Brain Pop Jr. Video- Parts of a Plant -Brain Pop Video- Plant Growth -Video explaining celery food coloring investigation -Note-taking template Lesson 2 -Feathers- Not Just for Flying Read Aloud Video Or -Hard copy version of book: Stewart, M. (2014). Feathers: Not just for flying. -Read aloud note-taking chart Lesson 3 -Wild Kratts Link (just use the night primates and eye adaptations videos) -Wild Kratts Googly Night Eye Guru Episode 39 Full Episode Lesson 4 -Video on instincts and learned behaviors -Newsela articles on animal behaviors: -Newsela Article #1 -Newsela Article #2 -Newsela Article #3 -Newsela Article #4 Lesson 5 -*The Brain* by Ben Williams (Time For Kids version- available on Get Epic) -The Franklin Institute Interactive Brain Activities

Reason: Students fill out the read aloud note-taking chart that explains how each bird uses its feathers for survival, growth, or reproduction. This can be done while the teacher does the whole class read aloud, or if you are showing the read aloud on video, students can do this independently or in pairs. **Communicate:** Create a whole class chart on chart paper and have each student/partnerships fill in part of the chart. **Lesson 4: Wild Kratts Videos on Night Primates** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather:** Play the Wild Kratts videos on night primates and eye adaptations. The first link is the clips that talk specifically about night vision,and the second link is the full episode. **Reason:** In their science notebooks, students take notes during the episode that explains how night primates have certain structures and senses that help them survive at night. **Communicate:** At the end of the episode, students gather in partnerships or small groups to compare their notes. Gather as a whole class to ensure students understand how animals use internal and external structures and senses to survive in the dark in order to survive. **Lesson 5: Animal Adaptations- Instincts & Learned Behaviors** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather:** Watch this video on instincts and learned behavior. Then, ask students to choose 2 of the 4 Newsela articles (listed to the right) to read about animal behaviors. **Reason:** For each article, ask students to list out the animal behaviors as instincts or learned behaviors and how it helps the animal to survive, grow, or reproduce. **Communicate**: Students should share their findings with	

a partner or small group. Students who read the same articles should compare their findings. **Lesson 6: Human Brain Reading & Interactive Activities** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather:** Read *The Brain* by Ben Williams on Get Epic. Students can read this independently, or the teacher can do a whole class read aloud. **Reason:** Students will try out some of the interactive brain activities on The Franklin Institute's website. Students will use what they learned in the reading to help explain what is happening in the activities. Each activity is also accompanied by an explanation. **Communicate:** In their science notebooks, students will choose one of the activities to focus on and write down what they learned about how their brains functioned during that activity. **Lesson 7: Vocabulary** **Gather** - display all the unit's vocabulary words on the board. Read each word to the class with a brief explanation of the words. **Reason** - partners sort these words in an open sort using their prior knowledge. Label each group of words. **Communicate** - share how they sorted these words to the class.	
Episode 4 **Elaborate/Build New Content/Apply new Content** Days: 3	
Activity	Resources
Project- "Create-a-plant" or "Create-an-animal": Use the link as a resource to provide students with the directions and planning pages. Students will create their own plant or animal and identify at least 3 external and internal structures that help the plant/animal to grow, survive, or reproduce. See the samples in the link.	Episode Supply List: Directions and Planning Templates

Episode 5 **Evaluate** Days: 2	
Assessment	Resources
Assessment: What's Your Evidence? Tell students: "You are going to use what you have learned to construct an evidence-based argument defending the claim that a specific plant or animal uses internal and external structures to support survival, growth, reproduction, and behavior." Students will choose one plant and/or one animal from the series of slides linked to the right. Students will then use the planning templates to construct their arguments. Students can peer review each other's arguments and provide feedback to improve each other's pieces.	Episode Supply List: -What's Your Evidence Slides -Planning Template- Animals -Planning Template- Plants -Rubric

Unit 3 Topic/Storyline: **Earth's Systems and Earth's Place in the Universe**	Grade 4	Days 17
Question		
How is Earth's structure continuously changing over time?		
Essential Questions:		
1. What do the shapes of landforms and rock formations tell us about the past? 2. How can models be used to understand interactions on earth? 3. How has the Earth changed over time? 4. How does the past help us predict the future?		
Enduring Understandings		
- Physical and chemical principles are unchanging and drive both gradual and rapid changes in the Earth system. - Models help us understand change over time. - Physical and chemical cycles on Earth (water cycle, weather, erosion, etc) drive both gradual and rapid changes of the earth's landforms.		

