

Carolina™ Curriculum Correlation to



Massachusetts Science and Technology/Engineering Curriculum Framework Grades K-8

Carolina™ Curriculum Correlation to Massachusetts Science and Technology/Engineering Curriculum Framework - Science Grades K-8

This document is an alignment of The STC PROGRAM™, GEMS Kits®, GEMS® Space Science for Grades 3-5 and Building Blocks of Science® units with the Massachusetts Science and Technology/Engineering Curriculum Framework, grades K–8. Although each unit was developed for use at a specific grade level, there is some flexibility in grade placement. Below is a chart of the STC PROGRAM™.



The STC PROGRAM™ is made up of 2 research-based, inquiry-centered core curriculums:

- Science and Technology for Children® (STC®) for grades K–6; and
- Science and Technology Concepts for Middle Schools™ (STC/MS™) for grades 6–8

	Life Science	Earth Science	Physical Science and Technology	
K–2	Organisms	Weather	Solids and Liquids	Comparing and Measuring
1–3	The Life Cycle of Butterflies	Soils	Changes	Balancing and Weighing
2–4	Plant Growth and Development	Rocks and Minerals	Chemical Tests	Sound
3–5	Animal Studies	Land and Water	Electric Circuits	Motion and Design
4–6	Microworlds	Ecosystems	Food Chemistry	Floating and Sinking
5–6	Experiments with Plants	Measuring Time	Magnets and Motors	The Technology of Paper
6–8	Human Body Systems	Catastrophic Events	Properties of Matter	Energy, Machines, and Motion
	Organisms–From Macro to Micro	Earth in Space	Light	Electrical Energy and Circuit Design



Great Explorations in Math and Science® (GEMS Kits®) are standards-based PreK-8 math and science supplemental kits. The kits have been tested for specific grade levels but can also be used at lower or higher levels.



GEMS® Space Science for Grades 3-5 is a research-based science curriculum that teaches fundamental concepts in space science.



Building Blocks of Science® is a K-5 supplementary science curriculum that can be used as stand-alone instruction.

LEGEND - To save paper, the location information in this document has been abbreviated as follows:

- TG = Teacher’s Guide, SG=Student Guide
- L01, L02, etc. = Lesson 1, Lesson 2, etc. or Act01, Act02, etc. = Activity 1, Activity 2, etc.
- RB = STC BOOK™ (a science reading book included in some of the grades 3–5 STC® unit kits)
- Exts = Extensions (found at the end of most lessons in the Teacher’s Guide)

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K-2 Science

DOMAIN / GENERAL STANDARD	MA.1.	Earth and Space Science
LEARNING STANDARD / OUTCOME	1.1.	<p>Earth's Materials: Recognize that water, rocks, soil, and living organisms are found on the earth's surface.</p> <ul style="list-style-type: none"> • Changes • TG: L02 (pp21-30) • TG: L03 Exts (pp35-36) • TG: L08 (pp79-84) • Penguins and Their Young • TG: Act01 (pp5-13) • TG: Act04 (pp39-45) • Rocks and Minerals • TG: L16 (pp113-126) • Soils • TG: L01-17 (pp3-172) • Solids and Liquids • TG: L10 Exts (p85) • Weather • TG: L10 Exts (p95) • TG: L11 (pp101-112)
LEARNING STANDARD / OUTCOME	1.3.	<p>Weather: Describe the weather changes from day to day and over the seasons.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Sky Watchers • TG: Act 02 (pp 1-6) • Weather • TG: L02-5 (pp11-54) • TG: L15-17 (pp135-150)
LEARNING STANDARD / OUTCOME	1.4.	<p>The Sun as a Source of Light and Heat: Recognize that the sun supplies heat and light to the earth and is necessary for life.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Sky Watchers • TG: Act 03 (pp 1-6) • Investigating Artifacts • TG: Ses01-6 (pp7-63)
LEARNING STANDARD / OUTCOME	1.5.	<p>Periodic Phenomena: Identify some events around us that have repeating patterns, including the seasons of the year, day and night.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Sky Watchers • TG: Act 02 (pp 1-6) • TG: Act 04 (pp 1-7)

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DOMAIN / GENERAL STANDARD	MA.2.	Life Science
LEARNING STANDARD / OUTCOME	2.1.	<p>Characteristics of Living Things: Recognize that animals (including humans) and plants are living things that grow, reproduce, and need food, air, and water.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act01 (pp13-23) • Building Blocks of Science: Understanding My Body • TG: Act 02 (pp 1-4) • TG: Act 03 (pp 1-5) • The Life Cycle of Butterflies • TG: L01-16 (pp3-96) • Organisms • TG: L07-10 (pp75-118) • Terrarium Habitats • TG: Act02 (pp15-21) • Weather • TG: L07 Exts (p67)
LEARNING STANDARD / OUTCOME	2.2.	<p>Characteristics of Living Things: Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.</p> <ul style="list-style-type: none"> • The Life Cycle of Butterflies • TG: L10 (pp63-68) • Organisms • TG: L01 (pp3-10) • TG: L15-17 (pp155-182) • On Sandy Shores • TG: Act01 (pp13-25) • Soils • TG: L01-10 (pp3-108) • TG: L13 (pp125-138)
LEARNING STANDARD / OUTCOME	2.3.	<p>Life Cycles: Recognize that plants and animals have life cycles, and that life cycles vary for different living things.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act04 (pp45-59) • Ant Homes Underground • TG: Act04 (pp41-47) • Buzzing a Hive • TG: Les04 (pp39-53) • Eggs, Eggs, Everywhere • TG: Act01 (pp5-15) • TG: Act02 (pp17-29) • Hide a Butterfly • TG: Ses03 (pp25-26) • Ladybugs • TG: Act03-5 (pp43-71) • The Life Cycle of Butterflies • TG: L01-9 (pp3-62) • TG: L11-16 (pp69-96) • Mother Opossum and Her Babies

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		<ul style="list-style-type: none"> • TG: Act02 (pp31-45) • TG: Act03 (pp47-62) • Organisms • TG: L03 Exts (pp29-30) • TG: L06 (pp65-74) • TG: L10 Exts (p115) • TG: L11-13 (pp119-148) • TG: L16 Exts (pp172-173) • Plant Growth and Development • TG: L10 (pp55-60) • TG: L12 (pp67-70) • TG: L15 (pp89-94) • TG: L16 (pp95-98) • Soils • TG: L16 Exts (pp164-166)
LEARNING STANDARD / OUTCOME	2.4.	<p>Heredity: Describe ways in which many plants and animals closely resemble their parents in observed appearance.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Understanding My Body • TG: Act 04 (pp 1-4)
LEARNING STANDARD / OUTCOME	2.6.	<p>Living Things and Their Environment: Recognize that people and other animals interact with the environment through their senses of sight, hearing, touch, smell, and taste.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Understanding My Body TG: Act 01 (pp 1-7) • Changes • TG: L01 Exts (pp10-11) • TG: L17 (pp155-158) • Mother Opossum and Her Babies • TG: Act01 (pp7-29) • Solids and Liquids • TG: L05 Exts (pp43-45) • Sound • TG: L04 Exts (pp26-27) • TG: L08 (pp57-62)
LEARNING STANDARD / OUTCOME	2.7.	<p>Living Things and Their Environment: Recognize changes in appearance that animals and plants go through as the seasons change.</p> <ul style="list-style-type: none"> • Buzzing a Hive • TG: Exts (p67) • Hide a Butterfly • TG: Ses02 (pp11-22) • TG: Ses03 (pp25-26) • The Life Cycle of Butterflies • TG: L01-16 (pp3-96) • On Sandy Shores • TG: Act04 (pp59-89) • Terrarium Habitats • TG: Act03 (pp23-31)

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		<ul style="list-style-type: none"> • TG: Act04 (pp33-41) • TG: Act05 (pp43-48) • Weather • TG: L10 Exts (p95)
LEARNING STANDARD / OUTCOME	2.8.	<p>Living Things and Their Environment: Identify the ways in which an organism's habitat provides for its basic needs (plants require air, water, nutrients, and light; animals require food, water, air, and shelter).</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act01-5 (pp13-70) • Buzzing a Hive • TG: Les03 (pp27-37) • Ladybugs • TG: Act02 (pp33-41) • The Life Cycle of Butterflies • TG: L01-12 (pp3-80) • TG: L15 (pp89-94) • Organisms • TG: L04 (pp36-52) • TG: L07-12 (pp75-134) • TG: L16 (pp169-178) • Soils • TG: L09 (pp87-96) • TG: L10 (pp97-108) • Terrarium Habitats • TG: Act01-5 (pp5-48) • Tree Homes • TG: Act01-6 (pp15-68)
DOMAIN / GENERAL STANDARD	MA.3.	Physical Sciences
LEARNING STANDARD / OUTCOME	3.1.	<p>Observable Properties of Objects: Sort objects by observable properties such as size, shape, color, weight, and texture.</p> <ul style="list-style-type: none"> • Balancing and Weighing • TG: L12 Exts (p104) • Changes • TG: L01 (pp3-20) • TG: L11 (pp103-110) • Chemical Tests • TG: L01-17 (pp3-158) • Rocks and Minerals • TG: L01-2 (pp3-18) • Soils • TG: L01 (pp3-16) • TG: L03-8 (pp27-86) • Solids and Liquids • TG: L01-2 (pp3-18) • TG: L03 Exts (pp22-23) • TG: L04 Exts (p34) • TG: L05 Exts (pp43-45) • TG: L07-8 (pp55-68)

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		<ul style="list-style-type: none"> • TG: L10 (pp81-86) • TG: L16 Exts (pp135-136) • TG: L17 (pp137-140) • Sound • TG: L03-4 (pp23-102)
LEARNING STANDARD / OUTCOME	3.2.	<p>States of Matter: Identify objects and materials as solid, liquid, or gas. Recognize that solids have a definite shape and that liquids and gases take the shape of their container.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act01-12 (pp54-124) • Changes • TG: L01 (pp3-20) • Chemical Tests • TG: L08-9 (pp79-92) • TG: L14 (pp125-134) • TG: L17 (pp155-158) • Liquid Explorations • TG: Act01-5 (pp5-49) • Solids and Liquids • TG: L01-17 (pp3-140)
LEARNING STANDARD / OUTCOME	3.3.	<p>Position and Motion of Objects: Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.</p> <ul style="list-style-type: none"> • Solids and Liquids • TG: L03 Exts (pp22-23) • TG: L04 (pp29-40)
LEARNING STANDARD / OUTCOME	3.4.	<p>Position and Motion of Objects: Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of the object.</p> <ul style="list-style-type: none"> • Solids and Liquids • TG: L04 (pp29-40) • TG: L04 Exts (p34)
LEARNING STANDARD / OUTCOME	3.5.	<p>Position and Motion of Objects: Recognize that under some conditions, objects can be balanced.</p> <ul style="list-style-type: none"> • Balancing and Weighing • TG: L01-17 (pp3-138)
DOMAIN / GENERAL STANDARD	MA.4.	Technology/Engineering
LEARNING STANDARD / OUTCOME	4.1.	<p>Materials and Tools: Identify and describe characteristics of natural materials (e.g., wood, cotton, fur, wool) and human-made materials (e.g., plastic, Styrofoam).</p> <ul style="list-style-type: none"> • Chemical Tests • TG: L01-16 (pp3-154) • The Life Cycle of Butterflies • TG: L01-16 (pp3-96)

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		<ul style="list-style-type: none"> • Plant Growth and Development • TG: L01 (pp3-8) • Rocks and Minerals • TG: L02 (pp13-18) • TG: L13-15 (pp91-112) • Organisms • TG: L11-13 (pp119-148) • TG: L15 (pp155-168) • Solids and Liquids • TG: L03 Exts (pp22-23) • TG: L04 Exts (p34) • TG: L05 Exts (pp43-45) • TG: L07-10 (pp55-86) • TG: L16 Exts (pp135-136) • TG: L17 (pp137-140)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.3.</p>	<p>Materials and Tools: Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.</p> <ul style="list-style-type: none"> • Balancing and Weighing • TG: S-Sec3 (pp17-22) • Building Blocks of Science: Sky Watchers • TG: Act 03 (pp 1-6) • Chemical Tests • TG: S-Sec3 (pp18-46) • TG: L02 (pp13-22) • TG: L04 Exts (p39) • TG: L12 Exts (pp109-110) • Comparing and Measuring • TG: S-Sec3 (pp8-11) • TG: L13 (pp87-92) • Organisms • TG: S-Sec3 (pp19-24) • Plant Growth and Development • TG: S-Sec3 (pp10-14) • Solids and Liquids • TG: S-Sec3 (pp9-18) • Weather • TG: S-Sec3 (pp9-12) • TG: L02 Exts (pp15-16)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.4.</p>	<p>Engineering Design: Identify tools and simple machines used for a specific purpose, e.g., ramp, wheel, pulley, lever.</p> <ul style="list-style-type: none"> • Comparing and Measuring • TG: L13 (pp87-92)

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LEARNING STANDARD / OUTCOME	4.5.	Engineering Design: Describe how human beings use parts of the body as tools (e.g., teeth for cutting, hands for grasping and catching), and compare their use with the ways in which animals use those parts of their bodies. <ul style="list-style-type: none">• Building Blocks of Science: Understanding My Body• TG: Act 01 (pp 1-7)• TG: Act 04 (pp 1-4)• TG: Act 05 (pp 1-6)• TG: Act 06 (pp 1-5)• Organisms• TG: L16-17 (pp169-182)• Sound• TG: L08 Exts (pp61-62)• TG: L14 Exts (p98)
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Grade 3-5 Science

DOMAIN / GENERAL STANDARD	MA.1.	Earth and Space Science
LEARNING STANDARD / OUTCOME	1.1.	<p>Rocks and Their Properties: Give a simple explanation of what a mineral is and some examples, e.g., quartz, mica.</p> <ul style="list-style-type: none"> • Rocks and Minerals • TG: L04-17 (pp27-128) • Stories in Stone • TG: Ses03 (pp33-45) • TG: Ses08 (pp103-113)
LEARNING STANDARD / OUTCOME	1.2.	<p>Rocks and Their Properties: Identify the physical properties of minerals (hardness, color, luster, cleavage, and streak), and explain how minerals can be tested for these different physical properties.</p> <ul style="list-style-type: none"> • Rocks and Minerals • TG: L04-17 (pp27-128) • Stories in Stone • TG: Ses03 (pp33-45) • TG: Ses08 (pp103-113)
LEARNING STANDARD / OUTCOME	1.3.	<p>Rocks and Their Properties: Identify the three categories of rocks (metamorphic, igneous, and sedimentary) based on how they are formed, and explain the natural and physical processes that create these rocks.</p> <ul style="list-style-type: none"> • Land and Water • RB: (pp15-18) • TG: L06 Exts (pp67-68) • Rocks and Minerals • TG: L03 (pp19-26), L15 (pp103-112) • TG: L15 (pp103-112) • Stories in Stone • TG: Ses04-6 (pp47-81) • TG: Ses08 (pp103-113)
LEARNING STANDARD / OUTCOME	1.4.	<p>Soil: Explain and give examples of the ways in which soil is formed (the weathering of rock by water and wind and from the decomposition of plant and animal remains).</p> <ul style="list-style-type: none"> • Ecosystems • TG: L02 (pp13-24) • Land and Water • RB: (pp36-38) • TG: L05 (pp51-62), L10 Exts (p113) • Microworlds • TG: L15 (pp79-82) • TG: L16 (pp83-86) • On Sandy Shores • TG: Act02 (pp27-43) • Soils • TG: L01-17 (pp3-172)

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		<ul style="list-style-type: none"> • Terrarium Habitats • TG: Act01 (pp5-13)
LEARNING STANDARD / OUTCOME	1.5.	<p>Soil: Recognize and discuss the different properties of soil, including color, texture (size of particles), the ability to retain water, and the ability to support the growth of plants.</p> <ul style="list-style-type: none"> • Land and Water • TG: L05-6 (pp51-74) • TG: L14 Exts (p156) • Microscopic Explorations • TG: Act06 (pp69-73) • On Sandy Shores • TG: Act02 (pp27-43) • Soils • TG: L01 (pp3-16) • TG: L03-5 (pp27-56) • TG: L08 (pp73-86) • TG: L11-12 (pp109-124) • TG: L14 Exts (p143) • Terrarium Habitats • TG: Act01 (pp5-13)
LEARNING STANDARD / OUTCOME	1.6.	<p>Weather: Explain how air temperature, moisture, wind speed and direction, and precipitation make up the weather in a particular place and time.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp56-59) • Land and Water • RB: (pp57-61)
LEARNING STANDARD / OUTCOME	1.7.	<p>Weather: Distinguish among the various forms of precipitation (rain, snow, sleet, and hail), making connections to the weather in a particular place and time.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp56-59) • Land and Water • RB: (pp57-61)
LEARNING STANDARD / OUTCOME	1.8.	<p>Weather: Describe how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp56-59) • Floating and Sinking • RB: (pp48-50) • Land and Water • RB: (pp57-61) • Ocean Currents • TG: Act02 (pp29-45)

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LEARNING STANDARD / OUTCOME	1.10.	<p>The Water Cycle: Describe how water on earth cycles in different forms and in different locations, including underground and in the atmosphere.</p> <ul style="list-style-type: none"> • Chemical Tests • TG: L05 Exts (p50) • Land and Water • TG: L01-3 (pp3-36) • TG: L06 (pp63-74)
LEARNING STANDARD / OUTCOME	1.11.	<p>The Water Cycle: Give examples of how the cycling of water, both in and out of the atmosphere, has an effect on climate.</p> <ul style="list-style-type: none"> • Chemical Tests • TG: L05 Exts (p50) • Land and Water • TG: L01-3 (pp3-36) • TG: L06 (pp63-74)
LEARNING STANDARD / OUTCOME	1.12.	<p>Earth's History: Give examples of how the surface of the earth changes due to slow processes such as erosion and weathering, and rapid processes such as landslides, volcanic eruptions, and earthquakes.</p> <ul style="list-style-type: none"> • Land and Water • RB: (pp10-14) • RB: (pp36-38) • TG: L03 -7(pp29-84) • TG: L09-10 (pp99-118) • TG: L12 (pp129-142) • TG: L14-15 (pp153-172) • Microworlds • RB: (pp13- 15)
LEARNING STANDARD / OUTCOME	1.13.	<p>The Earth in the Solar System: Recognize that the earth is part of a system called the 'solar system' that includes the sun (a star), planets, and many moons. The earth is the third planet from the sun in our solar system.</p> <ul style="list-style-type: none"> • 3-5 Space Science • TG: Ses 1 Post Assessment (pp 1-2) • TG: Ses 1 Pre Assessment (p 1) • TG: Ses 1.1-1.9 (pp 28-167) • Earth, Moon, and Stars T • TG: Act02 (pp9-16) • Messages From Space • TG: Act02 (pp27-45) • TG: Act03 (pp46-87)
LEARNING STANDARD / OUTCOME	1.14.	<p>The Earth in the Solar System: Recognize that the earth revolves around (orbits) the sun in a year's time and that the earth rotates on its axis once approximately every 24 hours. Make connections between the rotation of the earth and day/night, and the apparent movement of the sun, moon, and stars across the sky.</p> <ul style="list-style-type: none"> • 3-5 Space Science • TG: Ses 3 Post Assessment (pp 1-2)

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		<ul style="list-style-type: none"> • TG: Ses 3 Pre Assessment (pp 1-2) • TG: Ses 3.1-4.5 (pp 286-423) • Earth, Moon, and Stars • TG: Act03 (pp17-24) • TG: Act05 (pp33-40) • TG: Act06 (pp40-52) • Moons of Jupiter • TG: Act01 (pp7-17) • Measuring Time • RB: (pp24-27) • RB: (pp30-34) • TG: L02 (pp21-30)
LEARNING STANDARD / OUTCOME	1.15.	<p>The Earth in the Solar System: Describe the changes that occur in the observable shape of the moon over the course of a month.</p> <ul style="list-style-type: none"> • 3-5 Space Science • TG: Ses 1 Post Assessment (pp 1-2) • TG: Ses 1 Pre Assessment (p 1) • TG: Ses 1.4-1.9 (pp 70-167) • TG: Ses 2.6 (pp 260-281) • TG: Ses 4 Post Assessment (pp 1-2) • TG: Ses 4 Pre Assessment (pp 1-2) • TG: Ses 4.1-4.5 (pp 340-423) • Earth, Moon, and Stars • TG: Act03 (pp17-24) • Moons of Jupiter • TG: Act02 (pp19-29) • Measuring Time • TG: L05 (pp49-58) • TG: L06 (pp59-66)
DOMAIN / GENERAL STANDARD	MA.2.	Life Science
LEARNING STANDARD / OUTCOME	2.1.	<p>Characteristics of Plants and Animals: Classify plants and animals according to the physical characteristics that they share.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act02 (pp25-33) • TG: Act03 (pp35-43) • TG: Exts (pp70-78) • Animal Studies • RB: (pp06-08) • RB: (pp16-19) • TG: L03-6 (pp21-74) • TG: L08 (pp87-96) • TG: L13 Exts (p138) • TG: L14 (pp143-156) • TG: L15 (pp157-164) • TG: L15 Exts (pp159-160) • TG: L16 Exts (p167) • Buzzing a Hive • TG: Les01 (pp5-13)

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		<ul style="list-style-type: none"> • TG: Les02 (pp15-25) • Building Blocks of Science: Human Bodyworks • TG: Ext 01 (p 21) • TG: Ext 04 (pp 41) • TG: Ext 12 (pp 83) • Electric Circuits • RB: (pp11-12) • RB: (pp47-49) • Experiments with Plants • RB: (pp07-21) • RB: (pp24-33) • RB: (pp36-59) • RB: (pp62) • TG: L01-16 (pp9-128) • Floating and Sinking • RB: (pp54-61) • The Life Cycle of Butterflies • TG: App-B (pp101-110) • TG: L01-6 (pp3-96) • Land and Water • TG: L14 Exts (p156) • Life Through Time • TG: Ses03-6 (pp101-234) • Microworlds • RB: (pp31-33) • RB: (pp40-43) • RB: (pp58-61) • Motion and Design • RB: (pp07-09) • Microscopic Explorations • TG: Act08 (pp81-85) • TG: Act09 (pp87-91) • TG: Act10 (pp93-97) • Measuring Time • RB: (pp57-61) • Only One Ocean • TG: Act02 (pp43-87) • Plant Growth and Development • TG: L02 (pp9-12) • TG: L04 (pp25-28) • TG: L05 (pp29-34) • TG: L08-10 (pp43-60) • TG: L13 (pp71-78) • TG: L13 Exts (p78) • TG: L14 (pp79-88) • Soils • TG: L10 (pp97-108) • TG: L10 Exts (pp102-103) • TG: L16 Exts (pp164-166) • Schoolyard Ecology • TG: Act02 (pp21-31) • TG: Act04 (pp43-49) • Sound
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		<ul style="list-style-type: none"> • TG: L04 Exts (pp26-27) • TG: L14 Exts (p98) • Terrarium Habitats • TG: Act03-5 (pp23-48) • The Technology of Paper • RB: (pp07-09) • RB: (pp27-29)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.2.</p>	<p>Plant Structures and Functions: Identify the structures in plants (leaves, roots, flowers, stem, bark, wood) that are responsible for food production, support, water transport, reproduction, growth, and protection.</p> <ul style="list-style-type: none"> • Buzzing a Hive • TG: Les02 (pp15-25) • Experiments with Plants • RB: (pp07-13) • RB: (pp30-33) • TG: L01 (pp9-20) • TG: L02 (pp21-30) • TG: L05-7 (pp51-70) • TG: L09 (pp75-80) • TG: L12-14 (pp91-114) • TG: L15 Exts (p117) • TG: L16 (pp123-128) • Land and Water • TG: L14 Exts (p156) • Measuring Time • RB: (pp59-61) • Plant Growth and Development • TG: L02 (pp9-12) • TG: L04-6 (pp25-38) • TG: L10 (pp55-60) • TG: L10 Exts (pp56-57) • TG: L13 (pp71-78) • Soils • TG: L10 (pp97-108) • TG: L10 Exts (pp102-103) • TG: L16 Exts (pp164-166)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.3.</p>	<p>Plant Structures and Functions: Recognize that plants and animals go through predictable life cycles that include birth, growth, development, reproduction, and death.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act04 (pp45-59) • Animal Studies • RB: (pp06-08) • RB: (pp12-15) • RB: (pp35-37) • TG: L04 Exts (pp41-42) • TG: L07 Exts (pp79-80) • Buzzing a Hive • TG: Les04 (pp39-53) • Ecosystems

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		<ul style="list-style-type: none"> • RB: (pp31-34) • TG: L03 Exts (p29) • TG: L05 (pp53-60) • TG: L06 (pp61-74) • Experiments with Plants • RB: (pp07-10) • TG: L02 (pp21-30) • TG: L06 Exts (p62) • TG: L08 (pp71-74) • TG: L12 (pp91-100) • TG: L13 (pp101-104) • TG: L14 Exts (pp109-110) • The Life Cycle of Butterflies • TG: App-A (pp97-100) • TG: App-B (pp101-110) • TG: L01-16 (pp3-96) • Measuring Time • RB: (pp59-61) • Plant Growth and Development • TG: L10 (pp55-60) • TG: L12 (pp67-70) • TG: L15 (pp89-94) • TG: L16 (pp95-98) • Soils • TG: L16 Exts (pp164-166)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.4.</p>	<p>Plant Structures and Functions: Describe the major stages that characterize the life cycle of the frog and butterfly as they go through metamorphosis.</p> <ul style="list-style-type: none"> • 3-5 Space Science • TG: Ses 1.6 (pp 104-121) • Aquatic Habitats • TG: Act04 (pp45-59) • TG: Act05 (pp61-70) • TG: Exts (pp70-78) • Animal Studies • RB: (pp06-08) • RB: (pp35-39) • TG: L03-4 (pp21-48) • TG: L06 Exts (p69) • TG: L07 Exts (pp79-80) • TG: L09 Exts (pp101-102) • TG: L10 Exts (p110) • TG: L14 Exts (p145) • Buzzing a Hive • TG: Les01-6 (pp5-66) • Ecosystems • TG: L06 (pp61-74) • TG: L06 Exts (pp64-65) • Experiments with Plants • TG: L06-7 (pp57-70) • Floating and Sinking • RB: (pp57-59)

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		<ul style="list-style-type: none"> • The Life Cycle of Butterflies • TG: App-A (pp97-100) • TG: App-B (pp101-110) • TG: L01 -14(pp3-88) • Life Through Time • TG: Ses04 (pp139-172) • Motion and Design • RB: (pp12-13) • Microscopic Explorations • TG: Act08-10 (pp81-97) • Measuring Time • RB: (pp50-52) • Plant Growth and Development • TG: L08-9 (pp43-54) • TG: L11 (pp61-66) • TG: L14 Exts (pp86-87) • Schoolyard Ecology • TG: Act02 (pp21-31) • TG: Act04 (pp43-49) • Terrarium Habitats • TG: Act04 (pp33-41) • TG: Act05 (pp43-48) • The Technology of Paper • RB: (pp12-15)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.5.</p>	<p>Plant Structures and Functions: Differentiate between observed characteristics of plants and animals that are fully inherited (e.g., color of flower, shape of leaves, color of eyes, number of appendages) and characteristics that are affected by the climate or environment (e.g., browning of leaves due to too much sun, language spoken).</p> <ul style="list-style-type: none"> • Building Blocks of Science: Understanding Cells and DNA • Pre Assessment (pp 17-19) • TG: Act 06 (pp 75-79) • TG: Ext 05 (p 71) • TG: Post Assessment (p 85-91)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.6.</p>	<p>Adaptations of Living Things: Give examples of how inherited characteristics may change over time as adaptations to changes in the environment that enable organisms to survive, e.g., shape of beak or feet, placement of eyes on head, length of neck, shape of teeth, color.</p> <ul style="list-style-type: none"> • Animal Studies • RB: (pp06-11) • RB: (pp16-19) • RB: (pp30-32) • RB: (pp40-42) • RB: (pp45-49) • TG: L01-4 (pp3-48) • TG: L06-16 (pp65-168) • Buzzing a Hive • TG: Exts (p67) • Building Blocks of Science: Human Bodyworks • TG: Ext 01 (p 21)

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		<ul style="list-style-type: none"> • Ecosystems • RB: (pp11-13) • Electric Circuits • RB: (pp47-49) • Floating and Sinking • RB: (pp57-59) • Environmental Detectives • TG: Act01-7 (pp15-202) • Floating and Sinking • RB: (pp60-61) • The Life Cycle of Butterflies • TG: L01-16 (pp3-96) • Life Through Time • TG: Ses05-7 (pp173-269) • Motion and Design • RB: (pp14-17) • Only One Ocean • TG: Act03 (pp89-144) • On Sandy Shores • TG: Act04 (pp59-89) • Terrarium Habitats • TG: Act03-5 (pp23-48)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.7.</p>	<p>Adaptations of Living Things: Give examples of how changes in the environment (drought, cold) have caused some plants and animals to die or move to new locations (migration).</p> <ul style="list-style-type: none"> • Ecosystems • RB: (pp20-23) • RB: (pp26-27) • TG: L01-7 (pp3-82) • TG: L12 (pp117-124) • TG: L17 (pp169-171) • Experiments with Plants • RB: (pp24-25) • TG: L02 Exts (p24) • Microworlds • TG: L14-16 (pp75-86)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.8.</p>	<p>Adaptations of Living Things: Describe how organisms meet some of their needs in an environment by using behaviors (patterns of activities) in response to information (stimuli) received from the environment. Recognize that some animal behaviors are instinctive (e.g., turtles burying their eggs), and others are learned (e.g., humans building fires for warmth, chimpanzees learning how to use tools).</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act02 (pp25-33) • TG: Act03 (pp35-43) • TG: Act05 (pp61-70) • TG: Exts (pp70-78) • Animal Studies • RB: (pp16-19) • RB: (pp22-32) • RB: (pp40-42)

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		<ul style="list-style-type: none"> • RB: (pp50-61) • TG: L01 Exts (p6) • TG: L02 Exts (pp15-16) • TG: L03-7 (pp21-86) • TG: L09-10 (pp97-114) • TG: L12-15 (pp123-164) • TG: L16 Exts (p167) • Buzzing a Hive • TG: Exts (p67) • TG: Les01-6 (pp5-66) • Building Blocks of Science: Human Bodyworks • TG: Ext 01 (p 21) • Building Blocks of Science: Understanding Cells and DNA • TG: Act 06 (pp 75-79) • Experiments with Plants • RB: (pp26-33) • TG: L06 Exts (p62) • TG: L07 (pp65-70) • Ecosystems • RB: (pp11-13) • Floating and Sinking • RB: (pp54-61) • The Life Cycle of Butterflies • TG: L02 Exts (pp14-15) • TG: L04 (pp23-28) • TG: L10 (pp63-68) • TG: L11 (pp69-74) • Life Through Time • TG: Ses02 (pp37-100) • TG: Ses07 (pp235-269) • Plant Growth and Development • TG: L08 Exts (p44) • TG: L11 (pp61-66) • TG: L14 Exts (pp86-87) • Magnets and Motors • RB: (pp23-25) • Motion and Design • RB: (pp14-17) • Schoolyard Ecology • TG: Act02-4 (pp21-49) • Terrarium Habitats • TG: Act03-5 (pp23-48)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.9.</p>	<p>Adaptations of Living Things: Recognize plant behaviors, such as the way seedlings' stems grow toward light and their roots grow downward in response to gravity. Recognize that many plants and animals can survive harsh environments because of seasonal behaviors, e.g., in winter, some trees shed leaves, some animals hibernate, and other animals migrate.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act02 (pp25-33) • TG: Act03 (pp35-43) • TG: Act05 (pp61-70)

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		<ul style="list-style-type: none"> • Building Blocks of Science: Human Bodyworks • TG: Ext 01 (p 21) • Ecosystems • RB: (pp11-13) • Experiments with Plants • RB: (pp26-33) • TG: L07 (pp65-70) • TG: L14-15 (pp105-122) • Floating and Sinking • RB: (pp54-61) • Life Through Time • TG: Ses02 (pp37-100) • TG: Ses07 (pp235-269) • Motion and Design • RB: (pp14-17) • Terrarium Habitats • TG: Act03-5 (pp23-48)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.10.</p>	<p>Adaptations of Living Things: Give examples of how organisms can cause changes in their environment to ensure survival. Explain how some of these changes may affect the ecosystem.</p> <ul style="list-style-type: none"> • Animal Studies • RB: (pp06-11) • RB: (pp16-19) • RB: (pp30-32) • RB: (pp40-42) • RB: (pp45-49) • TG: L01-17 (pp3-172) • Ecosystems • RB: (pp07-23) • RB: (pp26-37) • RB: (pp40-61) • TG: L01 (pp3-12) • TG: L02 (pp13-24) • TG: L04-17 (pp39-117) • Electric Circuits • RB: (pp47-49) • Floating and Sinking • RB: (pp60-61) • The Life Cycle of Butterflies • TG: L01-16 (pp3-96) • Motion and Design • RB: (pp14-17) • Only One Ocean • TG: Act03 (pp89-144) • Schoolyard Ecology • TG: Act05 (pp51-59) • The Technology of Paper • RB: (pp44-46)

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LEARNING STANDARD / OUTCOME	2.11.	<p>Energy and Living Things: Describe how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within a food chain from producers (plants) to consumers to decomposers.</p> <ul style="list-style-type: none"> • Ecosystems • RB: (pp14-16) • TG: L07 (pp75-82) • TG: L12 Exts (p120) • Experiments with Plants • RB: (pp07-10) • Microworlds • TG: L12 Exts (pp69-70) • Plant Growth and Development • TG: L01 (pp3-8) • The Technology of Paper • TG: L02 Exts (p35)
DOMAIN / GENERAL STANDARD	MA.3.	Physical Sciences
LEARNING STANDARD / OUTCOME	3.1.	<p>Properties of Objects and Materials: Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).</p> <ul style="list-style-type: none"> • Balancing and Weighing • TG: L03 Exts (p20) • TG: L08 Exts (p67) • TG: L09 Exts (p76) • TG: L12 Exts (p104) • Changes • TG: L01 (pp3-20) • TG: L02 Exts (pp26-27) • TG: L03 (pp31-42) • TG: L05 (pp53-62) • TG: L07-9 (pp71-94) • TG: L11-16 (pp103-154) • Chemical Tests • TG: L01-17 (pp3-158) • Floating and Sinking • TG: L02 (pp13-20) • TG: L07 -9(pp55-78) • Rocks and Minerals • TG: L01 (pp3-12) • TG: L02 (pp13-18) • Soils • TG: L01 (pp3-16) • TG: L03-8 (pp27-86) • Sound • TG: L02-5 (pp17-38), L06 Exts (p42) • TG: L09-10 (pp63-74) • TG: L12 (pp85-87) • TG: L14 (pp91-102) • TG: L17 (pp117-118)

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LEARNING STANDARD / OUTCOME	3.2.	<p>States of Matter: Compare and contrast solids, liquids, and gases based on the basic properties of each of these states of matter.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act01-12 (pp54-124) • Crime Lab Chemistry • TG: Act01-3 (pp7-62) • Chemical Tests • TG: L08 (pp79-84) • TG: L09 (pp85-92) • TG: L14 (pp125-134) • TG: L17 (pp155-158) • Floating and Sinking • TG: L14 (pp113-118) • TG: L15 (pp119-128) • Liquid Explorations • TG: Act01-5 (pp5-49) • Oobleck: What Do Scientists Do? • TG: Ses01 (pp4-8)
LEARNING STANDARD / OUTCOME	3.3.	<p>States of Matter: Describe how water can be changed from one state to another by adding or taking away heat.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act10 (pp108-113) • Changes • TG: L01-3 (pp3-42) • TG: L08 Exts (p82) • TG: L09 (pp85-94) • TG: L13 Exts (p123) • TG: L17 (pp155-158) • Chemical Tests • TG: L08 Exts (p82) • TG: L10 (pp93-100) • TG: L10 Exts (p97) • GEMS: Electric Circuits • TG: Ses02 (pp35-71) • Land and Water • TG: L02 Exts (p19)
LEARNING STANDARD / OUTCOME	3.4.	<p>Forms of Energy: Identify the basic forms of energy (light, sound, heat, electrical, and magnetic). Recognize that energy is the ability to cause motion or create change.</p> <ul style="list-style-type: none"> • Electric Circuits • TG: L01-17 (pp3-86) • Motion and Design • TG: L06 (pp57-64)
LEARNING STANDARD / OUTCOME	3.5.	<p>Forms of Energy: Give examples of how energy can be transferred from one form to another.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp13-21)

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		<ul style="list-style-type: none"> • RB: (pp24-28) • RB: (pp32-33) • RB: (pp36-38) • Motion and Design • TG: L06 (pp57-64)
LEARNING STANDARD / OUTCOME	3.6.	<p>Electrical Energy: Recognize that electricity in circuits requires a complete loop through which an electrical current can pass, and that electricity can produce light, heat, and sound.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp07-21) • RB: (pp24-44) • RB: (pp47-61) • TG: L01-17 (pp3-86) • GEMS: Electric Circuits • TG: Ses01-11 (pp13-175) • Magnets and Motors • RB: (pp33-38) • RB: (pp41-44) • RB: (pp58-59) • TG: L07 (pp43-48) • TG: L14 (pp89-94) • TG: L16 (pp99-102) • TG: L17 (pp103-108)
LEARNING STANDARD / OUTCOME	3.7.	<p>Electrical Energy: Identify and classify objects and materials that conduct electricity and objects and materials that are insulators of electricity.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp07-21) • RB: (pp24-44) • RB: (pp47-61) • TG: L01-17 (pp3-86) • GEMS: Electric Circuits • TG: Ses01-11 (pp13-175) • Motion and Design • TG: L06 (pp57-64) • Magnets and Motors • RB: (pp41-44) • TG: L14 (pp89-94) • TG: L16-17 (pp99-108)
LEARNING STANDARD / OUTCOME	3.8.	<p>Electrical Energy: Explain how electromagnets can be made, and give examples of how they can be used.</p> <ul style="list-style-type: none"> • Electric Circuits • TG: L02 (pp7-14) • TG: L08 (pp45-48) • Magnets and Motors • RB: (pp28-38) • RB: (pp53-54) • RB: (pp60-61)

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		<ul style="list-style-type: none"> • TG: L08-11 (pp49-76) • On Sandy Shores • TG: Act01 (pp13-25)
LEARNING STANDARD / OUTCOME	3.9.	<p>Magnetic Energy: Recognize that magnets have poles that repel and attract each other.</p> <ul style="list-style-type: none"> • Magnets and Motors • RB: (pp07-20) • RB: (pp23-25) • TG: L01-4 (pp7-26) • TG: L06 Exts (p39) • TG: L07 (pp43-48) • TG: L10 Exts (p69) • TG: L12 (pp77-82) • TG: L14-17 (pp89-108) • Rocks and Minerals • TG: L11 (pp79-84)
LEARNING STANDARD / OUTCOME	3.10.	<p>Magnetic Energy: Identify and classify objects and materials that a magnet will attract and objects and materials that a magnet will not attract.</p> <ul style="list-style-type: none"> • Magnets and Motors • RB: (pp07-20) • RB: (pp23-25) • TG: L01-4 (pp7-26) • TG: L06 Exts (p39) • TG: L07 (pp43-48) • TG: L10 Exts (p69) • TG: L12 (pp77-82) • TG: L14-17 (pp89-108) • Rocks and Minerals • TG: L11 (pp79-84)
LEARNING STANDARD / OUTCOME	3.11.	<p>Sound Energy: Recognize that sound is produced by vibrating objects and requires a medium through which to travel. Relate the rate of vibration to the pitch of the sound.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Human Bodyworks • TG: Act 12 (pp 81-84) • Sound • TG: L01-17 (pp11-118)
LEARNING STANDARD / OUTCOME	3.12.	<p>Light Energy: Recognize that light travels in a straight line until it strikes an object or travels from one medium to another, and that light can be reflected, refracted, and absorbed.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act05 (pp80-85) • Building Blocks of Science: Human Bodyworks • TG: Act 11 (pp 77-80) • Chemical Tests • TG: L10 Exts (p97) • Electric Circuits

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		<ul style="list-style-type: none"> • RB: (pp39-41) • Microworlds • TG: L04 (pp21-24) • Microscopic Explorations • TG: Act03 (pp49-53) • TG: Act04 (pp55-59)
DOMAIN / GENERAL STANDARD	MA.4.	Technology/Engineering
LEARNING STANDARD / OUTCOME	4.1.	<p>Materials and Tools: Identify materials used to accomplish a design task based on a specific property, i.e., weight, strength, hardness, and flexibility.</p> <ul style="list-style-type: none"> • Experiments with Plants • RB: (pp50-53) • Floating and Sinking • RB: (pp29-35) • Land and Water • TG: L12 Exts (pp132-133) • Motion and Design • RB: (pp29-31) • RB: (pp54-57) • RB: (pp62) • TG: L01 (pp1-14) • TG: L02 (pp15-24) • TG: L05 (pp47-56) • TG: L09 (pp81-90) • TG: L13 Exts (pp120-121) • TG: L14-17 (pp125-1565) • The Technology of Paper • RB: (pp16-24) • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L15 (pp185-196) • TG: L16 Exts (pp201-202) • TG: L17-18 (pp207-218)
LEARNING STANDARD / OUTCOME	4.2.	<p>Materials and Tools: Identify and explain the appropriate materials and tools (e.g., hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) to construct a given prototype safely.</p> <ul style="list-style-type: none"> • Floating and Sinking • RB: (pp29-35) • RB: (pp41-42) • Land and Water • RB: (pp32-35) • TG: L12 Exts (pp132-133) • Motion and Design • TG: L13 Exts (pp120-121) • TG: L14 (pp125-138) • Measuring Time • RB: (pp24-27) • RB: (pp35-38) • RB: (pp43-45)

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		<ul style="list-style-type: none"> • RB: (pp46-47) • The Technology of Paper • TG: L07 Exts (p111)
LEARNING STANDARD / OUTCOME	4.3.	<p>Materials and Tools: Identify and explain the difference between simple and complex machines, e.g., hand can opener that includes multiple gears, wheel, wedge gear, and lever.</p> <ul style="list-style-type: none"> • Motion and Design • RB: (pp32-36)
LEARNING STANDARD / OUTCOME	4.4.	<p>Engineering Design: Identify a problem that reflects the need for shelter, storage, or convenience.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Understanding Cells and DNA TG: Act 02 (pp 27-33) • Floating and Sinking • RB: (pp29-35) • Land and Water • TG: L12 Exts (pp132-133) • Motion and Design • TG: L13 Exts (pp120-121) • TG: L14 (pp125-138) • The Technology of Paper • TG: L07 Exts (p111)
LEARNING STANDARD / OUTCOME	4.5.	<p>Engineering Design: Describe different ways in which a problem can be represented, e.g., sketches, diagrams, graphic organizers, and lists.</p> <ul style="list-style-type: none"> • 3-5 Space Science • TG: Ses 1.1-1.7 (pp 28-135) • TG: Ses 2.2 -2.6(pp 182-281) • TG: Ses 3 Post Assessment (pp 1-2) • TG: Ses 3 Pre Assessment (pp 1-2) • TG: Ses 3.1 (pp 286-299) • TG: Ses 3.3 (pp 312-323) • TG: Ses 3.4 (pp 324-335) • TG: Ses 4 Post Assessment (pp 1-2) • TG: Ses 4 Pre Assessment (pp 1-2) • TG: Ses 4.1-4.5 (pp 340-423) • Animal Studies • TG: L02-6 (pp11-74) • TG: L08 (pp87-96) • TG: L09 (pp97-106) • TG: L15 (pp157-164) • Bubble Festival • TG: Act03 (pp66-73) • TG: Act04 (pp74-79) • Bubble-ology • TG: Act03 (pp19-27) • Balancing and Weighing • TG: L01 (pp3-8) • TG: L02 (pp9-14)

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		<ul style="list-style-type: none"> • TG: L06 Exts (pp50-51) • TG: L10 (pp79-88) • TG: L11 (pp89-100) • TG: L14 (pp115-122) • TG: L15 Exts (p126) • TG: L17 (pp137-138) • Building Blocks of Science: Human Bodyworks • TG: Ext 04 (pp 41) • TG: Ext 11 (pp 79)) • Building Blocks of Science: Understanding Cells and DNA • TG: Act 03 (pp 35-50) • TG: Act 06 (pp 75-79) • TG: Ext 06 (p 78) • Changes • TG: L01 (pp3-20) • TG: L02 (pp21-30) • TG: L04 Exts (p48) • TG: L05 (pp53-62) • TG: L06 Exts (pp67-69) • TG: L07-17 (pp71-158) • Crime Lab Chemistry • TG: Act01 (pp7-27) • Chemical Tests • TG: L03 Exts (pp28-29) • TG: L05 (pp45-56) • TG: L08 (pp79-84) • TG: L11 (pp101-106) • TG: L12 Exts (pp109-110) • Ecosystems • TG: L02-12 (pp13-124) • TG: L14 (pp133-144) • Electric Circuits • RB: (pp07-21) • RB: (pp24-44) • RB: (pp47-61) • TG: L02-16 (pp7-84) • Experiments with Plants • RB: (pp07-10) • RB: (pp30-33) • RB: (pp50-53) • RB: (pp57-59) • TG: L01-16 (pp9-128) • Food Chemistry • TG: L01-17 (pp3-156) • Floating and Sinking • TG: L01-3 (pp3-30) • TG: L05 (pp39-48) • TG: L06 Exts (p52) • TG: L07 (pp55-60) • TG: L11 (pp87-94) • TG: L12 (pp95-102) • TG: L14 (pp113-118) • GEMS: Electric Circuits
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		<ul style="list-style-type: none"> • TG: Ses03 (pp73-87) • TG: Ses04 (pp89-108) • TG: Ses07-11 (pp127-175) • The Life Cycle of Butterflies • TG: App-B (pp101-110) • TG: L01 (pp3-10) • TG: L06 (pp35-38) • TG: L07 (pp39-46) • TG: L11 Exts (pp71-73) • TG: L13 Exts (p82) • TG: L16 (pp95-96) • Land and Water • TG: L01-2 (pp3-28) • TG: L04-5 (pp37-62) • TG: L07-9 (pp75-108) • TG: L12 (pp129-142) • TG: L13 (pp143-152) • TG: L16 (pp173-182) • Microworlds • RB: (pp07-25) • RB: (pp28-43) • RB: (pp46-47) • RB: (pp48-61) • TG: App-A (pp89-92) • TG: L01-17 (pp3-88) • Motion and Design • TG: L02 (pp15-24) • TG: L04 (pp35-46) • TG: L14-16 (pp125-152) • Magnets and Motors • RB: (pp09-11) • RB: (pp14-20) • RB: (pp23-25) • RB: (pp28-38) • RB: (pp41-50) • RB: (pp53-54) • RB: (pp58-61) • TG: L06 Exts (p39) • TG: L09 Exts (p62) • TG: L11 Exts (p75) • TG: L13-17 (pp83-108) • Measuring Time • RB: (pp15-17) • RB: (pp24-38) • TG: L03 (pp31-42) • TG: L08 (pp75-86) • TG: L09 (pp87-94) • TG: L11 (pp109-114) • TG: L12 (pp115-122) • On Sandy Shores • TG: Act01 (pp13-25) • TG: Act05 (pp91-108) • Plant Growth and Development
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		<ul style="list-style-type: none"> • TG: App-A (pp101-103) • TG: L01-2 (pp3-12) • TG: L04 (pp25-28) • TG: L05 (pp29-34) • TG: L07 (pp39-42) • TG: L12 (pp67-70) • TG: L15 (pp89-94) • Rocks and Minerals • TG: L03 (pp19-26) • TG: L17 (pp127-128) • Soils • TG: L01-17 (pp3-172) • Sound • TG: L01 Exts (pp7-8) • TG: L04-6 (pp28-48) • TG: L11 (pp79-81) • The Technology of Paper • RB: (pp07-24) • RB: (pp27-35) • RB: (pp38-46) • RB: (pp49-61) • TG: L01-7 (pp19-116) • TG: L09-10 (pp127-148) • TG: L14 -16(pp171-206)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.6.</p>	<p>Engineering Design: Identify relevant design features (e.g., size, shape, weight) for building a prototype of a solution to a given problem.</p> <ul style="list-style-type: none"> • Electric Circuits • RB: (pp39-41) • RB: (pp56-59) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Land and Water • TG: L12 Exts (pp132-133) • Motion and Design • RB: (pp29-31) • RB: (pp49-51) • RB: (pp54-57) • RB: (pp62) • TG: L01 (pp1-14) • TG: L02 (pp15-24) • TG: L05 (pp47-56) • TG: L09 (pp81-90) • TG: L13-17 (pp117-156) • Magnets and Motors • RB: (pp41-50) • Measuring Time • TG: L13-15 (pp123-144) • Rocks and Minerals • TG: L04 Exts (p32) • The Technology of Paper

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		<ul style="list-style-type: none"> • RB: (pp16-19) • RB: (pp20-24) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 (pp185-196) • TG: L16 Exts (pp201-202) • TG: L17 (pp207-214) • TG: L18 (pp215-218)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.7.</p>	<p>Engineering Design: Compare natural systems with mechanical systems that are designed to serve similar purposes, e.g., a bird's wings as compared to an airplane's wings.</p> <ul style="list-style-type: none"> • Building Blocks of Science: Understanding Cells and DNA • TG: Act 01 (pp 21-26) • TG: Ext 01 (p 23) • Electric Circuits • RB: (pp39-41) • RB: (pp56-59) • Floating and Sinking • RB: (pp29-30) • RB: (pp34-35) • RB: (pp43-45) • Motion and Design • RB: (pp32-36) • RB: (pp49-51) • RB: (pp62) • TG: L12 Exts (p112) • TG: L13-15 (pp117-144) • TG: L16 Exts (p148) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L14 Exts (p92) • Measuring Time • TG: L13-14 (pp123-138) • TG: L14 Exts (p136) • TG: L15 (pp139-144) • Rocks and Minerals • TG: L04 Exts (p32) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)

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Grades 6-8 Science

DOMAIN / GENERAL STANDARD	MA. 1.	Earth and Space Science
LEARNING STANDARD / OUTCOME	1.1.	<p>Mapping the Earth: Recognize, interpret, and be able to create models of the earth's common physical features in various mapping representations, including contour maps.</p> <ul style="list-style-type: none"> • Bubble-ology • TG: Act04 (pp29-32) • Catastrophic Events • SG: L01 (pp2-11) • SG: L06 (pp68-79) • SG: L07 (pp80-95) • SG: L10 (pp114-119) • SG: L13-15 (pp154-189) • SG: L18 (pp200-209) • SG: L25 (pp274-282) • TG: L01 (pp3-16) • TG: L06 (pp69-82) • TG: L07 (pp83-102) • TG: L10 (pp143-148) • TG: L13-15 (pp177-218) • TG: L18 (pp257-264) • TG: L25 (pp347-372) • Environmental Detectives • TG: Act01 (pp15-31) • Earth in Space • SG: L03-4 (pp22-61) • TG: L03-4 (pp21-52) • Magnets and Motors • RB: (pp21-22) • TG: L05-6 (pp27-42) • Measuring Time • RB: (pp24-27) • Ocean Currents • TG: Act01 (pp9-28) • Only One Ocean • TG: Act03 (pp89-144) • Schoolyard Ecology • TG: Act01-5 (pp7-59)
LEARNING STANDARD / OUTCOME	1.2.	<p>Earth's Structure: Describe the layers of the solid earth, including the lithosphere, the hot convecting mantle, and the dense metallic core.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L10 (pp114-119) • SG: L14 (pp164-169) • SG: L17-18 (pp194-209) • TG: L10 (pp143-148) • TG: L14 (pp187-196) • TG: L17-18 (pp233-264)

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		<ul style="list-style-type: none"> • Plate Tectonics • TG: Ses03 (pp43-55)
LEARNING STANDARD / OUTCOME	1.3.	<p>Heat Transfer in the Earth System: Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through the earth's system.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L03 (pp26-41) • SG: L05 (pp54-67) • SG: L13 (pp154-163) • TG: L03 (pp27-44) • TG: L05 (pp57-68) • TG: L13 (pp177-186) • Earth in Space • SG: L07-9(pp88-127) • TG: L07-9 (pp83-146) • Global Warming and the Greenhouse Effect • TG: Ses02 (pp17-27) • TG: Ses03 (pp29-57) • Hot Water and Warm Homes from Sunlight • TG: Ses03 (pp19-31) • TG: Ses04 (pp33-37)
LEARNING STANDARD / OUTCOME	1.4.	<p>Heat Transfer in the Earth System: Explain the relationship among the energy provided by the sun, the global patterns of atmospheric movement, and the temperature differences among water, land, and atmosphere.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L03 (pp26-41) • SG: L05 (pp54-67) • SG: L07 (pp80-95) • TG: L03 (pp27-44) • TG: L05 (pp57-68) • TG: L07 (pp83-102) • Earth in Space • SG: L07-9 (pp88-127) • TG: L07-9 (pp83-146) • Floating and Sinking • RB: (pp48-50) • Global Warming and the Greenhouse Effect • TG: Ses02 (pp17-27) • TG: Ses03 (pp29-57) • Hot Water and Warm Homes from Sunlight • TG: Ses04 (pp33-37)
LEARNING STANDARD / OUTCOME	1.5.	<p>Earth's History: Describe how the movement of the earth's crustal plates causes both slow changes in the earth's surface (e.g., formation of mountains and ocean basins) and rapid ones (e.g., volcanic eruptions and earthquakes).</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L10 (pp114-119) • SG: L13-16 (pp154-193) • TG: L10 (pp143-148)

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		<ul style="list-style-type: none"> • TG: L13-16 (pp177-232) • Plate Tectonics • TG: Ses02 (pp31-41) • TG: Ses05-6 (pp69-91) • Stories in Stone • TG: Ses07 (pp83-101)
<p>LEARNING STANDARD / OUTCOME</p>	<p>1.6.</p>	<p>Earth's History: Describe and give examples of ways in which the earth's surface is built up and torn down by natural processes, including deposition of sediments, rock formation, erosion, and weathering.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L21-22 (pp232-251) • TG: L21-22 (pp293-316) • Environmental Detectives • TG: Act04 (pp91-111) • Earth in Space • SG: L13 (pp174-199) • TG: L13 (pp197-208) • Plate Tectonics • TG: Ses07 (pp93-111) • River Cutters • TG: Ses02-4 (pp27-54) • TG: Ses06-7 (pp59-72) • Stories in Stone • TG: Ses05 (pp65-73) • TG: Ses08 (pp103-113)
<p>LEARNING STANDARD / OUTCOME</p>	<p>1.7.</p>	<p>Earth's History: Explain and give examples of how physical evidence, such as fossils and surface features of glaciation, supports theories that the earth has evolved over geologic time.</p> <ul style="list-style-type: none"> • Earth in Space • SG: L18 (pp290-311) • TG: L18 (pp277-286) • Human Body Systems • TG: L18 Exts (pp215-216) • Life Through Time • TG: Ses02-5 (pp37-204) • Properties of Matter • SG: L01 (pp2-13) • Plate Tectonics • TG: Ses08 (pp113-129)
<p>LEARNING STANDARD / OUTCOME</p>	<p>1.8.</p>	<p>The Earth in the Solar System: Recognize that gravity is a force that pulls all things on and near the earth toward the center of the earth. Gravity plays a major role in the formation of the planets, stars, and solar system and in determining their motions.</p> <ul style="list-style-type: none"> • Earth in Space • SG: L15 (pp216-243) • TG: L15 (pp221-244)

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<p>LEARNING STANDARD / OUTCOME</p>	<p>1.9.</p>	<p>The Earth in the Solar System: Describe lunar and solar eclipses, the observed moon phases, and tides. Relate them to the relative positions of the earth, moon, and sun.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L07 (pp80-95) • TG: L01 Exts (pp10-11) • TG: L07 (pp83-102) • Earth, Moon, and Stars • TG: Act03 (pp17-24) • TG: Act04 (pp25-32) • Earth in Space • SG: L01-10 (pp2-145) • SG: L12 (pp160-173) • SG: L16 (pp244-265) • TG: L01-9 (pp3-146) • TG: L12-13 (pp181-208) • TG: L14 Exts (p217) • TG: L16 (pp245-268) • Light • SG: L05 (pp48-57) • TG: L05 Exts (p65) • Moons of Jupiter • TG: Act02 (pp19-29) • Measuring Time • RB: (pp10-14) • RB: (pp15-17) • TG: L05 (pp49-58) • TG: L06 (pp59-66) • Organisms-From Macro to Micro • SG: L10 (pp120-131) • TG: L10 (pp167-184) • The Real Reasons for the Seasons • TG: Act03 (pp29-48) • TG: Act06-8 (pp65-88)
<p>LEARNING STANDARD / OUTCOME</p>	<p>1.10.</p>	<p>The Earth in the Solar System: Compare and contrast properties and conditions of objects in the solar system (i.e., sun, planets, and moons) to those on Earth (i.e., gravitational force, distance from the sun, speed, movement, temperature, and atmospheric conditions).</p> <ul style="list-style-type: none"> • Energy, Machines, and Motion • TG: L05 Exts (pp53-54) • Earth, Moon, and Stars • TG: Act02 (pp9-16) • Earth in Space • SG: L01-22 (pp2-343) • TG: L01-22 (pp3-326) • Messages From Space T • G: Act02-3 (pp27-87) • Moons of Jupiter • TG: Act01-5 (pp7-64) •

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LEARNING STANDARD / OUTCOME	1.11.	<p>The Earth in the Solar System: Explain how the tilt of the earth and its revolution around the sun result in an uneven heating of the earth, which in turn causes the seasons.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L03 (pp26-41) • SG: L07 (pp80-95) • TG: L01 Exts (pp10-11) • TG: L03 (pp27-44) • TG: L07 (pp83-102) • Earth, Moon, and Stars • TG: Act03 (pp17-24) • TG: Act05-6 (pp33-52) • Earth in Space • SG: L02-4 (pp12-61) • SG: L06 (pp74-87) • SG: L08 (pp102-121) • SG: L16 (pp244-265) • TG: L02-4 (pp11-52) • TG: L06 (pp73-82) • TG: L08 (pp97-120) • TG: L16 (pp245-268) • Measuring Time • RB: (pp10-14) • RB: (pp24-27) • RB: (pp30-34) • TG: L02 (pp21-30) • Organisms-From Macro to Micro • TG: L10 Exts (pp175-176) • The Real Reasons for the Seasons • TG: Act01 (pp17-21) • TG: Act02 (pp22-28) • TG: Act04-8 (pp49-88)
LEARNING STANDARD / OUTCOME	1.12.	<p>The Earth in the Solar System: Recognize that the universe contains many billions of galaxies, and that each galaxy contains many billions of stars.</p> <ul style="list-style-type: none"> • Earth in Space • SG: L02 (pp12-21) • Invisible Universe • TG: Act04 (pp58-77) • TG: Act05 (pp78-91) • Messages From Space • TG: Act02 (pp27-45) • TG: Exts (p38)
DOMAIN / GENERAL STANDARD	MA.2.	Life Science
LEARNING STANDARD / OUTCOME	2.1.	<p>Classification of Organisms: Classify organisms into the currently recognized kingdoms according to characteristics that they share. Be familiar with organisms from each kingdom.</p> <ul style="list-style-type: none"> • Organisms-From Macro to Micro • SG: L01 (pp2-11)

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		<ul style="list-style-type: none"> • SG: L06 (pp64-81) • SG: L11 (pp132-145) • TG: L01 (pp3-14) • TG: L06 (pp73-104) • TG: L11 (pp185-200)
LEARNING STANDARD / OUTCOME	2.2.	<p>Structure and Function of Cells: Recognize that all organisms are composed of cells, and that many organisms are single-celled (unicellular), e.g., bacteria, yeast. In these single-celled organisms, one cell must carry out all of the basic functions of life.</p> <ul style="list-style-type: none"> • Human Body Systems • SG: L22 (pp182-189) • TG: L22 (pp253-276) • TG: L22 Exts (p258) • Microworlds • RB: (pp28-30) • TG: L12 Exts (pp69-70) • TG: L13 Exts (p74) • TG: L15 (pp79-82) • TG: L16 (pp83-86) • Organisms-From Macro to Micro • SG: L11 (pp132-145) • TG: L11 (pp185-200) • TG: L12 Exts (p207)
LEARNING STANDARD / OUTCOME	2.3.	<p>Structure and Function of Cells: Compare and contrast plant and animal cells, including major organelles (cell membrane, cell wall, nucleus, cytoplasm, chloroplasts, mitochondria, vacuoles).</p> <ul style="list-style-type: none"> • Microworlds • TG: L11-16 (pp61-86) • Organisms-From Macro to Micro • SG: L07 (pp82-93) • TG: L07 (pp105-130)
LEARNING STANDARD / OUTCOME	2.4.	<p>Structure and Function of Cells: Recognize that within cells, many of the basic functions of organisms (e.g., extracting energy from food and getting rid of waste) are carried out. The way in which cells function is similar in all living organisms.</p> <ul style="list-style-type: none"> • Human Body Systems • SG: L06 (pp40-49) • Microworlds • TG: L11-16 (pp61-86) • Organisms-From Macro to Micro • SG: L07-8 (pp82-105) • TG: L07-8 (pp105-150)
LEARNING STANDARD / OUTCOME	2.5.	<p>Systems in Living Things: Describe the hierarchical organization of multicellular organisms from cells to tissues to organs to systems to organisms.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act03 (pp35-43) • Human Body Systems

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		<ul style="list-style-type: none"> • SG: L01 (pp2-7) • SG: L18 (pp150-159) • TG: L01 (pp3-10) • TG: L07 Exts (pp74-75) • TG: L18 (pp209-218) • Microworlds • RB: (pp37-43) • RB: (pp46-47) • TG: L13 Exts (p74) • Organisms-From Macro to Micro • SG: L01 (pp2-11) • SG: L03 (pp28-37) • SG: L11 (pp132-145) • SG: L14 (pp172-179) • TG: L01 (pp3-14) • TG: L02 Exts (p25) • TG: L03 (pp33-48) • TG: L11 (pp185-200) • TG: L14 (pp237-252) • Only One Ocean • TG: Act02 (pp43-87) • Terrarium Habitats • TG: Act03 (pp23-31)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.6.</p>	<p>Systems in Living Things: Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.</p> <ul style="list-style-type: none"> • Human Body Systems • SG: L15 (pp130-137) • SG: L17 (pp144-147) • SG: L18 (pp150-159) • SG: L22 (pp182-189) • TG: L02 (pp11-18) • TG: L10 (pp113-130) • TG: L11 Exts (p135) • TG: L14-18 (pp159-218) • TG: L22 (pp253-276)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.7.</p>	<p>Reproduction and Heredity: Recognize that every organism requires a set of instructions that specifies its traits. These instructions are stored in the organism's chromosomes. Heredity is the passage of these instructions from one generation to another.</p> <ul style="list-style-type: none"> • Experiments with Plants • RB: (pp36-40) • RB: (pp44-46) • Human Body Systems • TG: L04 Exts (p35) • Organisms-From Macro to Micro • SG: L08 (pp96-105) • SG: L18 (pp204-215) • SG: L19 (pp216-235)

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		<ul style="list-style-type: none"> • TG: L02 Exts (p25) • TG: L08 (pp131-150) • TG: L18 (pp293-302) • TG: L19 (pp303-330)
LEARNING STANDARD / OUTCOME	2.8.	<p>Reproduction and Heredity: Recognize that hereditary information is contained in genes located in the chromosomes of each cell. A human cell contains about 30,000 different genes on 23 different chromosomes.</p> <ul style="list-style-type: none"> • Experiments with Plants • RB: (pp36-40) • RB: (pp44-46) • Human Body Systems • TG: L04 Exts (p35) • Organisms-From Macro to Micro • SG: L08 (pp96-105) • SG: L18 (pp204-215) • SG: L19 (pp216-235) • TG: L02 Exts (p25) • TG: L08 (pp131-150) • TG: L18 (pp293-302) • TG: L19 (pp303-330)
LEARNING STANDARD / OUTCOME	2.9.	<p>Reproduction and Heredity: Compare sexual reproduction (offspring inherit half of their genes from each parent) with asexual reproduction (offspring is an identical copy of the parent's cell).</p> <ul style="list-style-type: none"> • Microworlds • TG: L13 (pp71-74) • Organisms-From Macro to Micro • SG: L03 (pp28-37) • SG: L09 (pp106-119) • SG: L12 (pp146-155) • SG: L14 (pp172-179) • SG: L17 (pp194-203) • SG: L18 (pp204-215) • TG: L03 (pp33-48) • TG: L09 (pp151-166) • TG: L12 (pp201-218) • TG: L14 (pp237-252) • TG: L17 (pp281-292)
LEARNING STANDARD / OUTCOME	2.10.	<p>Evolution and Biodiversity: Give examples of ways in which genetic variation and environmental factors are causes of evolution and the diversity of organisms.</p> <ul style="list-style-type: none"> • Experiments with Plants • RB: (pp30-33) • RB: (pp44-46) • RB: (pp57-59) • Human Body Systems • TG: L04 Exts (p35) • Life Through Time • TG: Ses05-7 (pp173-269)

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		<ul style="list-style-type: none"> • Organisms-From Macro to Micro • SG: L02 (pp12-27) • SG: L04 (pp38-45) • SG: L13 (pp158-171) • TG: L13 (pp219-236) • Schoolyard Ecology • TG: Act05 (pp51-59)
LEARNING STANDARD / OUTCOME	2.11.	<p>Evolution and Biodiversity: Recognize that evidence drawn from geology, fossils, and comparative anatomy provide the basis of the theory of evolution.</p> <ul style="list-style-type: none"> • Earth in Space • SG: L18 (pp290-311) • TG: L18 (pp277-286) • Life Through Time • TG: Ses02-7 (pp37-269) • Organisms-From Macro to Micro • SG: L13 (pp158-171) • TG: L13 (pp219-236) • TG: L19 Exts (pp317-318)
LEARNING STANDARD / OUTCOME	2.12.	<p>Evolution and Biodiversity: Relate the extinction of species to a mismatch of adaptation and the environment.</p> <ul style="list-style-type: none"> • Ecosystems • RB: (pp11-13) • RB: (pp20-23) • Experiments with Plants • RB: (pp11-13) • RB: (pp30-33) • Floating and Sinking • RB: (pp57-59) • RB: (pp60-61) • Human Body Systems • TG: L22 Exts (p258) • Organisms-From Macro to Micro • SG: L06 (pp64-81) • SG: L13 (pp158-171) • TG: L06 (pp73-104) • TG: L10 Exts (pp175-176) • TG: L13 (pp219-236) • TG: L18 Exts (pp299-300) • Terrarium Habitats • TG: Act03-5 (pp23-48)
LEARNING STANDARD / OUTCOME	2.13.	<p>Living Things and Their Environment: Give examples of ways in which organisms interact and have different functions within an ecosystem that enable the ecosystem to survive.</p> <ul style="list-style-type: none"> • Acid Rain • TG: Ses06-7 (pp87-113) • Ecosystems • RB: (pp07-23)

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		<ul style="list-style-type: none"> • RB: (pp26-37) • RB: (pp40-51) • RB: (pp54-61) • TG: L01 (pp3-12) • TG: L02 (pp13-24) • TG: L04-15 (pp39-164) • TG: L17 (pp169-171) • Experiments with Plants • RB: (pp24-25) • RB: (pp30-33) • TG: L07 (pp65-70) • Organisms-From Macro to Micro • SG: L04 (pp38-45) • SG: L12 (pp146-155) • TG: L04 (pp49-56) • TG: L12 (pp201-218) • Schoolyard Ecology • TG: Act03-5 (pp33-59) • Terrarium Habitats • TG: Act03-5 (pp23-48)
LEARNING STANDARD / OUTCOME	2.14.	<p>Energy and Living Things: Explain the roles and relationships among producers, consumers, and decomposers in the process of energy transfer in a food web.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act04-5 (pp45-70) • Ecosystems • RB: (pp14-19) • TG: L07 (pp75-82) • Earth in Space • TG: L07 Exts (pp92-93) • Light • TG: L11 Exts (p131)
LEARNING STANDARD / OUTCOME	2.15.	<p>Energy and Living Things: Explain how dead plants and animals are broken down by other living organisms and how this process contributes to the system as a whole.</p> <ul style="list-style-type: none"> • Light • TG: L11 Exts (p131) • Microworlds • TG: L15-16 (pp79-86) • Organisms-From Macro to Micro • SG: L14 (pp172-179) • TG: L14 (pp237-252)
LEARNING STANDARD / OUTCOME	2.16.	<p>Energy and Living Things: Recognize that producers (plants that contain chlorophyll) use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.</p> <ul style="list-style-type: none"> • Ecosystems • RB: (pp14-16) • TG: L03-4 (pp25-52)

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		<ul style="list-style-type: none"> • TG: L07 (pp75-82) • TG: L12 (pp117-124) • Experiments with Plants • RB: (pp07-10) • Light • SG: L11 (pp116-131) • TG: L11 Exts (p131) • Microworlds • TG: L12 Exts (pp69-70) • Organisms-From Macro to Micro • SG: L07 (pp82-93) • SG: L10 (pp120-131) • TG: L07 (pp105-130) • TG: L10 (pp167-184)
<p>LEARNING STANDARD / OUTCOME</p>	<p>2.17.</p>	<p>Changes in Ecosystems Over Time: Identify ways in which ecosystems have changed throughout geologic time in response to physical conditions, interactions among organisms, and the actions of humans. Describe how changes may be catastrophes such as volcanic eruptions or ice storms.</p> <ul style="list-style-type: none"> • Acid Rain • TG: Ses06-7 (pp87-113) • Catastrophic Events • SG: L01-25 (pp2-282) • TG: L01-25 (pp3-372) • Ecosystems • RB: (pp07-23) • RB: (pp26-37) • RB: (pp40-51) • RB: (pp54-61) • TG: L01 (pp3-12) • TG: L02 (pp13-24) • TG: L04-15 (pp39-164) • Environmental Detectives • TG: Act01 (pp15-31) • Electrical Energy and Circuit Design • TG: L02 Exts (pp35-36) • Experiments with Plants • RB: (pp20-21) • RB: (pp24-25) • TG: L02 Exts (p24) • Floating and Sinking • RB: (pp48-50) • Global Warming and the Greenhouse Effect • TG: Ses06-8 (pp93-124) • Life Through Time • TG: Ses02-7 (pp37-269) • Microworlds • RB: (pp13- 15) • Ocean Currents • TG: Act01 (pp9-28) • Organisms-From Macro to Micro • SG: L04 (pp38-45)

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		<ul style="list-style-type: none"> • SG: L06 (pp64-81) • SG: L12-13 (pp146-171) • TG: L04 (pp49-56) • TG: L12-13 (pp201-26) • TG: L19 Exts (pp317-318) • Properties of Matter • SG: L01 (pp2-13) • SG: L12 (pp106-111) • Plate Tectonics • TG: Ses08 (pp113-129) • River Cutters • TG: Exts (p73) • Schoolyard Ecology • TG: Act05 (pp51-59) • The Technology of Paper • RB: (pp41-46)
LEARNING STANDARD / OUTCOME	2.18.	<p>Changes in Ecosystems Over Time: Recognize that biological evolution accounts for the diversity of species developed through gradual processes over many generations.</p> <ul style="list-style-type: none"> • Experiments with Plants • RB: (pp30-33) • RB: (pp44-46) • RB: (pp57-59) • Life Through Time • TG: Ses02 -7 (pp37-269) • Organisms-From Macro to Micro • SG: L02 (pp12-27) • SG: L04 (pp38-45) • SG: L13 (pp158-171) • TG: L13 (pp219-236) • TG: L19 Exts (pp317-318) • Schoolyard Ecology • TG: Act05 (pp51-59)
DOMAIN / GENERAL STANDARD	MA.3.	Physical Sciences
LEARNING STANDARD / OUTCOME	3.1.	<p>Properties of Matter: Differentiate between weight and mass, recognizing that weight is the amount of gravitational pull on an object.</p> <ul style="list-style-type: none"> • Energy, Machines and Motion • SG: L05-6 (pp36-61) • TG: L05-6 (pp47-74) • TG: L07 Exts (p83) • TG: L18 Exts (p224) • TG: L21 Exts (p245) • Earth in Space • SG: L15 (pp216-243) • TG: L14 Exts (p217) • TG: L15 (pp221-244) • TG: L15 Exts (p234) • Floating and Sinking • RB: (pp07-10)

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		<ul style="list-style-type: none"> • TG: L03-6 (pp21-54) • TG: L09-14 (pp69-118) • TG: L16 (pp129-134) • Properties of Matter • SG: L01-2 (pp2-23) • SG: L04 (pp30-37) • SG: L08-9 (pp74-83) • SG: L14 (pp116-121) • SG: L25-26 (pp224-235) • TG: L01-2 (pp3-26) • TG: L04 (pp39-48) • TG: L08-9 (pp91-112) • TG: L14 (pp153-160) • TG: L25-26 (pp303-332)
<p>LEARNING STANDARD / OUTCOME</p>	<p>3.2.</p>	<p>Properties of Matter: Differentiate between volume and mass. Define density.</p> <ul style="list-style-type: none"> • Bubble-ology • TG: Act02 (pp11-16) • Catastrophic Events • SG: L04 (pp42-53) • TG: L04 (pp45-56) • Discovering Density • TG: Exts (p48) • TG: Ses01-5 (pp5-46) • Energy, Machines and Motion • SG: L05-6 (pp36-61) • TG: L05-6 (pp47-74) • TG: L07 Exts (p83) • TG: L18 Exts (p224) • TG: L21 Exts (p245) • Earth in Space • SG: L15 (pp216-243) • TG: L14 Exts (p217) • TG: L15 (pp221-244) • Floating and Sinking • RB: (pp07-10) • RB: (pp15-17) • RB: (pp36-42) • RB: (pp48-50) • RB: (pp60-61) • TG: L02-6 (pp13-54) • TG: L09-16 (pp69-134) • Ocean Currents • TG: Act03-5 (pp47-93) • Properties of Matter • SG: L01-5 (pp2-55) • SG: L08-9 (pp74-83) • SG: L14 (pp116-121) • SG: L19 (pp162-167) • SG: L25-26 (pp224-235) • TG: L01-5 (pp3-64) • TG: L08-9 (pp91-112)

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		<ul style="list-style-type: none"> • TG: L14 (pp153-160) • TG: L19 (pp209-226) • TG: L25-26 (pp303-332)
LEARNING STANDARD / OUTCOME	3.3.	<p>Properties of Matter: Recognize that the measurement of volume and mass requires understanding of the sensitivity of measurement tools (e.g., rulers, graduated cylinders, balances) and knowledge and appropriate use of significant digits.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L21 (pp232-239) • TG: L21 (pp293-302) • Human Body Systems • TG: L22 Exts (p258) • Energy, Machines and Motion • SG: L06 (pp48-61) • TG: L06 (pp59-74) • Floating and Sinking • TG: L03-6 (pp21-54) • TG: L09 (pp69-78) • TG: L11-13 (pp87-112) • TG: L16 (pp129-134) • Light • SG: L06 (pp58-67) • TG: L10 Exts (p124) • TG: L15 Exts (p187) • Properties of Matter • SG: L04 (pp30-37) • SG: L08-9 (pp74-83) • SG: L14 (pp116-121) • SG: L26 (pp230-235) • TG: L08-9 (pp91-112) • TG: L14 (pp153-160) • TG: L26 (pp313-332) • The Technology of Paper • TG: L03-4 (pp49-74) • TG: L07 (pp107-116) • TG: L11 (pp149-156) • TG: L13 (pp165-170)
LEARNING STANDARD / OUTCOME	3.4.	<p>Properties of Matter: Explain and give examples of how mass is conserved in a closed system.</p> <ul style="list-style-type: none"> • Properties of Matter • SG: L25 (pp224-229) • TG: L25 (pp303-312)
LEARNING STANDARD / OUTCOME	3.5.	<p>Elements, Compounds, and Mixtures: Recognize that there are more than 100 elements that combine in a multitude of ways to produce compounds that make up all of the living and nonliving things that we encounter.</p> <ul style="list-style-type: none"> • Light • TG: L10 Exts (p124) • Properties of Matter

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		<ul style="list-style-type: none"> • SG: L20-22 (pp170-207) • TG: L20-22 (pp227-274)
LEARNING STANDARD / OUTCOME	3.6.	<p>Elements, Compounds, and Mixtures: Differentiate between an atom (the smallest unit of an element that maintains the characteristics of that element) and a molecule (the smallest unit of a compound that maintains the characteristics of that compound).</p> <ul style="list-style-type: none"> • Crime Lab Chemistry • TG: Act01-3 (pp7-62) • Properties of Matter • TG: L21 Exts (p251)
LEARNING STANDARD / OUTCOME	3.7.	<p>Elements, Compounds, and Mixtures: Give basic examples of elements and compounds.</p> <ul style="list-style-type: none"> • Light • TG: L10 Exts (p124) • Properties of Matter • SG: L20 -22(pp170-207) • TG: L20-22 (pp227-274) • TG: L23 Exts (p284)
LEARNING STANDARD / OUTCOME	3.8.	<p>Elements, Compounds, and Mixtures: Differentiate between mixtures and pure substances.</p> <ul style="list-style-type: none"> • Crime Lab Chemistry • TG: Act01-3 (pp7-62) • TG: Exts (pp63-64) • Floating and Sinking • TG: L13 (pp103-112) • Light • TG: L10 Exts (p124) • Properties of Matter • SG: L01 (pp2-13) • SG: L11-12 (pp98-111) • SG: L14 -15 (pp116-129) • SG: L17-22 (pp140-207) • TG: L01 (pp3-14) • TG: L11-12 (pp125-142) • TG: L14-15 (pp153-168) • TG: L16 Exts (p178) • TG: L17-22 (pp179-274) • TG: L23 Exts (p284) • The Technology of Paper • TG: L11 (pp149-156)
LEARNING STANDARD / OUTCOME	3.9.	<p>Elements, Compounds, and Mixtures: Recognize that a substance (element or compound) has a melting point and a boiling point, both of which are independent of the amount of the sample.</p> <ul style="list-style-type: none"> • Bubble-ology • TG: Act05 (pp35-39) • Human Body Systems • TG: L03 Exts (p24)

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		<ul style="list-style-type: none"> • Properties of Matter • SG: L18 -19(pp150-167) • SG: L21 (pp186-197) • TG: L18-19 (pp193-226) • TG: L21 (pp241-260)
LEARNING STANDARD / OUTCOME	3.10.	<p>Elements, Compounds, and Mixtures: Differentiate between physical changes and chemical changes.</p> <ul style="list-style-type: none"> • Bubble-ology • TG: Act05 (pp35-39) • Chemical Reactions • TG: Part1 (pp9-14) • Microworlds • TG: L09 Exts (p53) • Of Cabbages and Chemistry • TG: Ses01 (pp9-19) • TG: Ses02 (pp21-28) • TG: Ses04 (pp41-46) • Properties of Matter • SG: L06 (pp56-63) • SG: L18 (pp150-161) • SG: L20 (pp170-185) • SG: L24 (pp218-223) • TG: L06 (pp65-78) • TG: L17 Exts (p185) • TG: L18 (pp193-208) • TG: L20 (pp227-240) • TG: L22 Exts (p270) • TG: L24 (pp295-302)
LEARNING STANDARD / OUTCOME	3.11.	<p>Motion of Objects: Explain and give examples of how the motion of an object can be described by its position, direction of motion, and speed.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L12 (pp134-153) • TG: L12 (pp163-176) • Energy, Machines and Motion • SG: L06 (pp48-61) • SG: L18-19 (pp174-199) • SG: L21 (pp214-225) • TG: L01 Exts (p14) • TG: L06 Exts (pp68-69) • TG: L18-19 (pp217-234) • TG: L21 (pp239-246) • Earth in Space • SG: L15 (pp216-243) • TG: L15 (pp221-244)
LEARNING STANDARD / OUTCOME	3.12.	<p>Motion of Objects: Graph and interpret distance vs. time graphs for constant speed.</p> <ul style="list-style-type: none"> • Energy, Machines and Motion

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		<ul style="list-style-type: none"> • SG: L06 (pp48-61) • SG: L18-19 (pp174-199) • SG: L21 (pp214-225) • TG: L01 Exts (p14) • TG: L06 Exts (pp68-69) • TG: L18-19 (pp217-234) • TG: L21 (pp239-246)
LEARNING STANDARD / OUTCOME	3.13.	<p>Forms of Energy: Differentiate between potential and kinetic energy. Identify situations where kinetic energy is transformed into potential energy and vice versa.</p> <ul style="list-style-type: none"> • Electrical Energy and Circuit Design • SG: L09 (pp94-103) • TG: L09 (pp123-142) • Energy, Machines and Motion • SG: L10 (pp92-97) • SG: L20-21 (pp200-225) • TG: L20-21 (pp235-246) • Light • TG: L02 (pp21-36)
LEARNING STANDARD / OUTCOME	3.14.	<p>Heat Energy: Recognize that heat is a form of energy and that temperature change results from adding or taking away heat from a system.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L03 Exts (pp35-36) • Chemical Reactions • TG: Exts (pp22-23) • Global Warming and the Greenhouse Effect • TG: Ses02 (pp17-27) • Human Body Systems • TG: L12 Exts (pp147-148) • TG: L22 Exts (p258) • Hot Water and Warm Homes from Sunlight • TG: Ses02 (pp13-16) • TG: Ses04 (pp33-37) • Ocean Currents • TG: Act03 (pp47-69) • TG: Act05 (pp85-93) • Properties of Matter • SG: L05 (pp38-55) • TG: L05 (pp49-64) • TG: L07 Exts (p86) • TG: L13 Exts (p148) • TG: L18 Exts (p201)
LEARNING STANDARD / OUTCOME	3.15.	<p>Heat Energy: Explain the effect of heat on particle motion through a description of what happens to particles during a change in phase.</p> <ul style="list-style-type: none"> • Properties of Matter • SG: L06 (pp56-63) • TG: L02 Exts (p21)

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		<ul style="list-style-type: none"> • TG: L06 (pp65-78) • TG: L07 Exts (p86) • TG: L08 Exts (p96) • TG: L12 Exts (p140) • TG: L14 Exts (p157) • TG: L15 Exts (p166)
LEARNING STANDARD / OUTCOME	3.16.	<p>Heat Energy: Give examples of how heat moves in predictable ways, moving from warmer objects to cooler ones until they reach equilibrium.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act10 (pp108-113) • Catastrophic Events • SG: L03-5 (pp26-67) • SG: L20-22 (pp224-251) • TG: L03-5 (pp27-68) • TG: L20-22 (pp279-316) • Electrical Energy and Circuit Design • TG: L01 Exts (p16) • Light • TG: L10 Exts (p124) • Properties of Matter • SG: L05-8 (pp38-77) • SG: L13 (pp112-115) • SG: L18 (pp150-161) • TG: L05-8 (pp49-100) • TG: L11 Exts (p132) • TG: L13 (pp143-152) • TG: L18 (pp193-208) • TG: L22 Exts (p270)
DOMAIN / GENERAL STANDARD	MA.4.	Technology/Engineering
LEARNING STANDARD / OUTCOME	4.1.	<p>Materials, Tools, and Machines: Given a design task, identify appropriate materials (e.g., wood, paper, plastic, aggregates, ceramics, metals, solvents, adhesives) based on specific properties and characteristics (e.g., weight, strength, hardness, and flexibility).</p> <ul style="list-style-type: none"> • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L16-17 (pp148-173) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45)

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		<ul style="list-style-type: none"> • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • Measuring Time T • G: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.2.</p>	<p>Materials, Tools, and Machines: Identify and explain appropriate measuring tools, hand tools, and power tools used to hold, lift, carry, fasten, and separate, and explain their safe and proper use.</p> <ul style="list-style-type: none"> • Aquatic Habitats • TG: Act01-5 (pp13-70) • TG: Exts (pp70-78) • Acid Rain • TG: Ses01 (pp7-19) • TG: Ses05 (pp72-86) • TG: Ses07 (pp106-113) • TG: Ses08 (pp114-119) • Bubble Festival • TG: Act01-12 (pp54-124) • Bubble-ology • TG: Act01-6 (pp5-44) • Color Analyzers • TG: Act01-4 (pp5-37) • TG: Exts (pp38-40) • Convection: A Current Event • TG: Ses01-3 (pp5-26) • Catastrophic Events • SG: L19 (pp210-223) • SG: L22 (pp240-251) • TG: (pp xxxiii - xxxv) • TG: L19 (pp265-278) • TG: L22 (pp303-316) • Crime Lab Chemistry • TG: Act01-3 (pp7-62) • Chemical Reactions • TG: Exts (pp22-23) • TG: Part1 (pp9-14) • TG: Part2 (pp15-21) • Discovering Density • TG: Exts (p48) • TG: Ses01-5 (pp5-46) • Dry Ice Investigations • TG: Act01-4 (pp19-129)

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		<ul style="list-style-type: none"> • TG: Exts (pp131-132) • Ecosystems • RB: (pp43-44) • TG: S-Sec3 (pp34-44) • TG: L06 (pp61-74) • Environmental Detectives • TG: Act01-7 (pp15-202) • Electrical Energy and Circuit Design • SG: L01 (pp2-11) • SG: L05-7 (pp46-83) • SG: L09 (pp94-103) • SG: L11-12 (pp118-133) • SG: L14-19 (pp144-209) • SG: L22 (pp224-231) • SG: L23 (pp232-243) • TG: (pp xxxvii - xxxix) • TG: L01 (pp3-22) • TG: L05-9 (pp61-142) • TG: L11-12 (pp157-180) • TG: L14-19 (pp205-276) • TG: L22 (pp299-304) • TG: L23 (pp305-312) • Energy, Machines and Motion • SG: L01-13 (pp2-129) • SG: L16-21 (pp148-225) • TG: (pp xxxiii - xxxv) • TG: L01-13 (pp3-166) • TG: L16 (pp185-202) • TG: L18-21 (pp217-246) • Earth, Moon, and Stars • TG: Act01-6 (pp3-52) • Experiments with Plants • TG: L01-16 (pp9-128) • Earth in Space • SG: L03-9 (pp22-127) • SG: L11-22 (pp146-343) • TG: (pp xxxiv - xxxvi) • TG: L01-22 (pp3-326) • Food Chemistry TG: L02 (pp11-22) • FP - TG: Ses01-3 (pp7-25) • Floating and Sinking • RB: (pp29-35) • TG: S-Sec3 (pp10-15) • TG: L01-17 (pp3-136) • GEMS: Electric Circuits • TG: Ses01-10 (pp13-168) • Global Warming and the Greenhouse Effect • TG: Ses01-8 (pp5-124) • Human Body Systems • SG: L11-23 (pp90-195) • TG: (pp xxxii - xxxiv) • Hot Water and Warm Homes from Sunlight • TG: Ses01-5 (pp7-41)
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		<ul style="list-style-type: none"> • Investigating Artifacts • TG: Ses01-6 (pp7-63) • TG: Act01-5(pp15-91) • Light • SG: L01-26 (pp2-297) • TG: (pp xxxiv - xxxv) • TG: L01-26 (pp3-367) • Life Through Time • TG: Ses01-7 (pp13-269) • TG: Act01-6 (pp15-131) • Microworlds • TG: S-Sec3 (pp11-24) • TG: L05-6 (pp25-36) • TG: L11 (pp61-66) • TG: L15-16 (pp79-86) • Microscopic Explorations • TG: Act01-10 (pp37-97) • Mystery Festival • TG: Ses01-5 (pp109-197) • Messages From Space • TG: Act01-5 (pp6-123) • TG: Exts (p38) • TG: Exts (p51) • TG: Exts (p87) • Moons of Jupiter • TG: Act01-5 (pp7-64) • Magnets and Motors • TG: L08 (pp49-56) • More Than Magnifiers • TG: Act01-4 (pp9-36) • Ocean Currents • TG: Act01-7 (pp9-140) • Of Cabbages and Chemistry • TG: Ses01-4 (pp9-46) • Organisms-From Macro to Micro • SG: L02-19 (pp12-235) • TG: (pp xxxiv-xxxv) • TG: L02-19 (pp15-330) • Oobleck: What Do Scientists Do? • TG: Exts (p19) • TG: Ses01-4 (pp4-18) • Only One Ocean • TG: Act01-3(pp15-144) • Properties of Matter • SG: L01-26 (pp2-235) • TG: (pp xxxi - xxxiii) • TG: L01-26 (pp3-332) • Plate Tectonics • TG: Ses01-8 (pp21-129) • Paper Towel Testing • TG: Exts (p25) • TG: Ses01-4 (pp7-24) • River Cutters
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		<ul style="list-style-type: none"> • TG: Exts (p73) • TG: Ses01-7 (pp21-72) • The Real Reasons for the Seasons • TG: Act01-8 (pp17-88) • Stories in Stone • TG: Ses01-8 (pp15-113) • Schoolyard Ecology • TG: Act01-5 (pp7-59) • Terrarium Habitats • TG: Act01-5 (pp5-48) • The Technology of Paper • TG: L02-4 (pp29-74) • TG: L06-11 (pp91-156) • TG: L13 (pp165-170) • TG: L14 (pp171-184) • TG: L16-18 (pp197-218)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.3.</p>	<p>Materials, Tools, and Machines: Identify and explain the safe and proper use of measuring tools, hand tools, and machines (e.g., band saw, drill press, sanders, hammer, screwdriver, pliers, tape measure, screws, nails, and other mechanical fasteners) needed to construct a prototype of an engineering design.</p> <ul style="list-style-type: none"> • Electrical Energy and Circuit Design • SG: L06-7 (pp58-83) • SG: L09 (pp94-103) • TG: L06-7 (pp77-110) • TG: L09 (pp123-142) • Energy, Machines and Motion • SG: L01-21 (pp2-225) • TG: L01-21 (pp3-246) • Floating and Sinking • RB: (pp29-35) • Light • SG: L06 (pp58-67) • SG: L10 (pp108-115) • SG: L15 (pp154-165) • SG: L21 (pp230-243) • SG: L23 (pp252-265) • TG: L10 Exts (p124) • TG: L15 (pp181-194) • TG: L21 (pp295-304) • Magnets and Motors • TG: L08 (pp49-56) • Properties of Matter • SG: L01-26 (pp2-235) • TG: L01-26 (pp3-332) • The Technology of Paper • TG: L07 Exts (p111)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.4.</p>	<p>Engineering Design: Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate the</p>

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		<p>solution(s), and redesign.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • G: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.5.</p>	<p>Engineering Design: Demonstrate methods of representing solutions to a design problem, e.g., sketches, orthographic projections, multiview drawings.</p> <ul style="list-style-type: none"> • Electrical Energy and Circuit Design • SG: L04-5 (pp36-57) • SG: L11-14 (pp118-155) • SG: L17 (pp174-185) • SG: L18 (pp186-195) • SG: L20 (pp210-213) • SG: L24 (pp244-251) • TG: L04-5 (pp49-76) • TG: L11-14 (pp157-212) • TG: L17 (pp240-248)

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		<ul style="list-style-type: none"> • TG: L18 (pp249-262) • TG: L20 (pp277-290) • TG: L22 Exts (p304) • TG: L24 (pp313-326) • Energy, Machines and Motion • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 Exts (p36) • TG: L04 Exts (pp41-42) • TG: L06 Exts (pp68-69) • TG: L12 Exts (p153) • TG: L17 Exts (p208) • TG: L21 Exts (p245) • Floating and Sinking • RB: (pp29-35) • TG: L01 (pp3-12) • TG: L06 Exts (p52) • GEMS: Electric Circuits • TG: Ses03 (pp73-87) • TG: Ses04 (pp89-108) • TG: Ses07-11 (pp127-175) • Light • SG: L02 (pp20-31) • SG: L05-6 (pp48-67) • SG: L08 (pp82-91) • SG: L10 (pp108-115) • SG: L12-13 (pp132-141) • SG: L15-24 (pp154-283) • TG: L02-6 (pp21-82) • TG: L08-13 (pp99-168) • TG: L15-24 (pp181-334) • TG: L25 Exts (p342) • Magnets and Motors • TG: L05-9 (pp27-66) • TG: L11 Exts (p75) • TG: L13-14 (pp83-94) • TG: L16 (pp99-102) • TG: L17 (pp103-108) • Properties of Matter • SG: L01-26 (pp2-235) • TG: L01-26 (pp3-332) • The Technology of Paper • TG: L02 Exts (p35) • TG: L07 Exts (p111)
LEARNING STANDARD / OUTCOME	4.6.	<p>Engineering Design: Describe and explain the purpose of a given prototype.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312)

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		<ul style="list-style-type: none"> • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • G: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.7.</p>	<p>Engineering Design: Identify appropriate materials, tools, and machines needed to construct a prototype of a given engineering design.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • SG: L06 (pp58-69) • SG: L07 (pp70-83) • SG: L09 (pp94-103) • TG: L06 (pp77-92) • TG: L07 (pp93-110) • TG: L09 (pp123-142) • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L01-21 (pp2-225) • TG: L01-21 (pp3-246) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297)

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		<ul style="list-style-type: none"> • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Light • SG: L06 (pp58-67) • SG: L10 (pp108-115) • SG: L15 (pp154-165) • SG: L21 (pp230-243) • SG: L23 (pp252-265) • TG: L10 Exts (p124) • TG: L15 (pp181-194) • TG: L15 Exts (p187) • TG: L21 (pp295-304) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L08 (pp49-56) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L01-26 (pp2-235) • TG: L01-26 (pp3-332) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.8.</p>	<p>Engineering Design: Explain how such design features as size, shape, weight, function, and cost limitations would affect the construction of a given prototype.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • Energy, Machines and Motion • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339)

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		<ul style="list-style-type: none"> • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.9.</p>	<p>Engineering Design: Identify the five elements of a universal systems model: goal, inputs, processes, outputs, and feedback.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro

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		<ul style="list-style-type: none"> • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.10.</p>	<p>Communication Technologies: Identify and explain the components of a communication system, i.e., source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination.</p> <ul style="list-style-type: none"> • Earth in Space • TG: L21 Exts (p310) • Light • SG: L25-26 (pp284-297) • TG: L25-26 (pp335-367) • Messages From Space • TG: Act04 (pp88-95) • Magnets and Motors • RB: (pp33-38) • RB: (pp53-54) • The Technology of Paper • TG: L01 (pp19-28)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.11.</p>	<p>Communication Technologies: Identify and explain the appropriate tools, machines, and electronic devices (e.g., drawing tools, computer-aided design, and cameras) used to produce and/or reproduce design solutions (e.g., engineering drawings, prototypes, and reports).</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16 (pp148-161) • SG: L17 (pp164-173) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • TG: L21 Exts (p310) • Floating and Sinking • RB: (pp29-35)

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		<ul style="list-style-type: none"> • RB: (pp43-45) • Light • SG: L25-26 (pp284-297) • TG: L25-26 (pp335-367) • Magnets and Motors • RB: (pp33-38) • RB: (pp45-50) • RB: (pp53-54) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09 (pp78-83) • The Technology of Paper • TG: L01 (pp19-28) • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.12.</p>	<p>Communication Technologies: Identify and compare communication technologies and systems, i.e., audio, visual, printed, and mass communication.</p> <ul style="list-style-type: none"> • Earth in Space • TG: L21 Exts (p310) • Light • SG: L25-26 (pp284-297) • TG: L25-26 (pp335-397) • Messages From Space • TG: Act04 (pp88-95) • Magnets and Motors • RB: (pp33-38) • RB: (pp53-54) • The Technology of Paper • TG: L01 (pp19-28)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.13.</p>	<p>Communication Technologies: Identify and explain how symbols and icons (e.g., international symbols and graphics) are used to communicate a message.</p> <ul style="list-style-type: none"> • Electrical Energy and Circuit Design • SG: L05 (pp46-57) • TG: L05 (pp61-76) • Earth in Space • TG: L21 Exts (p310) • Light • SG: L25-26 (pp284-297) • TG: L25-26 (pp335-367) • Magnets and Motors • RB: (pp33-38) • RB: (pp53-54)

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		<ul style="list-style-type: none"> • Organisms-From Macro to Micro • SG: L02 (pp12-27) • TG: L02 (pp15-32) • The Technology of Paper • TG: L01 (pp19-28)
LEARNING STANDARD / OUTCOME	4.14.	<p>Manufacturing Technologies: Describe and explain the manufacturing systems of custom and mass production.</p> <ul style="list-style-type: none"> • Earth in Space • TG: L20 Exts (p297) • Food Chemistry • TG: L10 Exts (p97) • Measuring Time • RB: (pp39-42) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L21 Exts (p251) • The Technology of Paper • RB: (pp16-19)
LEARNING STANDARD / OUTCOME	4.15.	<p>Manufacturing Technologies: Explain and give examples of the impacts of interchangeable parts, components of mass-produced products, and the use of automation, e.g., robotics.</p> <ul style="list-style-type: none"> • Earth in Space • TG: L20 Exts (p297) • Food Chemistry • TG: L10 Exts (p97) • Measuring Time • RB: (pp39-42) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L21 Exts (p251) • The Technology of Paper • RB: (pp16-19)
LEARNING STANDARD / OUTCOME	4.16.	<p>Manufacturing Technologies: Describe a manufacturing organization, e.g., corporate structure, research and development, production, marketing, quality control, distribution.</p> <ul style="list-style-type: none"> • Earth in Space • TG: L20 Exts (p297) • Food Chemistry • TG: L10 Exts (p97) • Measuring Time • RB: (pp39-42) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L21 Exts (p251) • The Technology of Paper

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		<ul style="list-style-type: none"> • RB: (pp16-19)
LEARNING STANDARD / OUTCOME	4.17.	<p>Manufacturing Technologies: Explain basic processes in manufacturing systems, e.g., cutting, shaping, assembling, joining, finishing, quality control, and safety.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Food Chemistry • TG: L10 Exts (p97) • Floating and Sinking • RB: (pp29-30) • RB: (pp34-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • RB: (pp39-42) • TG: L13-5 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L21 Exts (p251) • The Technology of Paper • RB: (pp16-19) • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
LEARNING STANDARD / OUTCOME	4.18.	<p>Construction Technologies: Describe and explain parts of a structure, e.g., foundation, flooring, decking, wall, roofing systems.</p> <ul style="list-style-type: none"> • Properties of Matter

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		<ul style="list-style-type: none"> • TG: L18 Exts (p201)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.20.</p>	<p>Construction Technologies: Explain how the forces of tension, compression, torsion, bending, and shear affect the performance of bridges.</p> <ul style="list-style-type: none"> • Bubble Festival • TG: Act06-7 (pp86-96) • Bubble-ology • TG: Act03 (pp19-27) • Energy, Machines and Motion • SG: L14 (pp130-139) • SG: L16-18 (pp148-187) • TG: L01 Exts (p14) • TG: L05 Exts (pp53-54) • TG: L14 (pp167-176) • TG: L15 Exts (pp180-181) • TG: L16 (pp185-202) • Floating and Sinking • RB: (pp29-35) • Magnets and Motors • RB: (pp58-59) • Magnets and Motors • TG: L14 Exts (p92) • Measuring Time • TG: L14 Exts (p136) • Properties of Matter • SG: L09 (pp78-83) • TG: L18 Exts (p201) • The Technology of Paper • TG: L07 Exts (p111)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.22.</p>	<p>Transportation Technologies: Identify and compare examples of transportation systems and devices that operate on each of the following: land, air, water, and space.</p> <ul style="list-style-type: none"> • Energy, Machines and Motion • SG: L18 (pp174-187) • SG: L19 (pp188-199) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Floating and Sinking • RB: (pp11-21) • RB: (pp31-35) • RB: (pp43-45) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L20 Exts (p235)

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<p>LEARNING STANDARD / OUTCOME</p>	<p>4.23.</p>	<p>Transportation Technologies: Given a transportation problem, explain a possible solution using the universal systems model.</p> <ul style="list-style-type: none"> • Catastrophic Events • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design • TG: L12 Exts (pp177-178) • TG: L21 Exts (p295) • TG: L23 Exts (p312) • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16-19 (pp148-199) • TG: L03 (pp31-36) • TG: L17 Exts (p208) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L21 Exts (p245) • Earth in Space • SG: L21 (pp334-339) • TG: L20 Exts (p297) • TG: L21 (pp309-310) • Floating and Sinking • RB: (pp11-21) • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp45-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L09-10 (pp78-97) • TG: L10 (pp113-124) • TG: L10 Exts (p119) • TG: L20 Exts (p235) • The Technology of Paper • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123) • TG: L15 Exts (pp191-192)
<p>LEARNING STANDARD / OUTCOME</p>	<p>4.24.</p>	<p>Transportation Technologies: Identify and describe three subsystems of a transportation vehicle or device, i.e., structural, propulsion, guidance, suspension, control, and support.</p> <ul style="list-style-type: none"> • Catastrophic Events • SG: L11 (pp120-133) • TG: L06 Exts (pp77-78) • TG: L11 (pp149-162) • TG: L23 Exts (pp325-326) • Electrical Energy and Circuit Design

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		<ul style="list-style-type: none"> • SG: L24 (pp244-251) • TG: L02 Exts (pp35-36) • TG: L03 Exts (pp47-48) • TG: L07 Exts (pp105-106) • TG: L12 Exts (pp177-178) • TG: L13 Exts (p191) • TG: L14 Exts (p210) • TG: L21 Exts (p295) • TG: L22 Exts (p304) • TG: L23 Exts (p312) • TG: L24 (pp313-326) • Energy, Machines and Motion • SG: L03 (pp20-25) • SG: L16-19 (pp148-199) • SG: L21 (pp214-225) • SG: L22 (pp226-236) • TG: L03 (pp31-36) • TG: L06 Exts (pp68-69) • TG: L08 Exts (pp92-93) • TG: L09 Exts (p105) • TG: L16-17 (pp185-216) • TG: L18 Exts (p224) • TG: L19 Exts (p234) • TG: L20 Exts (p238) • TG: L21 Exts (p245) • TG: L22 (pp247-254) • Experiments with Plants • RB: (pp50-53) • Earth in Space • SG: L20-21 (pp324-339) • TG: L20-21 (pp293-310) • TG: L21 Exts (p310) • Floating and Sinking • RB: (pp11-21) • RB: (pp29-35) • RB: (pp43-45) • Magnets and Motors • RB: (pp41-50) • RB: (pp58-59) • TG: L15 (pp95-98) • Measuring Time • TG: L13-15 (pp123-144) • Organisms-From Macro to Micro • TG: L05 Exts (pp69-70) • Properties of Matter • SG: L10 (pp86-97) • TG: L10 (pp113-124) • TG: L20 Exts (p235) • The Technology of Paper • RB: (pp16-24) • TG: L03 Exts (pp54-55) • TG: L07 Exts (p111) • TG: L08 Exts (pp122-123)
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		<ul style="list-style-type: none"> • TG: L15 (pp185-196) • TG: L16 Exts (pp201-202) • TG: L17-18 (pp207-218)
LEARNING STANDARD / OUTCOME	4.25.	<p>Transportation Technologies: Identify and explain lift, drag, friction, thrust, and gravity in a vehicle or device, e.g., cars, boats, airplanes, rockets.</p> <ul style="list-style-type: none"> • Bubble-ology • TG: Act04 (pp29-32)
LEARNING STANDARD / OUTCOME	4.26.	<p>Bioengineering Technologies: Explain examples of adaptive or assistive devices, e.g., prosthetic devices, wheelchairs, eyeglasses, grab bars, hearing aids, lifts, braces.</p> <ul style="list-style-type: none"> • Energy, Machines and Motion • SG: L16 (pp148-161) • SG: L17 (pp164-173) • Experiments with Plants • RB: (pp62) • Floating and Sinking • RB: (pp29-35) • Organisms-From Macro to Micro • TG: L09 Exts (p160) • Properties of Matter • SG: L09 (pp78-83) • TG: L17 Exts (p185) • The Technology of Paper • TG: L07 Exts (p111)
LEARNING STANDARD / OUTCOME	4.27.	<p>Bioengineering Technologies: Describe and explain adaptive and assistive bioengineered products, e.g., food, bio-fuels, irradiation, integrated pest management.</p> <ul style="list-style-type: none"> • Energy, Machines and Motion • SG: L16 (pp148-161) • SG: L17 (pp164-173) • Experiments with Plants • RB: (pp62) • Floating and Sinking • RB: (pp29-35) • Organisms-From Macro to Micro • TG: L09 Exts (p160) • Properties of Matter • SG: L09 (pp78-83) • TG: L17 Exts (p185) • The Technology of Paper • TG: L07 Exts (p111)

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