

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	Unit 1 Human Machine	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards</p> <p>Lesson 1 4-PS4-2-Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.</p> <p>Lesson2 4-LS1-1-Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p>Lesson 3 4-LS1-2-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.</p>	<p>Lesson 1- Why do biceps bulge? Lesson 2- Why do people who are blind see? Lesson 3- How can animals see in the dark? Lesson 4- How does your brain control your body?</p>

Brief Unit Summary	Content Vocabulary
<p>Students will investigate structures and functions of the human body. Students explore how our bones and muscles are interconnected, how our eyes interact with light and impact our vision, and how our brain responds to stimuli in our environment.</p>	<p>Lesson 1- Muscle, biceps bulge, tendon, joint movement Lesson 2-retina, iris, cornea lens, pupil Lesson 3- pupil, nocturnal animal, red eye Lesson 4- movement nerves, sensory nerves, senses, muscles</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<p>Lesson 1-Students construct a model of the human hand to explain how muscles pull on bones to create movement.</p> <p>Lesson 2-Students develop a working model of an eye. They use the model to reason about how light reflects off an object and into the eye, helping an organism process information from the environment.</p> <p>Lesson 3-Students use their eye model to discover that the pupil controls the amount of light let into the eye. In the dark, pupils get larger to let in more light.</p> <p>Lesson 4-Students investigate how their own brain works by testing their reflexes. They discover that the brain receives information from the senses, processes the information, and sends signals to the muscles to enable movement.</p>	<p>Lesson 1-4-Formative - Unit Assessment Lesson 1-https://docs.google.com/forms/d/1gJpZpdrXODmNS1NUyxtkHU6ULBag0acu8-Ltfu1h9bl/copy</p> <p>Lesson 2-https://docs.google.com/forms/d/1pPJbR6AfovNz0MIewOgqUM-qxufLeHUiYJaAidNEuoc/copy</p> <p>Lesson 3-https://docs.google.com/forms/d/1sl-ErvA60k53f0je4SCvA3b3wviqbWZgkP795G95UWg/copy</p> <p>Lesson 4-https://docs.google.com/forms/d/1rmAdvRe61dvnvbLhkeBaV12dmjP20kLUNKmazTRMfA8/copy</p> <p>Unit Assessment-https://docs.google.com/forms/d/1rq7GmH-0duy7Wpq6lgzJIX3cFII1f0lmFyIg8gtp7Q/copy</p> <p>Summative - Anchor Phenomena, Performance Task, Lesson Exit Tickets/See-Think/Wonder</p>	<p>Unit 1- October-November 19 Sessions (30-40 mins each)</p> <p>Unit Breakdown</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 4 Lessons & Activities • 4 Anchor Connections • 4 Lesson Assessments • 4 Extensions • 1 Unit Assessment • 1 Performance Task

Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	Unit 2 The Birth of Rocks	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards</p> <p>Lesson 1 4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p> <p>Lesson 2 4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p> <p>Lesson3 4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.</p> <p>Lesson 4 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p>	<p>Lesson 1- Could a volcano pop up where you live? Lesson 2- Why do some volcanoes explode? Lesson 3- Will a mountain last forever? Lesson 4- What did your town look like 100 million years ago? Lesson 5- How could you survive a landslide?</p>

Brief Unit Summary	Content Vocabulary
Students will investigate features and processes of the Earth's surface. Students explore the rapid process of volcanic eruptions! In	Lesson 1- volcano, volcano pattern, lava

contrast, students also explore the gradual Earth processes of weathering and erosion. Students apply their knowledge and design solutions to mitigate the impacts of these processes on humans.

