A Correlation of

Interactive Science
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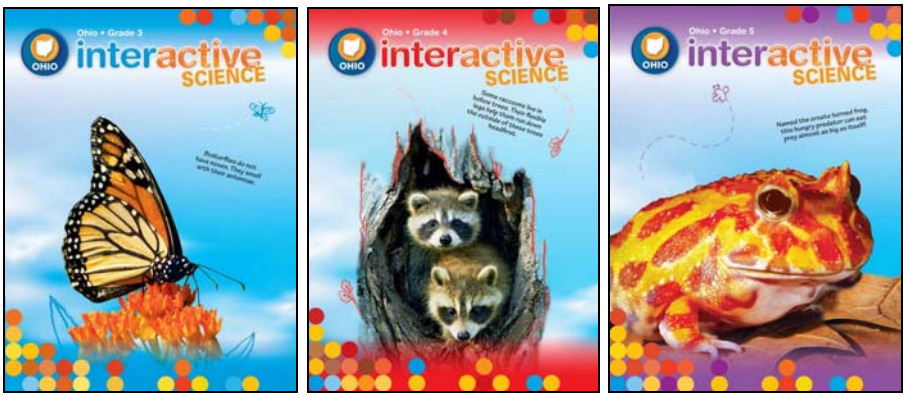

To

Ohio's New Learning Standards
Science Standards

Grades Kindergarten-5

ALWAYS LEARNING PEARSON

Table of Contents

Introduction

The following document indicates how closely ***Interactive Science,* ©2017, Grades K-5,** supports Ohio's New Learning Standards for Science, Grades K-5. Correlation references are to the Student Edition and Teacher Edition. Please note that the Kindergarten Student Edition text pages are two-sided; each singular page contains a corresponding Activity Page on the reverse side.

Interactive Science is an elementary science program that makes learning personal, engaging, and relevant for today's student. The program features an innovative Write-in Student Edition that enables students to become active participants in their learning and truly connect the Big Ideas of science to their world.

The 2017 editions of ***Interactive Science*** support the Next Generation Science Standards (NGSS) in several ways. In the Student Edition, lessons provide interactive opportunities for students to acquire the Disciplinary Core Ideas that are the building blocks of the NGSS Performance Expectations at each grade level. STEM Activities, Apply It! activities, Design It! Activities, and Performance-Based Assessments enable students to research, investigate, and apply Science and Engineering Practices to real-world problems in a meaningful way. In the Teacher's Edition, the NGSS Cross-Cutting Concepts that link across grade levels and across disciplines within grade levels are noted at the chapter level, and a detailed and focused Performance Expectation Activity is provided for each NGSS standard.

Ohio's New Learning Standards Science Standards	Interactive Science, ©2017 Kindergarten
Kindergarten	
Science Inquiry and Application	
During the years of PreK–4 all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas.	
• Observe and ask questions about the natural environment.	**SE:** 2, 3, 5, 6, 9
• Plan and conduct simple investigations.	**SE:** 11, 13, 19
• Employ simple equipment and tools to gather data and extend the senses.	**SE:** 4, 9, 14
• Use appropriate mathematics with data to construct reasonable explanations.	**SE:** 53
• Communicate about observations, investigations and explanations.	**SE:** 7, 8, 15, 18
• Review and ask questions about the observations and explanations of others.	*Reviewing a partner's work is covered in the Teacher's Edition.*
EARTH AND SPACE SCIENCE (ESS)	
Topic: Daily and Seasonal Changes	
This topic focuses on observing, exploring, describing and comparing weather changes, patterns in the sky and changing seasons.	
Weather changes are long term and short term.	
Weather changes occur throughout the day and from day to day.	**SE:** 34, 39, 42, OH5
Air is a nonliving substance that surrounds Earth and wind is air that is moving.	**SE:** OH4
Wind, temperature and precipitation can be used to document short-term weather changes that are observable.	**SE:** 34, 42
Yearly weather changes (seasons) are observable patterns in the daily weather changes.	**SE:** 40

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The moon, sun and stars can be observed at different times of the day or night.	
The moon, sun and stars are in different positions at different times of the day or night.	**SE:** 33, 36, OH6
Sometimes the moon is visible during the night, sometimes the moon is visible during the day, and at other times, the moon is not visible at all.	**SE:** 33, 38
The observable shape of the moon changes in size very slowly throughout each day of every month.	**SE:** OH7
The sun is visible only during the day.	**SE:** 36–37
The sun's position in the sky changes in a single day and from season to season.	**SE:** 37, OH8
Stars are visible at night, some are visible in the evening or morning, and some are brighter than others.	**SE:** OH6
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE:** 41
Demonstrating Science Knowledge	**SE:** 35
Interpreting and Communicating Science Concepts	**SE:** 34, 41
Recalling Accurate Science	**SE:** 34, 41