Storyline Narrative / Big Ideas:

In this unit of study, students develop understandings of the effects of weathering and the rate of erosion by water, ice, wind, or vegetation. The crosscutting concepts of patterns and cause and effect are called out as organizing concepts. Students demonstrate grade-appropriate proficiency in planning and carrying out investigations and constructing explanations. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Key Words: earthquake, erosion, mountain, ocean, history, planet, surface, canyon, fossil, layer, collide, cycle, properties, valley, volcano, weathering, deposition, water cycle

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions of test solutions to problems in 3-5 builes on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (4-ESS2-1 **Analyzing and Interpreting Data** Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Analyze and interpret data to make sense of phenomena using logical reasoning. (4-ESS2-2)	**ESS2.A: Earth Materials and Systems** Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms and gravity break rocks, soils and sediments into smaller particles and move them around. (4-ESS2-1) **ESS2.B: Plate Tectonics and Large-Scale System Interactions** The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. Major	**Cause and Effect** Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS2-1) **Patterns** Patterns can be used as evidence to support an explanation. (4-ESS1-1)

Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3– 5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Identify the evidence that supports particular points in an explanation. (4-ESS1-1)	mountain chains form inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4-ESS2-2) **ESS2.E: Biogeology** Living things affect the physical characteristics of their regions. (4-ESS2-1) **ESS1.C: The History of Planet Earth** Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)	

Consolidated Supply List -

- Sugar Cubes
- Plastic container with lids
- Paper plates
- Skittles
- Water Droppers
- Cups
- Food coloring
- Ziploc bag bags
- Paper Confetti
- Rocks
- Red Marker
- Book: “Fossils Tell of Long Ago” by Aliki Brandenberg
- Book: “Weathering and Erosion” by Maloof Torrey

Episode 1
Engage/Elicit Ideas
Days: 1

Lessons	Resources

Lesson 1: Phenomena **Gather** - Elicit ideas - Show phenomena video and elicit initial ideas. Have students draw a model of what they saw in the video in their science journals. Point out what makes a good science model - labels, pictures, arrows, etc. **Reason** - Students write down their noticings and wonders about the phenomena. **Communicate -** Class Discussion - Share their noticings and wonders. - How did Peru's river change over time? - What do you think caused the Earth's surface to change over time? - Do you think that Peru's river is still changing shape?	Phenomena- Video Link Episode Supply List: ● Journal/notebook ● Noticing and Wonders pdf - link ● KWL - link
Episode 2 **Explore** Days: 6	
Lessons	Resources
Lesson 1: Will a Mountain Last Forever? **Gather-** Watch the Mystery Science- The Birth of Rocks Lesson 3-Link **Reason**-Students will perform the experiment. In the experiment students will shake sugar cubes in a container and notice how the sugar cube becomes round as it hits the walls of the container. Students will record their noticings in the data recording sheet. **Communicate**-Students reflect on their new learning from this experiment by answering the questions at the bottom of the data recording sheet. **Lesson 2: Skittles Water Erosion Experiment** **Gather-** Students pour water on skittles to demonstrate erosion of the color and the layers. **Reason**- Students draw a model and describe what is happening to the skittles on the data recording sheet. Students answer the questions on the data recording sheet to relate the parts of experiment to how erosion shapes the Earth. **Communicate-** Class discussion:	Episode Supply List: Lesson 1: ● Data recording sheet ● Markers ● Sugar Cubes ● Plastic container with lids ● Paper plates Lesson 2: ● Data recording sheet ● Skittles ● Water ● Water Dropper ● Cup Lesson 3: ● Data Recording Sheet ● Ziploc bag bag ● Sharpie ● Water ● Food coloring Lesson 4: Mystery Science: Can a Volcano Pop Up in

Think back to the phenomena video we watched at the start of the unit. How does your data from this experiment relate to the way the shape of Peru's river change over time? **Lesson 3: Water Cycle in a Bag** **Gather**- Students create a model of the water cycle. They do this by drawing the different parts (sun, water, clouds) on a ziploc bag. Students then fill the ziplock bag with water/food coloring and tape it to the window. **Reason-**Students observe the bag over the next 3 days and record their noticings in their science notebook. Students should draw a model of what is happening in the bag using labels to identity the different parts of the water cycle that are taking place. **Communicate**-After 3 days have a class discussion with students about the experiment. Use the following questions to guide your class discussion. -Did you you confirm or refute your hypothesis? -Do you think if we keep the bags on the window the water cycle will continue? -Did anything in this experiment surprise you? **Lesson 4: Could a Volcano Pop Up in your Backyard?** **Gather:**Watch the Mystery Science- Could a Volcano Pop Up in your Backyard?Link **Reason**-Students perform the activity from the Mystery Science. In groups they will map out where volcano locations are around the world. Students will discover and learn that volcanos are most likely to appear in the ring of fire. **Communicate**- As a class discuss the following questions: 1. Looking at the data from the experiment do you think it is possible that a volcano can pop up in New Jersey? 2. Think back to the first Mystery Science, "Will a Mountain Last Forever?". How do you think New Jerseys land has changed over time? **Lesson 5: Wind Erosion and Weathering Lab** **Gather**- Students will perform the wind erosion lab. In this lab students will blow on paper confetti holes using a light breeze and a strong breeze. Students will then add rocks to the bin and repeat the same steps.	your Backyard? • Red marker,crayon, or colored pencil Lesson 5: Wind Erosion and Weathering Lab • Paper confetti • Rocks • Plastic bin Lesson 6: Fossils Lab