Lesson 2-thin and thick lava, eruptions
 Lesson 3- rocks, weathering erosion
 Lesson 4- sedimentary rock formation, landscape
 Lesson 5- landslide, erosion

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<p>Lesson 1-Students explore the past and present pattern of where volcanoes exist on the earth.</p> <p>Lesson 2-Students will investigate how differences in lava types explain differences in the shape and eruption patterns among volcanoes.</p> <p>Lesson 3-Students will explore how solid rock breaks apart into smaller pieces through a process called weathering (including root-wedging and ice-wedging).</p> <p>Lesson 4-Students gather evidence to describe how environments on Earth have changed over time. Students explore how the process of sedimentary rock formation preserves a record of those past environments.</p> <p>Lesson 5- Students will learn about the types, causes, and dangers of landslides.</p>	<p>Lesson 1-5-Formative - Unit Assessment Lesson 1-https://docs.google.com/forms/d/1fF2dkwI8VL7qbPyBmLsMAaqw3GunsLAEP6Ga2VT54Q/copy</p> <p>Lesson 2-https://docs.google.com/forms/d/1IAIZrMBfXKzReaLY_WUijzJWXiag9yZoER5VXpPr_VU/copy</p> <p>Lesson 3-https://docs.google.com/forms/d/1MLmcXHLdurv4X3OGtjaDi1uEwEC-p35spb0vcW1Zpz8/copy</p> <p>Lesson 4-https://docs.google.com/forms/d/1uHUdXrm3oEjX6aF_aBv3aOG-DvzSZCeYxZOmqaIiHlw/copy</p> <p>Lesson 5-https://docs.google.com/forms/d/1Yb8yH8D47dhKozbuI563KQ1C96LgeZgl7VyfM7bMkXA/copy</p>	<p>Unit 2-January-February 25 Sessions (30-40 mins each)</p> <p>Unit Breakdown</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 5 Lessons & Activities • 5 Anchor Connections • 5 Lesson Assessments • 5 Extensions • 1 Unit Assessment • 1 Performance Task

	Unit Assessment- https://docs.google.com/forms/d/1y9a12ZENK7RdfIugqdd92Bo2QwVUWda3IU8itHs0pP4/copy Summative - Anchor Phenomena, Performance Task, Lesson Exit Tickets/See-Think/Wonder	
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Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	Unit 3 Waves of Sound	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards</p> <p>Lesson 1 4-PS4-3. Generate and compare multiple solutions that use patterns to transfer information. 3-5-ETS1-3. 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</p> <p>Lesson 2 Foundational for 4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. 3-5-ETS1-2. 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.</p> <p>Lesson 3 4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and</p>	<p>Lesson 1-How do you send a secret code? Lesson 2-How far can a whisper travel? Lesson 3- What would happen if you screamed in outer space? Lesson 4-Why are some sounds high and some sounds low?</p>

<p>that waves can cause objects to move.</p> <p>Lesson 4 4-PS4-1. Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.</p>	
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Brief Unit Summary	Content Vocabulary
<p>Students will investigate the science of sound. Students construct physical devices to feel the vibrations that allow us to communicate across distances. Students also use digital devices to visualize the characteristics of different sound waves that cause us to hear different things.</p>	<p>Lesson 1- metal, vibrate, electrical signal, sound Lesson 2-metal, vibrate, sound travel Lesson 3- vibrations, sound travel in air Lesson 4- Ruben’s Tube, low and high pitch, sound, wavelength</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<p>Lesson 1-Students explore how digital devices encode complex information. Students generate their own codes in order to transfer information across the classroom. Then, they compare their codes and evaluate which worked best given the criteria and constraints.</p> <p>Lesson 2-Students will learn about the connection between sounds and vibration.</p>	<p>Lesson 1-4-Formative - Unit Assessment Lesson 1-https://docs.google.com/forms/d/1RA5OvT9f4JtKlgRcGe2HZ-bm4oCbwX7fFRwTvqyrFyQ/ copy</p> <p>Lesson 2-https://docs.google.com/forms/d/13NIOVcTSdqK5py8Ok14z8odY7CocJRcOj3NKo9_vbh4/copy</p> <p>Lesson 3-https://docs.google.com/forms/d/18PpGyCgQ</p>	<p>Unit 3-March-April 19 Sessions (30-40 mins each)</p> <p>Unit Breakdown</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 4 Lessons & Activities • 4 Anchor Connections • 4 Lesson Assessments • 4 Extensions • 1 Unit Assessment • 1 Performance Task

<p>Lesson 3-Students will explore the role that air plays in enabling a sound vibration to travel.</p> <p>Lesson 4-Students will discover that sound is a wave.</p>	<p>Y_iKF1nkCSyhjTgNCAPFxd2_FOSqU3o-tQ/copy</p> <p>Unit Assessment-https://docs.google.com/forms/d/1poflZaOT-n_FSq3Hg1p_spW83VQnKIGyuZenuMKmS1M/copy</p> <p>Summative - Anchor Phenomena, Performance Task, Lesson Exit Tickets/See-Think/Wonder</p>	
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Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	Unit 4 Energizing Everything Part 1 Sound, Waves, & Communication	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards</p> <p>Lesson 1 4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object.</p> <p>Lesson 2 4-PS3-1. Use evidence to construct an explanation relating the speed of an object to the energy of that object. 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide</p> <p>Lesson 3 4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.</p> <p>Lesson4 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified</p>	<p>Lesson 1- How else can energy be stored? Lesson 2-How does the speed of an object relate to the energy of an object? Lesson 3-How else can energy be transferred from one object to another? Lesson 4-How can I use energy transfer to make longer chain reaction machines?</p>

criteria for success and constraints on materials, time, or cost.	
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Brief Unit Summary	Content Vocabulary
Students explore energy. Students investigate how energy is stored, how it can make objects move, and how collisions transfer energy between objects. Students also construct devices that convert energy from one form into another, such as heat into motion and electricity into light.	Lesson 1-energy, chain reaction, complex chain reaction, stored energy Lesson 2-chain reaction, height stored energy, energy of motion Lesson 3- energy transfer, collisions, stored energy Lesson 4- chain reaction machine, release stored energy, transfer energy

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<p>Lesson 1-Students learn about stored energy and about the relationship between motion and energy. Students build models of an amusement park ride and discover how energy can be stored in materials. Stored energy can be converted to speed.</p> <p>Lesson 2-Students will build a model of a roller coaster and carry out an investigation using marbles. Students learn that lifting an object up stores energy in the object. When the object falls, that stored energy is released. They realize that energy is transferred when objects collide.</p> <p>Lesson 3-Students will investigate how energy transfers when objects collide. In the activity, Bumper Jumper, students ask questions and make predictions about how far</p>	<p>Lesson 1-4-Formative - Unit Assessment Lesson 1-https://docs.google.com/forms/d/1mf2Iz2eiCh3cA4x6haXUpK-c-NAZBmGMBPM12f5gkRY/copy</p> <p>Lesson 2-https://docs.google.com/forms/d/14qHtsvTzrYYv90P3xGPfWHts_PgiBw_DpZ8KcL_dq2U/copy</p> <p>Lesson 3-https://docs.google.com/forms/d/1-rQYRwHyAiBj9q-hX0XugkoYiCYqAQYxMPalwwNMh68/copy</p> <p>Lesson 4&5-https://docs.google.com/forms/d/1rTs1CC</p>	<p>Unit 4-May-June 25 Sessions (30-40 mins each)</p> <p>Unit Breakdown</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 5 Lessons & Activities • 5 Anchor Connections • 5 Lesson Assessments • 5 Extensions • 1 Unit Assessment • 1 Performance Task

<p>a marble will launch over a jump after colliding with other objects</p> <p>Lesson 4-Students will experiment with ways to store and release energy, creating the beginning of a chain reaction machine with a lever and a ramp. Students figure out that a domino standing on end is storing energy, only requiring a small amount of energy (a tiny push) to release the stored energy.</p>	<p>3F_2zAmlStGamGGOVZxuV2ZWNsvWtoIjf9qyE/copy</p> <p>Unit Assessment-https://docs.google.com/forms/d/1qbGLaGPail3JFUN0Wcgu96ZM5NIQf_YkooSL79fgkPE/copy</p> <p>Summative - Anchor Phenomena, Performance Task, Lesson Exit Tickets/See-Think/Wonder</p>	
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Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	Unit 4 Energizing Everything Part 2 Sound, Waves, & Communication	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards</p> <p>Lesson 5 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETS1-2. 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. 3-5-ETS1-3. 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.</p> <p>Lesson 6 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another. 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. 3-5-ETS1-3. Plan and carry out fair tests in which</p>	<p>Lesson 5-Is electricity a form of energy? Lesson 6-What other forms of energy do we use in our everyday lives? Lesson 7&8-Where can we get the energy we need without creating pollution?</p>

<p>variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p> <p>Lesson 7 4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS3-4. Apply scientific ideas to design, test, and refine a device that converts energy from one form to another</p> <p>Lesson 8 4-ESS3-1. Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment</p>	
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Brief Unit Summary	Content Vocabulary
<p>Students explore energy. Students investigate how energy is stored, how it can make objects move, and how collisions transfer energy between objects. Students also construct devices that convert energy from one form into another, such as heat into motion and electricity into light.</p>	<p>Lesson 5-energy, chain reaction, complex chain reaction, stored energy Lesson 6-chain reaction, height stored energy, energy of motion, electricity, Rube Goldberg/chain reaction machine Lesson 7- energy transfer, collisions, stored energy, chain reaction Lesson 8- chain reaction machine, release stored energy, transfer energy, chain reaction</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<p>Lesson 5-Students continue to build a chain reaction machine — identifying a goal, brainstorming and testing multiple ideas, and determining an optimal solution. The chain reaction machine uses multiple components to transfer energy from one part to the next.</p>	<p>Lesson 5-8-Formative - Unit Assessment Lesson 4&5-https://docs.google.com/forms/d/1rTs1CC3F_2zAmlStGamGGOVZxuV2ZWNsvWtoIjf9qyE/copy</p>	<p>Unit 4-May-June 25 Sessions (30-40 mins each)</p> <p>Unit Breakdown</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 5 Lessons & Activities • 5 Anchor Connections • 5 Lesson Assessments • 5 Extensions

<p>Lesson 6-Students will design a flashlight with an on/off switch, using batteries, flights and tin foil. Students figure out that electricity can be converted to other forms of energy, such as movement, light, and heat.</p> <p>Lesson 7-Students will build a paper spinner and conduct an investigation to explain how heat makes things move. Students realize that heat energy can be turned into motion energy using a turbine.</p> <p>Lesson 8-Students will evaluate the advantages and disadvantages of wind, water, and solar energy to power a town. Students obtain and evaluate information about the needs of each source of energy and analyze and interpret data about the town’s resources.</p>	<p>Lesson 6-https://docs.google.com/forms/d/1d78afOVoc35iFXQqwsWuNIuEFnXjScBfZmSUyuz9g40/copy</p> <p>Lesson 7-https://docs.google.com/forms/d/1skYLjqo23ejf4rjFiifVUbBknHsQg9OXfDnFtlQbUEw/copy</p> <p>Lesson 8-https://docs.google.com/forms/d/1wCKmSD5MSawLQfSPrPzascZJOOqT6ahQAd0OFCeXGk/copy</p> <p>Unit Assessment-https://docs.google.com/forms/d/1qbGLaGPaIL3JFUN0Wcgu96ZM5NIQf_YkooSL79fgkPE/copy</p> <p>Summative - Anchor Phenomena, Performance Task, Lesson Exit Tickets/See-Think/Wonder</p>	<ul style="list-style-type: none"> • 1 Unit Assessment • 1 Performance Task
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Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science Grade 4	School Year:	2023-2034
Unit Title:	NYS Grade 4 Circuits and Electricity	Author/s:	Angela Simmons

NYS Next Gen Learning Standards	Essential Question/Big Ideas
Should be aligned with CURRENT NYS standards Should include all standards, even supporting standards Science Standards	

Brief Unit Summary	Content Vocabulary

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
	-Formative - Unit Assessment- Summative -	Unit-Circuits and Electricity

Differentiation/Enrichment	Materials	Resources