Ohio's New Learning Standards Science Standards	Interactive Science, ©2017 Kindergarten
LIFE SCIENCE (LS)	
Topic: Physical and Behavioral Traits of Living Things	
This topic focuses on observing, exploring, describing and comparing living things in Ohio.	
Living things are different from nonliving things.	**SE:** 23–24, 31, 33
Living things include anything that is alive or has ever been alive.	**SE:** 23–24
Living things have specific characteristics and traits.	**SE:** 22, 23–24, 25, 27, 28, 29, 30
Living things grow and reproduce.	**SE:** 26
Living things are found almost everywhere in the world.	**SE:** 26, 31
There are somewhat different kinds in different places.	**SE:** 25, OH2
Living things have physical traits and behaviors, which influence their survival.	**SE:** 25
Living things are made up of a variety of structures.	**SE:** 25, 28, 29, 30
Some of these structures and behaviors influence their survival.	**SE:** 28, 29, OH3
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE:** 23–32
Demonstrating Science Knowledge	**SE:** 21, 30
Interpreting and Communicating Science Concepts	**SE:** 20, 22
Recalling Accurate Science	**SE:** 33

Ohio's New Learning Standards Science Standards	Interactive Science, ©2017 Kindergarten
PHYSICAL SCIENCE (PS)	
Topic: Properties of Everyday Objects and Materials	
This topic focuses on the production of sound and on observing, exploring, describing and comparing the properties of objects and materials with which the student is familiar	
Objects and materials can be sorted and described by their properties.	**SE:** 46, 48, 49–50
Objects can be sorted and described by the properties of the materials from which they are made. Some of the properties can include color, size and texture.	**SE:** 45–46, 47–48, 49–50, 52
Some objects and materials can be made to produce sound.	**SE:** 51, OH9
Sound is produced by touching, blowing or tapping objects.	**SE:** OH9
The sounds that are produced vary depending on the properties of objects.	**SE:** OH9
Sound is produced when objects vibrate.	**SE:** OH9
Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE:** 45, 52
Demonstrating Science Knowledge	**SE:** 43, 49
Interpreting and Communicating Science Concepts	**SE:** 44, 53
Recalling Accurate Science	**SE:** 46, 52

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 1
Grade 1	
Science Inquiry and Application	
During the years of PreK–4 all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas.	
• Observe and ask questions about the natural environment.	**SE/TE:** 4, 6–8, 20, 10–11, 47–48, 51
• Plan and conduct simple investigations.	**SE/TE:** 10, 20–23, 50, 56–57, 86–87, 134 **TE Only:** 29D, 57D, 87a-87d, 99D, 135D, 165D, 191D
• Employ simple equipment and tools to gather data and extend the senses.	**SE/TE:** 14–17, 24–25, 28–29, 41, 42, 44, 132–133, 148
• Use appropriate mathematics with data to construct reasonable explanations.	**SE/TE:** 13, 57, 88, 100 **TE Only:** 44C
• Communicate about observations, investigations and explanations.	**SE/TE:** 20, 22, 24–27, 41, 56–57, 64, 68, 70, 71, 87, 97
• Review and ask questions about the observations and explanations of others.	**SE/TE:** 12 **TE Only:** 23, 27, 63, 67, 71, 87c, 96,
EARTH AND SPACE SCIENCE (ESS)	
Topic: Sun, Energy and Weather	
This topic focuses on the sun as a source of energy and energy changes that occur to land, air and water.	
The sun is the principal source of energy.	**SE/TE:** 124
Sunlight warms Earth's land, air and water.	**SE/TE:** 21, 124
The amount of exposure to sunlight affects the amount of warming or cooling of air, water and land.	**SE/TE:** 21, 125
The physical properties of water can change.	**SE/TE:** 126–127
These changes occur due to changing energy.	**SE/TE:** 126–127
Water can change from a liquid to a solid and from a solid to a liquid.	**SE/TE:** 126–127

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 1
Weather observations can be used to examine the property changes of water.	**SE/TE:** 127, 128–129, 130
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 134–135 **TE Only:** 135A–135C
Demonstrating Science Knowledge	**SE/TE:** 130, 134–135
Interpreting and Communicating Science Concepts	**SE/TE:** 114, 122, 130, 135 **TE Only:** 135C
Recalling Accurate Science	**SE/TE:** 130 **TE Only:** 135D
LIFE SCIENCE (LS)	
Topic: Basic Needs of Living Things	
This topic focuses on the physical needs of living things in Ohio. Energy from the sun or food, nutrients, water, shelter and air are some of the physical needs of living things.	
Living things have basic needs, which are met by obtaining materials from the physical environment.	
Living things require energy, water and a particular range of temperatures in their environments.	**SE/TE:** 64, 66–67, 70, 78, 86–87, 89–90, 92, 98–99
Plants get energy from sunlight.	**SE/TE:** 80, 82–83, 86, 98–99 **TE Only:** 99A–99C
Animals get energy from plants and other animals.	**SE/TE:** 82–83, 90, 94
Living things acquire resources from the living and nonliving components of the environment.	**SE/TE:** 48, 64, 70–71, 72–73, 76–77, 84–85, 86–91
Living things survive only in environments that meet their needs.	
Resources are necessary to meet the needs of an individual and populations of individuals.	**SE/TE:** 58, 85, 86–91, 93–97
Living things interact with their physical environments as they meet those needs.	**SE/TE:** 76, 78–79, 86–91, 93–97
Effects of seasonal changes within the local environment directly impact the availability of resources.	**SE/TE:** 92