Reason- Students will answer the post lab questions and as a class discuss their noticings. **Communicate-** Students will write a reflection in their notebooks comparing/contrasting wind and water erosion/weathering. **Lesson 6: Fossils** **Gather-** Gather students together and go over the overview of this lab. The overview will gives students information they need to know to perform the lab. **Reason-** In the lab students will be working in partners to look at the layers in which fossils were found and will be making observations about the different types of fossils to explain how land changes over time. There are 3 stations (layers of fossils). Students will observe the order the fossils are in, Layer A being the top layer of rock, Layer D being the lowest layer of rock. Next, students will use the identification chart on page 2 to see what type of land each fossil would belong in. Students can record their data in their science notebooks. **Communicate-** Class discussion going over the post lab questions. 1. Describe the climate and environment of each location changed over time. 2. Is there a pattern in the relationship between old and recent layers of rock? 4. What could cause the climate or environment of these locations to change? 4. No fossils are found in rock layer C of location A. What do you think this means?	
Episode 3 **Explain** Days: 6	
Lessons	Resources
Lesson 1:- Vocabulary Splash **Gather** - display all the unit's vocabulary words on the board. Read each word to the class with a brief explanation of the words. **Reason -** partners sort these words in an open sort using	Episode Supply List: Lesson1 : Erosion Readings Guided Notes

their prior knowledge. Label each group of words. **Communicate** - share how they sorted these words to the class. **Lesson 2: Identify Different Types of Erosion** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather**- Split students into groups and assign each group a different form of erosion. Have students become an expert on that form of erosion and prepare to teach the rest of the class. -Link **Reason**- Groups take turns teaching their type of erosion to the class. Students can take notes in their science notebook or use the guided notes worksheet. -Link **Communicate-**As a class discuss the difference between the types of erosion and think of examples where they have seen the different types in their own lives. Teacher can chart out the real life examples. **Lesson 3: Read Aloud Weathering and Erosion** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather-** Read aloud the book Weather and Erosion on Get Epic https://www.getepic.com/app/read/42201 **Reason**-Students can fill out the note-taking chart while you are reading the book aloud to them. You can help students define weathering and erosion. Next, students will have to describe how different agents aide to weathering and erosion. **Communicate-** In their science notebooks have students choose one event (rain, ice, pollution, etc) that they think is the most impactful on weathering and erosion. Why do they think it is the most impactful? Have they seen it happen in their everyday lives? **Lesson 4:Vocabulary: Weathering, Erosion, Deposition** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word	Lesson 2: Get Epic: Weathering and Erosion Note Taking Chart Lesson 3: Vocabulary Google Slides Lesson 4: Magic School Bus Video- Wet all over Questions for video Lesson 5: Water Cycle Vocabulary Slides Lesson 6: ● "Fossils Tell of Long Ago" Video Read Aloud ● "Using Fossils to Study Climate" ● Phenomena Video

and write the word in a sentence in their journals. **Gather**-Students will work through the Google Slides throughout this lesson. First, as a class discuss the different definitions for weathering, erosion, and deposition. Have students drag and drop the definitions for weathering, erosion and deposition based on prior knowledge. **Reason-** You can split student into groups to work on the "Web Search" part of the slides. Students will read the article linked on the topic and then answer the questions in each of the boxes below. Students will also research real life examples of weathering, erosion, and deposition. **Communicate**- Revisit the anchor phenomenon. Have students write in a reflection in their science notebooks answering the question: Do you think weathering, erosion or deposition impacted the shape of Peru's river over time? **Lesson 5: Water Cycle** **Vocab. Focus** - choose a few vocabulary words to focus on. Students write the word, draw a picture of the word and write the word in a sentence in their journals. **Gather**- Students will watch the Magic School Bus video "Wet All Over"- link **Reason-** Students will answer the questions while watching the video. **Communicate-** Go over the questions as a class. There is an optional extension activity where students can draw out the parts of the water cycle.- Link **Lesson 6: Water Cycle Vocabulary** **Gather**- Reflect on the Magic School Bus video "Wet All Over" from the day before. Have students discuss the different parts of the water cycle using the words evaporation, condensation, precipitation and collection. **Reason**- Students can work in pairs to complete the Water Cycle Vocabulary Slides. In the slideshow students will drag and drop definitions and label a diagram with the different parts of the water cycle. **Communicate-** Have a class discussion using the	