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 1
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 48–57, 92 **TE Only:** 99D
Demonstrating Science Knowledge	**SE/TE:** 46, 68, 86–87, 96–97 **TE Only:** 87a–87d, 99A–99C
Interpreting and Communicating Science Concepts	**SE/TE**: 47, 58, 59, 64, 65, 66, 92 **TE Only:** 63a, 67a, 69, 99C
Recalling Accurate Science	**SE/TE:** 67, 94–95 **TE Only:** 63b, 67b
PHYSICAL SCIENCE (PS)	
Topic: Motion and Materials	
This topic focuses on the changes in properties that occur in objects and materials. Changes of position of an object are a result of pushing or pulling.	
Properties of objects and materials can change.	**SE/TE:** 156, 159, 160–163
Objects and materials change when exposed to various conditions, such as heating or freezing.	**SE/TE:** 159, 160–163 **TE Only:** 165A
Not all materials change in the same way.	**SE/TE:** 159, 160–163, 164
Objects can be moved in a variety of ways, such as straight, zigzag, circular and back and forth.	**SE/TE:** 178–181 **TE Only:** 174G–174H
The position of an object can be described by locating it relative to another object or to the object's surroundings.	**SE/TE:** 151–153
An object is in motion when its position is changing.	**SE/TE:** 176, 179, 180
The motion of an object can be affected by pushing or pulling.	**SE/TE:** 176, 180, 183–185 **TE Only:** 174G–174H
A push or pull is a force that can make an object move faster, slower or go in a different direction.	**SE/TE:** 183–185 **TE Only:** 174G–174H

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 1
Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 156, 164, 176, 178, 186, 190 **TE Only:** 165A–165B, 191A–191B
Demonstrating Science Knowledge	**SE/TE:** 156, 164–165, 182, 190
Interpreting and Communicating Science Concepts	**SE/TE:** 156, 164–165, 182, 186, 190–191 **TE Only:** 165C, 191C
Recalling Accurate Science	**SE/TE:** 156, 164, 182

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 2
Grade 2	
Science Inquiry and Application	
During the years of PreK–4, all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas:	
• Observe and ask questions about the natural environment.	**SE/TE:** 4, 6–9, 22, 26 **TE Only:** 2G–2H
• Plan and conduct simple investigations.	**SE/TE:** 22–23, 28–29, 38, 40 **TE Only:** 29A–29D
• Employ simple equipment and tools to gather data and extend the senses.	**SE/TE:** 10, 13, 14–18, 25, 46
• Use appropriate mathematics with data to construct reasonable explanations.	**SE/TE:** 20, 24, 25, 27, 84 **TE Only:** 2C
• Communicate about observations, investigations and explanations.	**SE/TE:** 11, 20, 26, 27 **TE Only:** 29C
• Review and ask questions about the observations and explanations of others.	**SE/TE:** 8, 11, 38, 40
EARTH AND SPACE SCIENCE (ESS)	
Topic: The Atmosphere	
This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.	
The atmosphere is made up of air.	**SE/TE:** 132 **TE Only:** 147
Air has properties that can be observed and measured.	**SE/TE:** 107, 108
The transfer of energy in the atmosphere causes air movement, which is felt as wind.	**SE/TE:** 107
Wind speed and direction can be measured.	**SE/TE:** 102, 107
Water is present in the air.	**SE/TE:** 99
Water is present in the air as clouds, steam, fog, rain, ice, snow, sleet or hail.	**SE/TE:** 38, 99, 104

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 2
When water in the air cools (change of energy), it forms small droplets of water that can be seen as clouds.	**SE/TE:** 100–101
Water can change from liquid to vapor in the air and from vapor to liquid.	**SE/TE:** 38, 100–101
The water droplets can form into raindrops.	**SE/TE:** 99–101, 104
Water droplets can change to solid by freezing into snow, sleet or hail.	**SE/TE:** 38, 104
Clouds are moved by flowing air.	**SE/TE:** 99
Long- and short-term weather changes occur due to changes in energy.	**SE/TE:** 109, 110–113
Changes in energy affect all aspects of weather, including temperature, precipitation amount and wind.	**SE/TE:** 38, 102, 103–104, 109, 110–113
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 96, 106, 114, 120 **TE Only:** 121A–121D
Demonstrating Science Knowledge	**SE/TE:** 102, 106
Interpreting and Communicating Science Concepts	**SE/TE:** 96, 102, 120–121
Recalling Accurate Science	**SE/TE:** 106, 114, 121

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 2
LIFE SCIENCE (LS)	
Topic: Interactions within Habitats	
This topic focuses on how ecosystems work by observations of simple interactions between the biotic/living and abiotic/nonliving parts of an ecosystem. Just as living things impact the environment in which they live, the environment impacts living things.	
Living things cause changes on Earth.	
Living things function and interact with their physical environments.	**SE/TE:** 70, 72, 73–77, 82
Living things cause changes in the environments where they live; the changes can be very noticeable or slightly noticeable, fast or slow.	This standard is addressed in Grade 4, Chapter 4, Lesson 4 of *Interactive Science Ohio*
Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today.	**SE/TE:** 79–81
Living things that once lived on Earth no longer exist; their basic needs were no longer met.	**SE/TE:** 79–81
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 70, 82 **TE Only:** 83A–83B, 83D
Demonstrating Science Knowledge	**SE/TE:** 78, 82
Interpreting and Communicating Science Concepts	**SE/TE:** 70, 72, 83 **TE Only:** 83C
Recalling Accurate Science	**SE/TE:** 78, 83 **TE Only:** 83C

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 2
PHYSICAL SCIENCE (PS)	
Topic: Changes in Motion	
This topic focuses on observing the relationship between forces and motion.	
Forces change the motion of an object.	**SE/TE:** 158, 161–165
Motion can increase, change direction or stop depending on the force applied.	**SE/TE:** 158, 161–165
The change in motion of an object is related to the size of the force.	**SE/TE:** 172–173
Some forces act without touching, such as using a magnet to move an object or objects falling to the ground.	**SE/TE:** 166–169
Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 158, 166, 170 **TE Only:** 175A–175C
Demonstrating Science Knowledge	**SE/TE:** 158, 166, 174
Interpreting and Communicating Science Concepts	**SE/TE:** 158, 166, 170, 174–175
Recalling Accurate Science	**SE/TE:** 158, 166, 175

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 3
Grade 3	
Science Inquiry and Application	
During the years of PreK–4, all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas.	
• Observe and ask questions about the natural environment.	**SE/TE:** 2, 6–8, 16–19, 36, 87–88, 90, 96, 130, 138–139, 148–149, 170–171, 192, 232, 244, 250 **TE Only:** 3, 9B, 27B, 35A, 35C–35D, 95A, 101A, 137A, 139A–139B
• Plan and conduct simple investigations.	**SE/TE:** 4, 10, 21, 24–25, 54, 60–63, 65–67, 78, 80–84, 88, 90, 96, 130, 138–139, 148–150, 156, 170–171, 192, 198, 232, 244 **TE Only:** 9A, 10B, 15A, 21A, 35A, 35C–35D, 65A–65B, 67B–67D, 95A, 101A, 137A, 139A–139B, 203A
• Employ simple equipment and tools to gather data and extend the senses.	**SE/TE:** 11, 16, 20, 28–31, 34–35, 54, 56–59, 79–80, 88, 90, 96, 130, 138–139, 148–150, 156, 170–171, 192, 198, 232, 244 **TE Only:** 33A–B, 35A–35D, 46C, 46D, 59A, 59B, 95A, 101A, 137A, 139A–139B, 203A
• Use appropriate mathematics with data to construct reasonable explanations.	**SE/TE:** 12–14, 30, 82, 198–205 **TE Only:** 35A, 35C–35D, 203A
• Communicate about observations, investigations and explanations.	**SE/TE:** 9, 15, 22–23, 26, 28, 54, 61, 64, 82, 88, 90, 96, 130, 138–139, 150–151, 156, 170–171, 192, 198, 232, 244 **TE Only:** 21B, 27A, 27B, 35A, 35C–35D, 95A, 101A, 137A, 139A–139B, 203A
• Review and ask questions about the observations and explanations of others.	**SE/TE:** 9, 15, 20–21, 27, 82 **TE Only:** 35A, 35C

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 3
EARTH AND SPACE SCIENCE (ESS)	
Topic: Earth's Resources	
This topic focuses on Earth's resources. While resources can be living and nonliving, within this strand, the emphasis is on Earth's nonliving resources, such as water, air, rock, soil and the energy resources they represent.	
Earth's nonliving resources have specific properties.	
Soil is composed of pieces of rock, organic material, water and air and has characteristics that can be measured and observed.	**SE/TE:** 156–157, 164–169 **TE Only:** 157, 165, 167, 169A–169B
Rocks have unique characteristics that allow them to be sorted and classified.	**SE/TE:** 158–163 **TE Only:** 159–160, 163, 163B
Rocks form in different ways.	**SE/TE:** 162–163
Air and water are nonliving resources.	**SE/TE:** 2**,** 196
Earth's resources can be used for energy.	
Many of Earth's resources can be used for the energy they contain.	**SE/TE:** 49, 51, OH2–OH3, OH5
Renewable energy is an energy resource, such as wind, water or solar energy that is replenished within a short amount of time by natural processes.	**SE/TE:** 49, 51, OH2–OH3, OH5 **TE Only:** 53B
Nonrenewable energy is an energy resource, such as coal or oil that is a finite energy source that cannot be replenished in a short amount of time.	**SE/TE:** OH4–OH5
Some of Earth's resources are limited.	
Some of Earth's resources become limited due to overuse and/or contamination.	**SE/TE:** OH6–OH7
Reducing resource use, decreasing waste and/or pollution, recycling and reusing can help conserve these resources.	**SE/TE:** OH6–OH7

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 3
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 170–171 **TE Only:** 171A–171D
Demonstrating Science Knowledge	**SE/TE:** 156, 170–171 **TE Only:** 163A, 171A–171D
Interpreting and Communicating Science Concepts	**SE/TE:** 156, 170–171 **TE Only:** 163A–163B, 171A–171D
Recalling Accurate Science	**TE Only:** 163B, 171C–171D
LIFE SCIENCE (LS)	
Topic: Behavior, Growth, and Changes	
This topic explores life cycles of organisms and the relationship between the natural environment and an organism's (physical and behavioral) traits, which affect its ability to survive and reproduce.	
Offspring resemble their parents and each other.	**SE/TE:** 123–124, 126, 128
Individual organisms inherit many traits from their parents indicating a reliable way to transfer information from one generation to the next.	**SE/TE:** 124
Some behavioral traits are learned through interactions with the environment and are not inherited.	**SE/TE:** 127–128
Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing.	
Plants and animals have physical features that are associated with the environments where they live.	**SE/TE:** 92, 94, 128, 135
Plants and animals have certain physical or behavioral characteristics that improve their chances of surviving in particular environments.	**SE/TE:** 94, 128
Individuals of the same kind have different characteristics that they have inherited. Sometimes these different characteristics give individuals an advantage in surviving and reproducing.	**SE/TE:** 128–129

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 3
Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.	
Over the whole earth, organisms are growing, reproducing, dying and decaying.	**SE/TE:** 102–105, 111, 130–134, 136
The details of the life cycle are different for different organisms, which affects their ability to survive and reproduce in their natural environments.	**SE/TE:** 106–107, 130–132, 136–137
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 108–109, 152 **TE Only:** 109A–109D, 137A, 139C–139D
Demonstrating Science Knowledge	**SE/TE:** 108–109, 130, 152 **TE Only:** 109A–109D, 137A, 139A–139D
Interpreting and Communicating Science Concepts	**SE/TE:** 109, 152 **TE Only:** 95B, 101B, 107B, 109A–109D, 129B, 137A–137B, 139A–139D
Recalling Accurate Science	**TE Only:** 95B, 101B, 107B, 137B, 139C–139D
PHYSICAL SCIENCE (PS)	
Topic: Matter and Forms of Energy	
This topic focuses on the relationship between matter and energy. Matter has specific properties and is found in all substances on Earth. Heat is a familiar form of energy that can change the states of matter.	
All objects and substances in the natural world are composed of matter.	**SE/TE:** 188–189
Matter takes up space and has mass.	**SE/TE:** 189, 193, 199–201
Matter exists in different states, each of which has different properties.	**SE/TE:** 193, 195
The most common states of matter are solids, liquids and gases.	**SE/TE:** 193, 195–197
Shape and compressibility are properties that can distinguish between the states of matter.	**SE/TE:** 190–191, OH8–OH9

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 3
One way to change matter from one state to another is by heating or cooling.	**SE/TE:** 196–197
Heat, electrical energy, light, sound and magnetic energy are forms of energy.	**SE/TE:** 222–223, 228, 233, 241–245, 250–257
There are many different forms of energy.	**SE/TE:** 49, 51, 221–225, 233, 241–242, 245, 250–257
Energy is the ability to cause motion or create change.	**SE/TE:** 221, 223, 225, 227, 241–242
Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 186, 194, 204–205, 218, 268–272 **TE Only:** 197A, 203A, 205A–205D, 249A, 255A, 257A–257D
Demonstrating Science Knowledge	**SE/TE:** 51, 186, 194, 204–205, 218, 268–272 **TE Only:** 191B, 197A, 203A, 205A–205D, 225B, 249A, 255A, 257A–257D
Interpreting and Communicating Science Concepts	**SE/TE:** 186, 194, 205, 218, 268–272 **TE Only:** 191B, 197A–B, 203A–203B, 205A–205D, 225B, 249B, 255B, 257A–257D
Recalling Accurate Science	**TE Only:** 191B, 197A–197B, 203B, 205B–205D, 249B, 257A–257D

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 4
Grade 4	
Science Inquiry and Application	
During the years of PreK–4, all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas.	
• Observe and ask questions about the natural environment.	**SE/TE:** 4, 6–9, 16–23, 92, 98, 132, 138, 192, 202, 214, 220, 226–227 **TE Only:** 2C–2D, 9A–9B, 23A–23B,
• Plan and conduct simple investigations.	**SE/TE:** 10–15, 16–23, 24–26, 28, 30–33, 46, 49, 54–59, 61–63, 72–78, 82, 84, 92, 322, 334 **TE Only:** 2C–2D, 15A–15B, 16B, 23A–23B, 24B, 31A–31B, 33A–33D, 61A–61B, 63A–63D
• Employ simple equipment and tools to gather data and extend the senses.	**SE/TE:** 10–15, 202, 252 **TE Only:** 2C–2D, 15A–15B,
• Use appropriate mathematics with data to construct reasonable explanations.	**SE/TE:** 24, 26–29, 31, 33, 54, 62–63, 76, 214, 252, 258–260, 302 **TE Only:** 2C–2D, 31A–31B, 33A–33D, 61A, 63A–63D
• Communicate about observations, investigations and explanations.	**SE/TE:** 24, 27–29, 33, 54, 60, 63, 76, 78, 82, 84, 98, 132, 220, 226–227, 278–279, 302, 338 **TE Only:** 2C–2D, 31A–31B, 33A–33D, 61A, 63A–63D
• Review and ask questions about the observations and explanations of others.	**SE/TE:** 82, 84, 302 **TE Only:** 2C–2D

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 4
EARTH AND SPACE SCIENCE (ESS)	
Topic: Earth's Surface	
This topic focuses on the variety of processes that shape and reshape Earth's surface.	
Earth's surface has specific characteristics and landforms that can be identified.	**SE/TE:** 203–204, 209
About 70 percent of the Earth's surface is covered with water and most of that is the ocean.	**SE/TE:** 215–217, 221–223
Only a small portion of the Earth's water is freshwater, which is found in rivers, lakes and groundwater.	**SE/TE:** 216–219, 221–223
Earth's surface can change due to erosion and deposition of soil, rock or sediment.	**SE/TE:** 203–206, 212
Catastrophic events such as flooding, volcanoes and earthquakes can create landforms.	**SE/TE:** 208–212
The surface of Earth changes due to weathering.	**SE/TE:** 204–205
Rocks change shape, size and/or form due to water or ice movement, freeze and thaw, wind, plant growth, gases in the air, pollution and catastrophic events such as earthquakes, mass wasting, flooding and volcanic activity.	**SE/TE:** 194–195, 200, 203–206, 208–212 **TE Only:** 182C–182D
The surface of Earth changes due to erosion and deposition.	**SE/TE:** 203–204, 206–207
Water, wind and ice physically remove and carry (erosion) rock, soil and sediment and deposit the material in a new location.	**SE/TE:** 196, 204, 206–207, 213 **TE Only:** 182C–182D
Gravitational force affects movements of water, rock and soil.	**SE/TE:** 206, 212, 221–225

Ohio's New Learning Standards Standards for Science	Interactive Science, ©2017 Grade 4
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 184, 192, 202, 214, 220, 226–227, 238–242 **TE Only:** 201A, 207A, 219A, 225A, 227A–227D
Demonstrating Science Knowledge	**SE/TE:** 184, 192, 202, 214, 220, 226–227, 238–242 **TE Only:** 201A–201B, 207A–207B, 213B, 219A–219B, 225A–225B, 227A–227D
Interpreting and Communicating Science Concepts	**SE/TE:** 184, 192, 202, 214, 220, 226–227, 238–242 **TE Only:** 201A–201B, 207A–207B, 213B, 219A–219B, 225A–225B, 227A–227D
Recalling Accurate Science	**TE Only:** 201B, 207B, 213B, 219B, 225B, 227A–227D
LIFE SCIENCE (LS)	
Topic: Earth's Living History	
This topic focuses on using fossil evidence and living organisms to observe that suitable habitats depend upon a combination of biotic and abiotic factors.	
Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.	**SE/TE:** 137, 144, 147–149, 151 **TE Only:** 122C–122D,
Ecosystems can change gradually or dramatically.	**SE/TE:** 137, 144, 147, 151 **TE Only:** 122C–122D,
When the environment changes, some plants and animals survive and reproduce and others die or move to new locations.	**SE/TE:** 104–107, 137, 144, 147–149, 151 **TE Only:** 122C–122D
An animal's patterns of behavior are related to the environment. This includes the kinds and numbers of other organisms present, the availability of food and resources, and the physical attributes of the environment.	**SE/TE:** 92–97, 104–109, 127–131, 144, 147–149, 151 **TE Only:** 122C–122D

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Fossils can be compared to one another and to present-day organisms according to their similarities and differences.	
The concept of biodiversity is expanded to include different classification schemes based upon shared internal and external characteristics of organisms.	**SE/TE:** 82, 84–91, 95, 99–103, 158–159
Most types of organisms that have lived on Earth no longer exist.	**SE/TE:** 152–157
Fossils provide a point of comparison between the types of organisms that lived long ago and those existing today.	**SE/TE:** 160–161
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 124, 164–165, 176–181 **TE Only:** 97A, 103A, 111A–111D, 137A, 151A, 165A–165D
Demonstrating Science Knowledge	**SE/TE:** 124, 150, 164–165, 176–181 **TE Only:** 97A–97B, 103A–103B, 111A–111D, 137A–137B, 145B, 151A–151B, 157B, 163B, 165A–165D
Interpreting and Communicating Science Concepts	**SE/TE:** 124, 150, 165, 176–181 **TE Only:** 91A, 97B, 103A–103B, 109A–109B, 111A–111D, 131B, 137A–137B, 145B, 151B, 157B, 163B, 165A–165D
Recalling Accurate Science	**TE Only:** 91B, 97B, 103B, 109B, 111A–111D, 131B, 137B, 151B, 157B, 163B, 165A–165D

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PHYSICAL SCIENCE (PS)	
Topic: Electricity, Heat and Matter	
This topic focuses on the conservation of matter and the processes of energy transfer and transformation, especially as they apply to heat and electrical energy.	
The total amount of matter is conserved when it undergoes a change.	**SE/TE:** 252–257, 273–277 **TE Only:** 244C–244D
When an object is broken into smaller pieces, when a solid is dissolved in a liquid or when matter changes state (solid, liquid, gas), the total amount of matter remains constant.	**SE/TE:** 248–250, 252–257, 260–265, 268–271, 273–277 **TE Only:** 244C–244D
Energy can be transformed from one form to another or transferred from one location to another.	**SE/TE:** 295–301, 303–309, 331–333 **TE Only:** 290C–290D
Energy transfers from hot objects to cold objects as heat, resulting in a temperature change.	**SE/TE:** 303–309, 331, 333 **TE Only:** 290C–290D
Electric circuits require a complete loop of conducting materials through which electrical energy can be transferred.	**SE/TE:** 322, 324, 328–329, 340–343
Electrical energy in circuits can be transformed to other forms of energy, including light, heat, sound and motion.	**SE/TE:** 328–329, 331–333, 338, 340–343
Electricity and magnetism are closely related.	**SE/TE:** 335, 339–343
Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 246, 252, 260, 272, 278–279, 292, 302, 308–309, 322, 324, 334, 344–345, 356–359 **TE Only:** 259A, 265A, 277A, 279A–279D, 307A, 309A–309D, 329A, 337A, 343A, 345A–345D
Demonstrating Science Knowledge	**SE/TE:** 246, 252, 260, 272, 278–279, 292, 302, 308–309, 322, 324, 334, 344–345, 356–359 **TE Only:** 251B, 259A–259B, 265A–265B, 271B, 277A–277B, 279A–279D, 301B, 307A–307B, 309A–309D, 329A–329B, 333B, 337A–337B, 343A–343B, 345A–345D

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Interpreting and Communicating Science Concepts	**SE/TE:** 246, 252, 260, 272, 278–279, 292, 302, 309, 322, 324, 334, 345, 356–359 **TE Only:** 251B, 259B, 265A–265B, 271B, 277A–277B, 279A–279D, 301B, 307A–307B, 309A–309D, 329A–329B, 333B, 337A–337B, 343A–343B, 345A–345D
Recalling Accurate Science	**SE/TE:** 246, 252, 279, 309, 324, 345, 356–359 **TE Only:** 251B, 259B, 265B, 271B, 277B, 279A–279D, 301B, 307B, 309A–309D, 329B, 333B, 337B, 343B, 345A–345D

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Grade 5	
Science Inquiry and Application	
During the years of grades 5–8, all students must use the following scientific processes, with appropriate laboratory safety techniques, to construct their knowledge and understanding in all science content areas.	
• Identify questions that can be answered through scientific investigations.	**SE/TE:** 4, 7–11, 60–69, 78–84, 114, 118–119, 130–134, 140 **TE Only:** 11B, 33A–33D, 67A–67B, 69A–69D
• Design and conduct a scientific investigation.	**SE/TE:** 12–19, 48–53, 60–69, 78–84, 98, 114, 118–119, 130–134, 200, 232 **TE Only:** 19A–19B, 33A–33D, 53A–53B, 67A–67B, 69A–69D
• Use appropriate mathematics, tools and techniques to gather data and information.	**SE/TE:** 20–33, 78–84 **TE Only:** 27A–27B, 31A–31B, 33A–33D
• Analyze and interpret data.	**SE/TE:** 12–33, 48–53, 78–84 **TE Only:** 19A–19B, 27A–27B, 31A–31B, 33A–33D, 53A–53B
• Develop descriptions, models, explanations and predictions.	**SE/TE:** 48–53, 60–69, 78–84, 140, 152, 166, 200, 238 **TE Only:** 53A–53B, 67A–67B, 69A–69D
• Think critically and logically to connect evidence and explanations.	**SE/TE:** 28–33, 78–84, 98, 200 **TE Only:** 31A–31B, 33A–33D
• Recognize and analyze alternative explanations and predictions.	**SE/TE:** 28–33, 60–69, 78–84 **TE Only:** 31A–31B, 33A–33D, 67A–67B, 69A–69D
• Communicate scientific procedures and explanations.	**SE/TE:** 12–33, 48–53, 55–69, 78–84 **TE Only:** 19A–19B, 27A–27B, 31A–31B, 33A–33D, 53A–53B, 59B, 67A–67B, 69A–69D

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EARTH AND SPACE SCIENCE (ESS)	
Topic: Cycles and Patterns in the Solar System	
This topic focuses on the characteristics, cycles and patterns in the solar system and within the universe.	
The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics.	
The distance from the sun, size, composition and movement of each planet are unique.	**SE/TE:** 153–165 **TE Only:** 136D
Planets revolve around the sun in elliptical orbits.	**SE/TE:** 154
Some of the planets have moons and/or debris that orbit them.	**SE/TE:** 157, 160–165, 171
Comets, asteroids and meteoroids orbit the sun.	**SE/TE:** 154, 166–169
The sun is one of many stars that exist in the universe.	**SE/TE:** 147, 150
The sun appears to be the largest star in the sky because it is the closest star to Earth.	**SE/TE:** 147
Some stars are larger than the sun and some stars are smaller than the sun.	**SE/TE:** 147, 150
Most of the cycles and patterns of motion between the Earth and sun are predictable.	**SE/TE:** 142–143
Earth's revolution around the sun takes approximately 365 days.	**SE/TE:** 143
Earth completes one rotation on its axis in a 24-hour period, producing day and night.	**SE/TE:** 142
This rotation makes the sun, stars and moon appear to change position in the sky.	**SE/TE:** 141–142

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Earth's axis is tilted at an angle of 23.5°. This tilt, along with Earth's revolution around the sun, affects the amount of direct sunlight that the Earth receives in a single day and throughout the year.	**SE/TE:** 143
The average daily temperature is related to the amount of direct sunlight received.	**SE/TE:** 144
Changes in average temperature throughout the year are identified as seasons.	**SE/TE:** 144–145
Earth and Space Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 138, 140, 152, 166, 172–173, 184–188 **TE Only:** 145A, 159A, 165A, 171A, 173A–173D
Demonstrating Science Knowledge	**SE/TE:** 138, 140, 152, 166, 172–173, 184–188 **TE Only:** 145A–145B, 151B, 159A–159B, 165A–165B, 171A–171B, 173A–173D
Interpreting and Communicating Science Concepts	**SE/TE:** 138, 140, 152, 166, 172–173, 184–188 **TE Only:** 145A–145B, 151B, 159A–159B, 165A–165B, 171A–171B, 173A–173D
Recalling Accurate Science	**SE/TE:** 173, 184–188 **TE Only:** 145B, 151B, 159B, 165B, 171B, 173A–173D

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LIFE SCIENCE (LS)	
Topic: Interconnections within Ecosystems	
This topic focuses on foundational knowledge of the structures and functions of ecosystems.	
Organisms perform a variety of roles in an ecosystem.	**SE/TE:** 91–97, 99–105, 110–113, 115–117 **TE Only:** 86C
Populations of organisms can be categorized by how they acquire energy.	**SE/TE:** 100–105
Food webs can be used to identify the relationships among producers, consumers and decomposers in an ecosystem.	**SE/TE:** 103
All of the processes that take place within organisms require energy.	**SE/TE:** 99–105
For ecosystems, the major source of energy is sunlight.	**SE/TE:** 100
Energy entering ecosystems as sunlight is transferred and transformed by producers into energy that organisms use through the process of photosynthesis. That energy then passes from organism to organism as illustrated in food webs.	**SE/TE:** 100
In most ecosystems, energy derived from the sun is transferred and transformed into energy that organisms use by the process of photosynthesis in plants and other photosynthetic organisms.	**SE/TE:** 100
Life Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 88, 114 **TE Only:** 105A, 117A, 119A–119D
Demonstrating Science Knowledge	**SE/TE:** 88, 114 **TE Only:** 97B, 105A–105B, 117A, 119A–119D
Interpreting and Communicating Science Concepts	**SE/TE:** 88, 114 **TE Only:** 97B, 105A–105B, 117A–117B, 119A–119D

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Recalling Accurate Science	**TE Only:** 97B, 105B, 117B, 119A–119D
PHYSICAL SCIENCE (PS)	
Topic: Light, Sound, and Motion	
This topic focuses on the forces that affect motion. This includes the relationship between the speed of an object, the amount of force applied and the mass of the object. Light and sound are explored as forms of energy that move in predictable ways, depending on the matter through which they move.	
The amount of change in movement of an object is based on the mass of the object and the amount of force exerted.	**SE/TE:** 195–205, 207, 225–227 **TE Only:** 190C–190D
Movement can be measured by speed.	**SE/TE:** 201, 204
The speed of an object is calculated by determining the distance (d) traveled in a period of time (t).	**SE/TE:** 206
Earth pulls down on all objects with a gravitational force.	**SE/TE:** 198
Weight is a measure of the gravitational force between an object and the Earth.	**SE/TE:** 198
Any change in speed or direction of an object requires a force and is affected by the mass of the object and the amount of force applied.	**SE/TE:** 202, 204–206
Light and sound are forms of energy that behave in predictable ways.	
Light travels and maintains its direction until it interacts with an object or moves from one medium to another, and then it can be reflected, refracted or absorbed.	**SE/TE:** 239–243
Sound is produced by vibrating objects and requires a medium through which to travel.	**SE/TE:** 233–234, 236–237 **TE Only:** 220C–220D
The rate of vibration is related to the pitch of the sound.	**SE/TE:** 233–234

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Physical Science Expectations for Learning: Cognitive Demands	
Designing Technological/Engineering Solutions Using Science Concepts	**SE/TE:** 192, 200, 208–209, 222, 232, 238, 244–245, 256–260 **TE Only:** 207A, 209A–209D, 237A, 243A, 245A–245D
Demonstrating Science Knowledge	**SE/TE:** 192, 200, 208–209, 222, 232, 238, 244–245, 256–260 **TE Only:** 199B, 207A–207B, 209A–209D, 231B, 237A–237B, 243A–243B, 245A–245D
Interpreting and Communicating Science Concepts	**SE/TE:** 192, 200, 208–209, 222, 232, 238, 244–245, 256–260 **TE Only:** 199B, 207A–207B, 209A–209D, 231B, 237A–237B, 243A–243B, 245A–245D
Recalling Accurate Science	**SE/TE:** 209, 245, 256–260 **TE Only:** 199B, 207B, 209A–209D, 231B, 237B, 243B, 245A–245D