following guided questions: 1. What patterns do you notice in the water cycle? 2. Is it possible that we are using the same water that dinosaurs drank back when they roamed the earth? 3. How does the water cycle impact weathering and erosion? **Lesson 7: Fossils** **Gather-** Read aloud the book "Fossils Tell of Long Ago" or watch the video read aloud on Youtube. **Reason-** Students can work in partners to read the article, "Using Fossils to Study Climate". Using information from bother the video read aloud and the article students can answer the following questions in their science notebooks. 1. What is a fossil? 2. How does the age of a fossil in a superficial layer of rock compare to the age of a fossil in a deep layer of rock? 3. What might you find in rock that would suggest an area was once covered by water? 4. How are plants helpful in studying the past climate of an area? **Communicate-** Show students the phenomena video again. Have a class discussion on how fossils could help scientist identify the changing shape of the land. **Lesson 8: Vocabulary** **Gather** - display all the unit's vocabulary words on the board. Read each word to the class with a brief explanation of the words. **Reason** - partners sort these words in an open sort using their prior knowledge. Label each group of words. **Communicate** - share how they sorted these words to the class.	
Episode 4 **Elaborate/Build New Content/Apply new Content** Days: 2	
Activity	Resources

1. Connection: "We have been investigating how natural earth processes can cause landscape changes. Today you are going to apply what you have learned to solve a problem that is being caused by the different types of landscape changes." 2. Show students photos of the castle and map of the land the castle is on (Slides 1-8). Explain to the class that their job is to work as a team of civil engineers and to design a way to prevent this historic building from collapsing into the river. Show video *Time-Lapse: The Power of Water* Direct student attention to the impact that the fast-moving water has on the landscape. Discuss as a class what happened during the video. 3. In a group students give students the final task Protect the Castle. Using what they have learned this unit students will create a claim on why the Castle is in danger and come up with a design to protect the castle. 4. Groups can share out their claims/designs and decided which design is best to protect the castle. 5. Think back to phenomena and reflect: a. Is it possible to protect that castle?	Episode Supply List: Castle Slides *Time-Lapse: The Power of Water* Protect the Castle Worksheet
Episode 5 **Evaluate** Days: 1	
Assessment	Resources
Journal Writing/Decision Making Using all of what they have learned throughout the unit students will have to make the decision on where they would want to live. They will have the option of Positano, Italy, Island Park, Idaho, and Albany New York. Students should write a response in their science notebook using the following guided questions: 1. Based off of the pictures where would you choose to live? 2. Why do you think this is the safest location to live?	Episode Supply List: Pictures of where to live

3. What might happen in the other locations based off of your knowledge or weathering, erosion, and the water cycle? Use specific evidence to support your thinking.	

Unit 4 Topic/Storyline:	Grade 4	Days
Question		
Essential Questions:		
2.		
Enduring Understandings		
-		
Storyline Narrative / Big Ideas:		
Key Words:		

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
Consolidated Supply List -		
Episode 1 Engage/Elicit Ideas		

Days:

Instructional Goals:
Motivates students Phenomena - short video, text, picture, gifs, song, demonstration, maps
Notice and Wonder Statements (10 observations and 10 Questions)
Model
Students draw a model to explain or predict. Then write about what they drew or label the model.
Claim - make a claim about the phenomena.

Lessons	Resources
Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate	Episode Supply List:

Episode 2
Explore
Days:

Instructional Goals:
Experience - Students explore and carry out investigations from wonder statements or claims from the first episode.
Data - Collect data from the investigations.
Research - obtain information.
Model - Students revise their models

Lessons	Resources
Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate Lesson 3: Gather	Episode Supply List:

Reason Communicate	

Episode 3
Explain
Days:

Instructional Goals:
Learn information to make sense of their science explorations from the explore phase.
Analyze and interpret the data (SP4) .
How does the Evidence support this claim?
Reading, listening and/or discussing text, articles, videos
Vocabulary Instruction
Teacher directed lessons.

Lessons	Resources
Lesson 1: Gather Reason Communicate Lesson 2: Gather Reason Communicate Lesson 3: Gather Reason Communicate Lesson 4: Gather Reason Communicate	Episode Supply List:

Episode 4
Elaborate/Build New Content/Apply new Content
Days:

Instructional Goals:
Students have the opportunity to practice what they have learned in the introduction section to consolidate learning and develop understanding. Use what they learned to apply to another experience.
Back to phenomena to explain the Reasoning
Independent Activities

STEM projects Choice Boards Debates	
Activity	Resources
	Episode Supply List:
Episode 5 **Evaluate** Days: Instructional Goals: Assessment -problem solving, system analysis, decision making, rubrics, project, student self assessment, journal writing Reflect	
Assessment	Resources
	Episode Supply List: