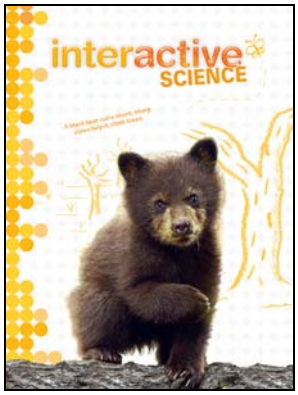
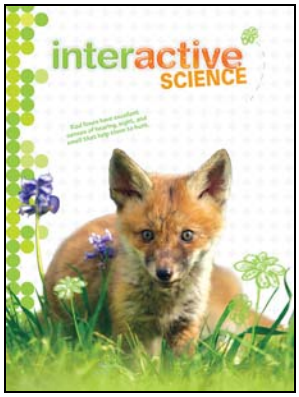
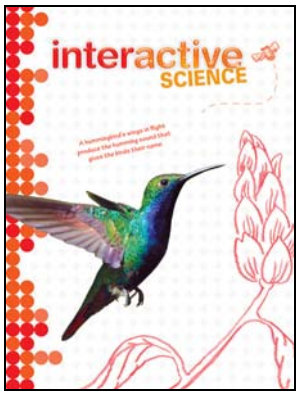
A Correlation of

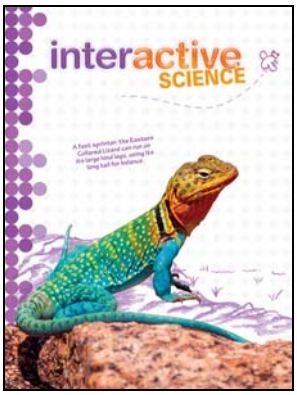
Interactive Science

©2016









to the

Indiana Academic Standards for Science Grades K-5

Pearson

Introduction

The following document demonstrates how ***Interactive Science,* ©2016, Grades K-5,** supports the Indiana Academic Standards for Science. 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 2016 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.

Table of Contents

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
KINDERGARTEN	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE Only:** 75, Lesson 1: What questions can you ask? **TE Only:** 124–125, Lesson 1: What questions can you ask?
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE Only:** 2, Try It: How do objects move? 18, Investigate It: How can you move the car? **TE Only:** 10, Try It: How do objects move? 24, Investigate It: How can you move the car?
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE Only:** 79, Lesson 5: What do you use to observe? **TE Only:** 132–133, Lesson 5: What do you use to observe?

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE Only:** 18, Investigate It: How can you move the car? 60, Investigate It: How can the sun make temperatures change? 77, Lesson 3: How can you learn together? 84, Try It: What can this object do? **TE Only:** 24, Investigate It: How can you move the car? 98, Investigate It: How can the sun make temperatures change? 128–129, Lesson 3: How can you learn together? 154, Try It: What can this object do?
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	**SE Only:** 78, Lesson 4: How do you share what you learn? **TE Only:** 64–65, Activity Card Support 130–131, Lesson 4: How do you share what you learn?

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE Only:** 39, Investigate It: How do some turtles stay warm in winter? **TE Only:** 33a, Performance Expectation Activity 60, Investigate It: How do some turtles stay warm in winter? 61, Science/Math 71a, Performance Expectation Activity 71c, Performance Expectation Activity 99, Science/Math
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE Only:** 57, Lesson 4: What are some kinds of weather? 58, Lesson 5: How can we use rocks, soil, and water? 84, Try It: What can this object do? 96, Lesson 1: What problem can you solve? 97, Lesson 2: How can you make a plan? **TE Only:** 92–93, Lesson 4: What are some kinds of weather? 94–95, Lesson 5: How can we use rocks, soil, and water? 102–103, Activity Card Support 154, Try It: What can this object do? 160–161, Lesson 1: What problem can you solve? 162–163, Lesson 2: How can you make a plan?

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE Only:** 43, Draw Conclusions 60, Investigate It: How can the sun make temperatures change? **TE Only:** 81, Draw Conclusions 98, Investigate It: How can the sun make temperatures change?
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE Only:** 98, Lesson 3: How can you share your ideas with others? **TE Only:** 28–29, Activity Card Support 64–65, Activity Card Support 102–103, Activity Card Support 164–165, Lesson 3: How can you share your ideas with others?

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
Physical Science (PS)	
K.PS.1 Plan and conduct an investigation using all senses to describe and classify different kinds of objects by their composition and physical properties. Explain these choices to others and generate questions about the objects.	**SE Only:** 63, Try It: How do we observe? 76, Lesson 2: How do you observe? **TE Only:** 112, Integrate Your Day: Art 118, Try It: How do we observe? 126–127, Lesson 2: How do you observe?
K.PS.2 Identify and explain possible uses for an object based on its properties and compare these uses with other students' ideas.	**SE Only:** 84, Try It: What can this object do? **TE Only:** 154, Try It: What can this object do?
K.PS.3 Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	**SE Only:** 2, Try It! How do objects move? 15, Lesson 2: What makes objects move? 18, Investigate It: How can you move the car? **TE Only:** 8–9, Chapter Opener 10, Try It! How do objects move? 18–19, Lesson 2: What makes objects move? 24, Investigate It: How can you move the car? 33a, Performance Expectation Activity
K.PS.4 Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.	**SE Only:** 4–13, STEM Activity: Move Around It! 17, Lesson 4: How do moving objects affect each other? 99, Investigate It: How can you lift heavy things? **TE Only:** 12–15, STEM Activity: Move Around It! 22–23, Lesson 4: How do moving objects affect each other? 33b, Performance Expectation Activity 166, Investigate It: How can you lift heavy things?

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
Earth and Space Science (ESS)	
K.ESS.1 Make observations to determine the effect of sunlight on Earth's surface and use tools and materials to design and build a structure to reduce the warming effect on Earth's surface.	**SE Only:** 44-52, STEM Activity: Cool It Down! 56, Lesson 3: What do you get from the sun? 60, Investigate It: How can the sun make temperatures change? **TE Only:** 82-85, STEM Activity: Cool It Down! 90-91, Lesson 3: What do you get from the sun? 98, Investigate It: How can the sun make temperatures change? 102-103, Activity Card Support 109d, Performance Expectation Activity
K.ESS.2 Describe and compare objects seen in the night and day sky, observing that the sun and moon move across the sky.	**SE Only:** 54, Lesson 1: What can you see in the day sky? 55, Lesson 2: How does the sun seem to move? **TE Only:** 77A–77B, Leveled Content Reader Support 86–87, Lesson 1: What can you see in the day sky? 88–89, Lesson 2: How does the sun seem to move?
K.ESS.3 Investigate the local weather conditions to describe patterns over time.	**SE Only:** 42, Try It! How does the weather change? 57, Lesson 4: What are some kinds of weather? 61, Big World My World **TE Only:** 92–93, Lesson 4: What are some kinds of weather? 99, Big World My World 107, Performance-Based Assessment 109a, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
K.ESS.4 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**SE Only:** 59, Lesson 6: What is recycling? **TE Only:** 96–97, Lesson 6: What is recycling?
Life Science (LS)	
K.LS.1 Describe and compare the growth and development of common living plants and animals.	**SE Only:** 34, Lesson 2: What are living things? **TE Only:** 50–51, Lesson 2: What are living things?
K.LS.2 Describe and compare the physical features of common living plants and animals.	**SE Only:** 22, Let's Read Science! 23–32, STEM Activity: Scratch Away! 34, Lesson 2: What are living things? **TE Only:** 43, Let's Read Science! 44–47, STEM Activity: Scratch Away! 50–51, Lesson 2: What are living things?
K.LS.3 Use observations to describe patterns of what plants and animals (including humans) need to survive.	**SE Only:** 20, Where do these animals get food? 21, Try It! Do plants need water? 35, Lesson 3: What do plants need? 36, Lesson 4: What do animals need? 37, Lesson 5: What do you need? 39, Investigate It: How do some turtles stay warm in winter? **TE Only:** 40–41, Chapter Opener 42, Try It! Do plants need water? 52–53, Lesson 3: What do plants need? 54–55, Lesson 4: What do animals need? 56–57, Lesson 5: What do you need? 71a–71c, Performance Expectation Activity 60, Investigate It: How do some turtles stay warm in winter? 69, Performance-Based Assessment

Indiana Academic Standards for Science	Interactive Science ©2016 Kindergarten
Engineering (E)	
K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.	**SE Only:** 4–5, STEM Activity: Move Around It! 23–25, STEM Activity: Scratch Away! 44-45, STEM Activity: Cool It Down! 65-67, STEM Activity: Where the Wind Blows! 75, Lesson 1: What questions can you ask? 76, Lesson 2: How do you observe? 86–95, STEM Activity: How Can You Make a Crayon Box? **TE Only:** 12-13, STEM Activity: Move Around It! 44–45, STEM Activity: Scratch Away! 82-83, STEM Activity: Cool It Down! 120-122, STEM Activity: Where the Wind Blows! 124–125, Lesson 1: What questions can you ask? 126–127, Lesson 2: How do you observe? 156–159, STEM Activity: How Can You Make a Crayon Box?
K-2.E.2 Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.	**SE Only:** 89, STEM Activity: How Can You Make a Crayon Box? 97, Lesson 2: How can you make a plan? 98, Lesson 3: How can you share your ideas with others? **TE Only:** 158, STEM Activity: How Can You Make a Crayon Box? 162–163, Lesson 2: How can you make a plan? 164–165, Lesson 3: How can you share your ideas with others?
K-2.E.3 Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.	**SE Only:** 99, Investigate It: How can you lift heavy things? **TE Only:** 166, Investigate It: How can you lift heavy things? 170–174, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
GRADE 1	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE/TE:** 154–157, Lesson 1: What questions do scientists ask? 168–171, Lesson 4: How do scientists find answers? **TE Only:** 157b, Part 1 Lesson 1 Check
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE/TE:** 6-15, STEM Activity: Let's Talk! 144–153, STEM Activity: What's Over the Wall? 190–199, STEM Activity: Reach, Grab, Pull 200, Explore It: Which tool works better? 208, Explore It: Which design works best? **TE Only:** 139a, Performance Expectation Activity
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE/TE:** 162–167, Lesson 3: How do scientists use tools? 172–175, Lesson 5: How do scientists record and share data? 176-177, Investigate It: How do you know the mass of objects? **TE Only:** 117a-177c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE/TE:** 28, Explore It! 31, At-Home Lab 32-33, Investigate It! 188, Try It: How can you design a top? 200, Explore It: Which tool works better? 208, Explore It: Which design works best? **TE Only:** 33c–33d, Activity Card Support 43a, Performance Expectation Activity 87c–87d, Activity Card Support 117c-177d, Activity Card Support 139b, Performance Expectation Activity
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	**SE/TE:** 144–153, STEM Activity: What’s Over the Wall? 190–199, STEM Activity: Reach, Grab, Pull 200, Explore It: Which tool works better? 208, Explore It: Which design works best?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE/TE:** 88, Do the Math: Tally 172-175, Lesson 3: How do scientists record and share data? 176-177, Investigate It: How do you know the mass of objects? **TE Only:** 44C, Integrate Your Day: Math 99b–99c, Performance Expectation Activity: Mathematics 139b, Performance Expectation Activity: Mathematics 175a, Explore It! 175b, Part 1 Lesson 5 Check 117a-177b, Activity Card Support
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE/TE:** 28, Explore It: How can you make sound? 32–33, Investigate It: What sounds can bottles make? **TE Only:** 30, Science/Writing 33a–33d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE/TE:** 64, My Planet Diary 86–87, Investigate It: How do different seeds grow? **TE Only:** 43b, Performance Expectation Activity
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE/TE:** 154–157, Lesson 1: What questions do scientists ask? 168–171, Lesson 4: How do scientists find answers? **TE Only:** 43b, Performance Expectation Activity: ELA/Literacy 45, Introduce the Big Question
Physical Science (PS)	
1.PS.1 Characterize materials as solid, liquid, or gas and investigate their properties, record observations and explain the choices to others based on evidence (i.e., physical properties).	The *Interactive Science* program meets this standard in Grade 2, Chapter 1, Lessons 1 and 2.
1.PS.2 Predict and experiment with methods (sieving, evaporation) to separate solids and liquids based on their physical properties.	The *Interactive Science* program meets this standard in Grade 2, Chapter 1, Lesson 3.

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
1.PS.3 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	**SE/TE:** 6-15, STEM Activity: Let's Talk! 28, Explore It: How can you make sound? 29, Cause and Effect/ELL Support 31, At-Home Lab 32-33, Investigate It! **TE Only:** 6-7, Background 30, Differentiated Instruction 31a, Explore It! 33a-33d, Activity Card Support 43a, Performance Expectation Activity
1.PS.4 Make observations to collect evidence and explain that objects can be seen only when illuminated.	**SE/TE:** 25–27, Lesson 3: What is Light? 128-129, Investigate It: Why can we see things in the night sky? **TE Only:** 27b, Chapter 1 Lesson 3 Check 43b, Performance Expectation Activity 129a-129b, Activity Card Support
Earth and Space Science (ESS)	
1.ESS.1 Use observations of the sun, moon, and stars to describe patterns that can be predicted.	**SE/TE:** 119–123, Lesson 2: What causes day and night? 124–127, Lesson 3: What are the four seasons? **TE Only:** 123b, Chapter 3 Lesson 2 Check 139a, Performance Expectation Activity 139b, Performance Expectation Activity
1.ESS.2 Observe and compare properties of sand, clay, silt, and organic matter. Look for evidence of sand, clay, silt, and organic matter as components of soil samples.	This standard falls outside the scope of the *Interactive Science* program.
1.ESS.3 Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items.	This standard falls outside the scope of the *Interactive Science* program.

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
1.ESS.4 Develop solutions that could be implemented to reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	**SE/TE:** 18, Go Green 34, Go Green **TE Only:** 19, 21st Century Learning
Life Science (LS)	
1.LS.1 Develop representations to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.	**SE/TE:** 62, Science Notebook 72–77, Lesson 4: How do some animals grow? 78–81, Lesson 5: How are living things like their parents? **TE Only:** 77b, Chapter 2 Lesson 4 Check 81a, Explore It! 81b, Chapter 2 Lesson 5 Check
1.LS.2 Develop a model mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. Explore how those external parts could solve a human problem.	**SE/TE:** 62-63, Animal Groups 64–67, Lesson 2: What are some parts of plants? 99, Performance-Based Assessment: Design a Helmet **TE Only:** 67b, Chapter 2, Lesson 2 Check 99a, Performance Expectation Activity
1.LS.3 Make observations of plants and animals to compare the diversity of life in different habitats.	The *Interactive Science* program meets this standard in Grade 2, Chapter 2, Lessons 4 and 5.
1.LS.4 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.	The *Interactive Science* program meets this standard in Grade 2, Chapter 2, Lessons 3 and 4.

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 1
Engineering (E)	
K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.	**SE/TE:** 6-8, STEM Activity: Let's Talk! 144–146, STEM Activity: What's Over the Wall? 154–157, Lesson 1: What questions do scientists ask? 168–171, Lesson 4: How do scientists find answers? 190–192, STEM Activity: Reach, Grab, Pull
K-2.E.2 Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.	**SE/TE:** 7-11, STEM Activity: Let's Talk! 147–149, STEM Activity: What's Over the Wall? 188, Try It: How can you design a top? 191-196, STEM Activity: Reach, Grab, Pull 208–213: Lesson 3: What is the design process? **TE Only:** 213b: Part 2 Lesson 3 Check
K-2.E.3 Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.	**SE/TE:** 14-15, STEM Activity: Let's Talk! 152–153, STEM Activity: What's Over the Wall? 188, Try It: How can you design a top? 198-199, STEM Activity: Reach, Grab, Pull 200, Explore It: Which tool works better? 208, Explore It: Which design works best?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
GRADE 2	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE/TE:** 160–161, Part 1 Opener 174–177, Lesson 1: What questions do scientists ask? **TE Only:** 161, Introduce the Big Question
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE/TE:** 222–227, Lesson 2: How do people design new things? **TE Only:** 63, Introduce the Big Question 87, Differentiated Instruction
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE/TE:** 163, Let's Read Science! 175, Scientists 182–187, Lesson 3: How do scientists use tools and stay safe?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE/TE:** 164–173, STEM Activity: Strike Up a Band! 188–191, Lesson 4: How do scientists find answers? **TE Only:** 3, Introduce the Big Question 49a–49d, Activity Card Support 61a, Performance Expectation Activity
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	**SE/TE:** 192–195, Lesson 5: How do scientists collect and share data? **TE Only:** 61b, Performance Expectation Activity 205, Introduce the Big Question

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE/TE:** 195, Show Data **TE Only:** 61a–61b, Performance Expectation Activity: Mathematics 62C, Integrate Your Day: Math 118C, Integrate Your Day: Math 136, Science/Math 159b, Performance Expectation Activity: Mathematics
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE/TE:** 82, My Planet Diary 206, Try It: How can you keep an ice cube from melting? **TE Only:** 119, Introduce the Big Question

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE/TE:** 6–15, STEM Activity: Trails That Last 40, Explore It: How can you build a bridge? **TE Only:** 61d, Performance Expectation Activity
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE/TE:** 48–49, Investigate It: How can properties change? 192–195, Lesson 5: How do scientists collect and share data? **TE Only:** 159d, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
Physical Science (PS)	
2.PS.1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	**SE/TE:** 16–23, Lesson 1: What are some properties of matter? 24–29, Lesson 2: What are solids, liquids, and gases? 58-59, Apply It: Which objects will float? 60, Performance-Based Assessment: Group Objects 61, Performance-Based Assessment: Order Objects by Mass **TE Only:** 29b, Chapter 1 Lesson 2 Check 61a, Performance Expectation Activity
2.PS.2 Predict the result of combining solids and liquids in pairs. Mix, observe, gather, record, and discuss evidence of whether the result may have different properties than the original materials.	**SE/TE:** 35, Water Mixtures 48–49, Investigate It: How can properties change? 196–197, Investigate It: What skills do scientists use? **TE Only:** 49a–49d, Activity Card Support 197c, Activity Card Support
2.PS.3 Construct an argument with evidence that some changes caused by heating and cooling can be reversed and some cannot.	**SE/TE:** 33, Other Ways Matter Can Change 36–39: Lesson 4: How can water change? **TE Only:** 39b, Chapter 1 Lesson 4 Check 61d, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
2.PS.4 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.	**SE/TE:** 12-14, STEM Activity: Trails That Last 40, Explore It! 40–47, Lesson 5: How can you combine materials? **TE Only:** 47b, Chapter 1 Lesson 5 Check 61b, Performance Expectation Activity
Earth and Space Science (ESS)	
2.ESS.1 Record detailed weather observations, including cloud cover, cloud type, and type of precipitation on a daily basis over a period of weeks and correlate observations to the time of year. Chart and graph collected data.	The *Interactive Science* program meets this standard in Grade 3, Chapter 6.
2.ESS.2 Investigate the severe weather of the region and its impact on the community, looking at forecasting to prepare for, and respond to, severe weather.	The *Interactive Science* program meets this standard in Grade 3, Chapter 6.
2.ESS.3 Investigate how wind or water change the shape of the land and design solutions for prevention.	**SE/TE:** 138–143, Lesson 2: What changes land? 148–149, Investigate It: How can rocks crack? 158, Performance-Based Assessment: Erosion **TE Only:** 143b, Chapter 2 Lesson 2 Check 149a–149d, Activity Card Support 159b, Performance Expectation Activity
2.ESS.4 Obtain information to identify where water is found on Earth and that it can be solid or liquid.	**SE/TE:** 120, Try It: How much water and land are on Earth? 132–137, Lesson 1: What are some kinds of land and water? **TE Only:** 137b, Chapter 3 Lesson 1 Check 159d, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 2
Life Science (LS)	
2.LS.1 Determine patterns and behavior (adaptations) of parents and offspring which help offspring to survive.	**SE/TE:** 76, My Planet Diary 88–93, Lesson 3: What are some parts of animals? 100–103, How do living things get food?
2.LS.2 Compare and contrast details of body plans and structures within the life cycles of plants and animals.	The *Interactive Science* program meets this standard in Grade 1, Chapter 2, Lessons 3 and 4.
2.LS.3 Classify living organisms according to variations in specific physical features (i.e. body coverings, appendages) and describe how those features may provide an advantage for survival in different environments.	**SE/TE:** 80–81, Seed Plants 82–87, Lesson 2: What are some kinds of animals? 90-91, Animal Body Parts 92-93, Staying Safe **TE Only:** 91, Science Notebook 93b, Chapter 2 Lesson 3 Check
Engineering (E)	
K-2.E.1 Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.	**SE/TE:** 6-9, STEM Activity: Trails That Last 147–177, Lesson 1: What questions do scientists ask? 160–161, Part 1 Opener **TE Only:** 177b, Part 1 Lesson 1 Check
K-2.E.2 Develop a simple sketch, drawing, or physical model to illustrate and investigate how the shape of an object helps it function as needed to solve an identified problem.	**SE/TE:** 40, Explore It: How can you combine materials? 164–173, STEM Activity: Strike Up a Band!
K-2.E.3 Analyze data from the investigation of two objects constructed to solve the same problem to compare the strengths and weaknesses of how each performs.	**SE/TE:** 14-15, STEM Activity: Trails That Last **TE Only:** 61b, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
GRADE 3	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE/TE:** 4–5, STEM Activity: Heave Ho! 104, STEM Activity: Watch It Grow! 250, STEM Activity: Runaway Water! 294–295, STEM Activity: Can You Hear Me? 300, Questions 300, Lightning Lab 314, Explore It: How can scientists communicate what they learn? 340, Try It: How can you design a parachute? 342–343, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 362-363, Investigate It: What makes a bridge strong? **TE Only:** 141d, Activity Card Support 277d, Activity Card Support 301b, Part 1 Lesson 1 Check 327d, Activity Card Support 363d, Activity Card Support
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE/TE:** 160, Explore It: How does a backbone move? 224, Explore It: What can a fossil tell you? 250-253, STEM Activity: Runaway Water! 270, Explore It: What do tornadoes look like? 294–297, STEM Activity: Can You Hear Me? 308, Explore It: How can a model help answer questions? 312, Part 1, Lesson 3: How do scientists answer questions? 362-363, Investigate It: What makes a bridge strong? 380, Make a Model **TE Only:** 167a, Explore It: How does a backbone move? 227a, Explore It: What can a fossil tell you? 363a-363c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE/TE:** 258, Explore It: What is the daily temperature? 266, Explore It: How does an anemometer work? 266-269, Chapter 6, Lesson 3: What tools are used to measure weather? 277, Investigate It: How are clouds and the weather related? 320, Explore It: How can a tool help scientists observe? 321, Science Tools 322-323, Tools for Measuring and Observing 326-327, Investigate It: How does a microscope help you make observations? 340, Try It: How can you design a parachute? **TE Only:** 269a, Explore It: What is the daily temperature? 269b, Chapter 6 Lesson 3 Check 277a-277c, Activity Card Support 322, ELL Support 325a, Explore It: How can a tool help scientists observe? 327a-327c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE/TE:** 4–7, STEM Activity, Heave Ho! 14, Explore It: How does mass affect motion? 52, Explore It: How can sound energy change? 99, Performance-Based Assessment: Plan an Investigation 200–253, STEM Activity: Runaway Water! 258, Explore It: What is the daily temperature? 294–297, STEM Activity: Can You Hear Me? 314, Explore It: How can scientists communicate what they learn? 340, Try It: How can you design a parachute? 342–345, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 362-363, Investigate It: What makes a bridge strong? 376-377, Design It: What parachute design works best? **TE Only:** 99a, Performance Expectation Activity 141d, Activity Card Support 277c-277d, Activity Card Support 319a, Explore It: How can scientists communicate what they learn? 355a, Explore It: How can a simple machine solve a problem? 361a, Explore It: Which design transfers sound best? 363c-363d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: “Does this make sense?” "Could my results be duplicated?" and/or “Does the design solve the problem with the given constraints?”	**SE/TE:** 70, Explore It: What can affect the sound made by a rubber band? 122, Explore It: Which way will roots grow? 140–141, Investigate It: How does water move through celery? 258, Explore It: What is the daily temperature? 268, Lightning Lab 276-277, Investigate It: How are clouds and the weather related? 307, Interpret and Explain Data 314, Explore It: How can scientists communicate what they learn? 320, Explore It: How can a tool help scientists observe? 340, Try It: How can you design a parachute? 362-363, Investigate It: What makes a bridge strong? **TE Only:** 277b, Activity Card Support 245c, Performance Expectation Activity 289a, Performance Expectation Activity
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE/TE:** 258, Explore It: What is the daily temperature? 268, Lightning Lab 304, Estimate and Measure 306, Do the Math! 314, Explore It: How can scientists communicate what they learn? 320, Explore It: How can a tool help scientists observe? **TE Only:** 99a, Performance Expectation Activity: Mathematics 289a, Performance Expectation Activity 319a, Explore It: How can scientists communicate what they learn?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE/TE:** 7, STEM Activity, Heave Ho! 52, Explore It: How can sound energy change form? 107, STEM Activity: Watch It Grow! 116, Explore It: How does sunlight affect plant survival? 224, Explore It: What can a fossil tell you? 253, STEM Activity: Runaway Water! 277, Investigate It: How are clouds and the weather related? 297, STEM Activity: Can You Hear Me? 340, Try It: How can you design a parachute? 344, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 362-363, Investigate It: What makes a bridge strong? 374-377, Design It: What parachute design works best? **TE Only:** 121a, Explore It: How does sunlight affect plant survival? 127a, Explore It: Which way will roots grow? 355a, Explore It: How can a simple machine solve a problem? 361a, Explore It: Which design transfers sound best? 363a-363d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE/TE:** 253, STEM Activity: Runaway Water! 297, STEM Activity: Can You Hear Me? 362–363, Investigate It! **TE Only:** 289c, Performance Expectation Activity 363b, Activity Card
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE/TE:** 4–7, STEM Activity, Heave Ho! 104–107, STEM Activity: Watch It Grow! 200–253, STEM Activity: Runaway Water! 277, Investigate It: How are clouds and the weather related? 294–297, STEM Activity: Can You Hear Me? 314, Explore It: How can scientists communicate what they learn? 314-319, Part 1 Lesson 4: How do scientists communicate? 326-327, Investigate It: How does a microscope help you make observations? 340, Try It: How can you design a parachute? 342–343, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 362-363, Investigate It: What makes a bridge strong? **TE Only:** 141a-141d, Activity Card Support 277a-277d, Activity Card Support 289c, Performance Expectation Activity 327a-327d, Activity Card Support 363a-363d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
Physical Science (PS)	
3.PS.1 Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	**SE/TE:** 14-17, Lesson 2: How does force affect motion? 14, Explore It: How does mass affect motion? 16, Lightning Lab 99, Performance-Based Assessment: Plan an Investigation **TE Only:** 21a, Explore It: How does mass affect motion? 16, Differentiated Instruction 19, Differentiated Instruction 99a, Performance Expectation Activity
3.PS.2 Identify types of simple machines and their uses. Investigate and build simple machines to understand how they are used.	**SE/TE:** 4–7, STEM Activity: Heave Ho! 350, Explore It: How can a simple machine solve a problem? 352–353, Simple Machines 364, STEM: Lawn Mowers 380, Performance-Based Assessment: Make a Poster
3.PS.3 Generate sound energy using a variety of materials and techniques, and recognize that it passes through solids, liquids, and gases (i.e. air).	**SE/TE:** 52, Explore It: How can sound energy change form? 70, Explore It: What can affect the sound made by a rubber band? 71, Sound 72, How Sound Travels 73, Lightning Lab 294–297, STEM Activity: Can You Hear Me?
3.PS.4 Investigate and recognize properties of sound that include pitch, loudness (amplitude), and vibration as determined by the physical properties of the object making the sound.	**SE/TE:** 70–75, Chapter 2, Lesson 5: What is sound energy? **TE Only:** 73, Science Notebook 74, Differentiated Instruction 75a, Explore It: What can affect the sound made by a rubber band? 75b, Chapter 2 Lesson 5 Check

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
Earth and Space Science (ESS)	
3.ESS.1 Obtain and combine information to determine seasonal weather patterns across the different regions of the United States.	**SE/TE:** 258, Explore It: What is the daily temperature? 264–265, Chapter 6, Lesson 2: What are weather and climate? **TE Only:** 265a, Explore It: What is the daily temperature? 289a, Performance Expectation Activity
3.ESS.2 Develop solutions that could be implemented to reduce the impact of weather related hazards.	**SE/TE:** 200–253, STEM Activity: Runaway Water! 270-275, Chapter 6, Lesson 4: How can you stay safe in severe weather? 288, Performance-Based Assessment: Make a Poster **TE Only:** 273, Science Notebook 275, Differentiated Instruction 275b, Chapter 6 Lesson 4 Check 289c, Performance Expectation Activity
3.ESS.3 Observe the detailed characteristics of rocks and minerals. Identify and classify rocks as being composed of different combinations of minerals.	The *Interactive Science* program meets this standard in Grade 4, Chapter 6, Lessons 1 and 2.
3.ESS.4 Determine how fossils are formed, discovered, layered over time, and used to provide evidence of the organisms and the environments in which they lived long ago.	**SE/TE:** 224–227, Chapter 5, Lesson 4: What can we learn from fossils? **TE Only:** 227, Differentiated Instruction 227b, Chapter 5 Lesson 4 Check 245e, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
Life Science (LS)	
3.LS.1 Analyze evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.	**SE/TE:** 170, Inherited Characteristics 174-175, Small Differences in Traits **TE Only:** 170, Differentiated Instruction 175, 21st Century Learning 245c, Performance Expectation Activity
3.LS.2 Plan and conduct an investigation to determine the basic needs of plants to grow, develop, and reproduce.	**SE/TE:** 104–107, STEM Activity: Watch It Grow! 116, Explore It: How does sunlight affect plant survival? **TE Only:** 121a, Explore It!
3.LS.3 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	**SE/TE:** 109–115, Chapter 3, Lesson 1: How can you classify plants? 117–121, Chapter 3, Lesson 2: How do plants use leaves to make food? 123–127, Chapter 3, Lesson 3: How do plants use roots and stems to grow? 129–133, Chapter 3, Lesson 4: How do plants use flowers or cones to reproduce? 140-141, Investigate It: How does water move through celery? 160-167, Chapter 4, Lesson 1: How can you classify animals? **TE Only:** 127a, Explore It: Which way will roots grow? 133a, Explore It: What is inside a seed? 149b, Chapter 3 Test 152C-152D, Teacher Background

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
3.LS.4 Construct an argument that some animals form groups that help members survive.	**SE/TE:** 168, My Planet Diary 172, Inherited Behavior 208, Groups Within Ecosystems **TE Only:** 175b, Chapter 4 Lesson 2 Check 245e, Performance Expectation Activity
Engineering (E)	
3-5.E.1 Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.	**SE/TE:** 4–7, STEM Activity, Heave Ho! 104, STEM Activity: Watch It Grow! 250, STEM Activity: Runaway Water! 294–295, STEM Activity: Can You Hear Me? 340, Try It! 342–343, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 362-363, Investigate It: What makes a bridge strong? 374-375, Design It: What parachute design works best?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 3
3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**SE/TE:** 4–7, STEM Activity, Heave Ho! 104–107, STEM Activity: Watch It Grow! 251–253, STEM Activity: Runaway Water! 295–297, STEM Activity: Can You Hear Me? 340, Try It: How can you design a parachute? 344, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 359, Part 2, Lesson 3: What is the design process? 362-363, Investigate It: What makes a bridge strong? 376-377, Design It: What parachute design works best? **TE Only:** 363a-363c, Activity Card Support
3-5.E.3 Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**SE/TE:** 4–7, STEM Activity, Heave Ho! 106–107, STEM Activity: Watch It Grow! 252–253, STEM Activity: Runaway Water! 296–297, STEM Activity: Can You Hear Me? 340, Try It: How can you design a parachute? 344–345, STEM Activity: Bird Food Is Served! 350, Explore It: How can a simple machine solve a problem? 356, Explore It: Which design transfers sound best? 359, Part 2, Lesson 3: What is the design process? 362-363, Investigate It: What makes a bridge strong? 377-379, Design It: What parachute design works best? **TE Only:** 363a-363c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
GRADE 4	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE/TE:** 4, STEM Activity: Is It Cold in Here? 50–51, STEM Activity: Let's Glide Away! 116–117, STEM Activity: Natural Humidifier 234-235, STEM Activity: Hold Back the Water 300–301, STEM Activity: Time to Clean Green! 346–347, STEM Activity: What's Inside? 374, Design It: What design will carry cargo best? **TE Only:** 35d, Activity Card Support 69d, Activity Card Support 97d, Activity Card Support 213d, Activity Card Support 279d, Activity Card Support 295a, Performance Expectation Activity 331d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE/TE:** 50–53, STEM Activity: Let's Glide Away! 142, Explore It: How can some fish float? 188, Explore It: What happens when one part of an ecosystem is removed? 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 234–237, STEM Activity: Hold Back the Water 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 320, Models 346–347, STEM Activity: What's Inside? 356, Explore It: How can the design of a model help you learn about the real thing? 364–365, Investigate It: Which boat design will hold more cargo? 374–379, Design It: What design will carry cargo best? **TE Only:** 279a-279c, Activity Card Support 295c, Performance Expectation Activity 365a-365c, Activity Card Support 363a, Explore It: How can the design of a model help you learn about the real thing?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE/TE:** 28, Explore It: How does heat move? 34–35, Investigate It: Which material is the better heat conductor? 51–53, STEM Activity: Let's Glide Away! 62, Explore It: What can change a marble's speed? 68–69, Investigate It: How does friction affect motion? 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 308–313, Part 1, Lesson 2: How do scientists use tools? 330–331, Investigate It: What affects how many times a pendulum swings? 356, Explore It: How can the design of a model help you learn about the real thing? 378–379, Design It: What design will carry cargo best? **TE Only:** 69a-69c, Activity Card Support 111a, Performance Expectation Activity 279a-279c, Activity Card Support 295a, Performance Expectation Activity 313a, Explore It: 331a-331c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE/TE:** 4-7, STEM Activity: Is It Cold in Here? 34–35, Investigate It: 50–53, STEM Activity: Let's Glide Away! 68–69, Investigate It: How does friction affect motion? 96–97, Investigate It: How does a circuit board work? 116–119, STEM Activity: Natural Humidifier 142, Explore It: How can some fish float? 160–161, Investigate It: 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 234–237, STEM Activity: Hold Back the Water 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 300–303, STEM Activity: Time to Clean Green! 314, Explore It: What helps scientists answer questions? 330–331, Investigate It: What affects how many times a pendulum swings? 344, Try It: How can you design a hovercraft? 346–347, STEM Activity: What's Inside? 374–379, Design It: What design will carry cargo best? **TE Only:** 35c-35d, Activity Card Support 69a-69c, Activity Card Support 97c-97d, Activity Card Support 111a, Performance Expectation Activity 213c-213d, Activity Card Support 279c-279d, Activity Card Support 295a, Performance Expectation Activity 295c, Performance Expectation Activity 321a, Explore It: What helps scientists answer questions? 331a-331d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"	**SE/TE:** 28, Explore It: How does heat move? 34–35, Investigate It: Which material is the better heat conductor? 51–53, STEM Activity: Let's Glide Away! 62, Explore It: What can change a marble's speed? 68–69, Investigate It: How does friction affect motion? 80, Try It: What can electricity flow through? 96–97, Investigate It: How does a circuit board work? 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 234–237, STEM Activity: Hold Back the Water 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 298, Try It: 322, Explore It: How can data help you draw a conclusion? 330–331, Investigate It: What affects how many times a pendulum swings? 356, Explore It: How can the design of a model help you learn about the real thing? 374–379, Design It: What design will carry cargo best? **TE Only:** 35c, Activity Card Support 69a-69c, Activity Card Support 97b, Activity Card Support 213a-213c, Activity Card Support 279a-279c, Activity Card Support 331a-331c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE/TE:** 50–53, STEM Activity: Let's Glide Away! 194, Explore It: **TE Only:** 111a, Performance Expectation Activity: Mathematics 111b, Performance Expectation Activity: Mathematics 111d, Performance Expectation Activity: Mathematics 229d, Performance Expectation Activity: Mathematics 295c, Performance Expectation Activity: Mathematics 331b, Activity Card Support
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE/TE:** 34–35, Investigate It: Which material is the better heat conductor? 68–69, Investigate It: How does friction affect motion? 96–97, Investigate It: How does a circuit board work? 116–119, STEM Activity: Natural Humidifier 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 234–237, STEM Activity: Hold Back the Water 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 356, Explore It: How can the design of a model help you learn about the real thing? 374–379, Design It: What design will carry cargo best? **TE Only:** 35a-35c, Activity Card Support 97c, Activity Card Support 111a, Performance Expectation Activity 111d, Performance Expectation Activity 213a-213c, Activity Card Support 279a-279c, Activity Card Support 295c, Performance Expectation Activity 331b, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE/TE:** 34–35, Investigate It: Which material is the better heat conductor? 68–69, Investigate It: How does friction affect motion? 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 356, Explore It: How can the design of a model help you learn about the real thing? **TE Only:** 229a, Performance Expectation Activity 279a-279c, Activity Card Support
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE/TE:** 4–7, STEM Activity: Is It Cold in Here? 34–35, Investigate It: Which material is the better heat conductor? 50–53, STEM Activity: Let's Glide Away! 68–69, Investigate It: How does friction affect motion? 96–97, Investigate It: How does a circuit board work? 116–119, STEM Activity: Natural Humidifier 212–213, Investigate It: How do earthworms meet their needs in a model of an ecosystem? 234–237, STEM Activity: Hold Back the Water 278–279, Investigate It: How does the steepness of a stream affect how fast it flows? 300–303, STEM Activity: Time to Clean Green! 330–331, Investigate It: What affects how many times a pendulum swings? 344, Try It: How can you design a hovercraft? 356, Explore It: How can the design of a model help you learn about the real thing? 374–379, Design It: What design will carry cargo best?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
(continued) **SEPS.8 Obtaining, evaluating, and communicating information** Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**(continued)** **TE Only:** 35a–35d, Activity Card Support 69a–69d, Activity Card Support 97a–97d, Activity Card Support 111a, Performance Expectation Activity: ELA/Literacy 111b, Performance Expectation Activity 111d, Performance Expectation Activity: ELA/Literacy 213a-213d, Activity Card Support 229d, Performance Expectation Activity 279a-279d, Activity Card Support 295a, Performance Expectation Activity 295c, Performance Expectation Activity 331a-331d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
Physical Science (PS)	
4.PS.1 Investigate transportation systems and devices that operate on or in land, water, air and space and recognize the forces (lift, drag, friction, thrust and gravity) that affect their motion.	For supporting content, please see **SE/TE:** 50–53, STEM Activity: Let's Glide Away! 68–69, Investigate It: How does friction affect motion? 352, Technology and Transportation Systems 356, Explore It: How can the design of a model help you learn about the real thing? 358, Science Notebook 358, 21st Century Learning **TE Only:** 69a-69c, Activity Card Support
4.PS.2 Investigate the relationship of the speed of an object to the energy of that object.	**SE/TE:** 63, Speed 62, Explore It: What can change a marble's speed? **TE Only:** 67a, Explore It: What can change a marble's speed? 111a, Performance Expectation Activity
4.PS.3 Investigate how multiple simple machines work together to perform everyday tasks.	The *Interactive Science* program meets this standard in the Grade 3 Skills Handbook, Part 2, Lesson 2.

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
4.PS.4 Describe and investigate the different ways in which energy can be generated and/or converted from one form of energy to another form of energy.	**SE/TE:** 2, Try It: What are some forms of energy? 10-11, Forms of energy 12-13, Where is the energy? 17, Sound Energy 23, Sources of Light 32–33, Changes of Other Energy to Heat 80, Try It: What can electricity flow through? 92–95, Chapter 3, Lesson 2: How can energy change? 96–97, Investigate It: How does a circuit board work? 103, Chapter 3 Review: Apply the Big Question **TE Only:** 32, 21st Century Learning 93, Science – Social Studies 111d, Performance Expectation Activity
4.PS.5 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.	**SE/TE:** 2, Try It: What are some forms of energy? 4–7, STEM Activity: Is It Cold in Here? 10–11, Forms of Energy 17–21, Chapter 1, Lesson 2: What is sound energy? 24, Light Waves We See 26-27, Light and Matter 28, Explore It: How does heat move? 29-31, Conduction/Convection/Radiation 33, Got It? 34–35, Investigate It: Which material is the better heat conductor? 80, Try It: What can electricity flow through? 86–91, Chapter 3, Lesson 1: How do electric charges flow in a circuit? 96–97, Investigate It: How does a circuit board work? **TE Only:** 33a, Explore It: How does heat move? 111b, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
Earth and Space Science (ESS)	
4.ESS.1 Investigate how the moon appears to move through the sky and it changes day to day, emphasizing the importance of how the moon impacts the Earth, the rising and setting times, and solar and lunar eclipses.	The *Interactive Science* program meets this standard in Grade 5, Chapter 6, Lesson 1.
4.ESS.2 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	**SE/TE:** 195–199, Chapter 5, Lesson 3: What are natural resources? 373, Go Green **TE Only:** 198, Science Notebook 229d, Performance Expectation Activity
4.ESS.3 Describe how geological forces change the shape of the land suddenly and over time.	**SE/TE:** 254, Explore It: How does a rock wear away? 254–259, Chapter 6, Lesson 3: What are weathering and erosion? 260–265, Chapter 6, Lesson 4: How can Earth's surface change rapidly? 280, Field Trip: The Galapagos Islands 286-287, Chapter 6 Review 290-293, Apply It: What affects how soil erodes? 294, Performance-Based Assessment: Write Historical Fiction 295, Performance-Based Assessment: Create a Booklet **TE Only:** 258, Science Notebook 263, Science – Social Studies 265a, My Planet Diary 287b, Chapter 6 Test 295a, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
4.ESS.4 Develop solutions that could be implemented to reduce the impact of humans on the natural environment and the natural environment on humans.	**SE/TE:** 188-193, Chapter 5, Lesson 2: How do living things affect the environment? 192, Go Green 199, Chapter 5, Lesson 3: What are natural resources? 234–237, STEM Activity: Hold Back the Water 300–303, STEM Activity: Time to Clean Green! **TE Only:** 99, 21st Century Learning 295c, Performance Expectation Activity
Life Science (LS)	
4.LS.1 Observe, analyze, and interpret how offspring are very much, but not exactly, like their parents or one another. Describe how these differences in physical characteristics among individuals in a population may be advantageous for survival and reproduction.	**SE/TE:** 148–153, Chapter 4, Lesson 5: What plant and animal characteristics are inherited? **TE Only:** 150, Science – Writing 151, Differentiated Instruction 152, Science Notebook
4.LS.2 Use evidence to support the explanation that a change in the environment may result in a plant or animal will survive and reproduce, move to a new location, or die.	**SE/TE:** 188, Explore It: What happens when one part of an ecosystem is removed? 189-193, Chapter 5, Lesson 2: How do living things affect the environment? **TE Only:** 186, Differentiated Instruction 190, Differentiated Instruction

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
4.LS.3 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction in different ecosystems.	**SE/TE:** 122–127, Chapter 4, Lesson 1: How are plants and animals classified? 128–135, Chapter 4, Lesson 2: How do plants reproduce? 136–141, Chapter 4, Lesson 3: How do plants make food? 142–147, Chapter 4, Lesson 4: What are adaptations? 148–153, Chapter 4, Lesson 5: What plant and animal characteristics are inherited? 154–159, Chapter 4, Lesson 6: How do animals respond to the environment? 177, Let's Read Science! 187, Chapter 5, Lesson 1: What are ecosystems? **TE Only:** 229a, Performance Expectation Activity
Engineering (E)	
3-5.E.1 Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.	**SE/TE:** 4, STEM Activity: Is It Cold in Here? 50–51, STEM Activity: Let's Glide Away! 82–83, STEM Activity: How Can You Keep Liquids Warm or Cold? 111, Performance-Based Assessment: Design a Device 116–117, STEM Activity: Natural Humidifier 234–235, STEM Activity: Hold Back the Water 300–301, STEM Activity: Time to Clean Green! 346–347, STEM Activity: What's Inside? 358, Steps of the Design Process 374–375, Design It: What design will carry cargo best? 380, Design a Package **TE Only:** 111d, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**SE/TE:** 5–6, STEM Activity: Is It Cold in Here? 51–53, STEM Activity: Let's Glide Away! 83-84, STEM Activity: How Can You Keep Liquids Warm or Cold? 118, STEM Activity: Natural Humidifier 235–236, STEM Activity: Hold Back the Water 302, STEM Activity: Time to Clean Green! 347–348, STEM Activity: What's Inside? 359, Steps of the Design Process 364–365, Investigate It: Which boat design will hold more cargo? 376, Design It: What design will carry cargo best? **TE Only:** 111d, Performance Expectation Activity 295c, Performance Expectation Activity 356b, Activity Card Support 363a, Part 2, Lesson 2: What is the design process?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 4
3-5.E.3 Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**SE/TE:** 6-7, STEM Activity: Is It Cold in Here? 51–53, STEM Activity: Let's Glide Away! 84-85, STEM Activity: How Can You Keep Liquids Warm or Cold? 111, Performance-Based Assessment: Design a Device 119, STEM Activity: Natural Humidifier 236–237, STEM Activity: Hold Back the Water 302–303, STEM Activity: Time to Clean Green! 344, Try It: How can you design a hovercraft? 348–349, STEM Activity: What's Inside? 356, Explore It: How can the design of a model help you learn about the real thing? 360–361, Steps of the Design Process 364–365, Investigate It: Which boat design will hold more cargo? 377–379, Design It: What design will carry cargo best? **TE Only:** 295c, Performance Expectation Activity 363a, Explore It: How can the design of a model help you learn about the real thing? 365a–365c, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
GRADE 5	
Science and Engineering Process Standards (SEPS)	
SEPS.1 Posing questions (for science) and defining problems (for engineering) A practice of science is posing and refining questions that lead to descriptions and explanations of how the natural and designed world(s) work and these questions can be scientifically tested. Engineering questions clarify problems to determine criteria for possible solutions and identify constraints to solve problems about the designed world.	**SE/TE:** 54, Try It: How can you make a paper helicopter drop slowly? 146, STEM Activity: Let It Self-Water! 200, STEM Activity: Filter It Out 316, Try It: What questions do scientists ask? 318–319, STEM Activity: Where's the Wind Going? 328, Explore It: Which method keeps bread freshest? 332, Steps for Investigation 362, Try It: How can you design a strong glue? **TE Only:** 41d, Activity Card Support 83d, Activity Card Support 179d, Activity Card Support 241a, Explore It: How does melting ice cause erosion? 289a, Explore It: How are the sizes of the inner and outer planets different? 373a, Explore It! Which transport system works best?
SEPS.2 Developing and using models and tools A practice of both science and engineering is to use and construct conceptual models that illustrate ideas and explanations. Models are used to develop questions, predictions and explanations; analyze and identify flaws in systems; build and revise scientific explanations and proposed engineered systems; and communicate ideas. Measurements and observations are used to revise and improve models and designs. Models include, but are not limited to: diagrams, drawings, physical replicas, mathematical representations, analogies, and other technological models.	**SE/TE:** 104–107, STEM Activity: Come in Out of Nature! 120: Explore It: Which bird beak can crush seeds? 144: Try It: What is in a local ecosystem? 236, Explore It: How does melting cause erosion? 330, Models 364–365, STEM Activity: Is Your Arm a Simple Machine? 380, Explore It: How can the design of a model arm help you learn about how your arm works? **TE Only:** 99a, Performance Expectation Activity 195a, Performance Expectation Activity 195c, Performance Expectation Activity 207, Differentiated Instruction 313a, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
Another practice of both science and engineering is to identify and correctly use tools to construct, obtain, and evaluate questions and problems. Utilize appropriate tools while identifying their limitations. Tools include, but are not limited to: pencil and paper, models, ruler, a protractor, a calculator, laboratory equipment, safety gear, a spreadsheet, experiment data collection software, and other technological tools.	**SE/TE:** 2, Try It: How are weight and volume affected when objects are combined? 18, Mass 19, Volume 66, Explore It: How can forces affect motion? 106, STEM Activity: Come in Out of Nature! 284, Explore It: How are the sizes of the inner and outer planets different? 339, Tools 340, Safety 362, Try It: How can your design a strong glue? 364–367, STEM Activity: Is Your Arm a Simple Machine? **TE Only:** 314, Predict
SEPS.3 Constructing and performing investigations Scientists and engineers are constructing and performing investigations in the field or laboratory, working collaboratively as well as individually. Researching analogous problems in order to gain insight into possible solutions allows them to make conjectures about the form and meaning of the solution. A plan to a solution pathway is developed prior to constructing and performing investigations. Constructing investigations systematically encompasses identified variables and parameters generating quality data. While performing, scientists and engineers monitor and record progress. After performing, they evaluate to make changes to modify and repeat the investigation if necessary.	**SE/TE:** 40–41, Investigate It: What are some ways to separate a mixture? 56–59, STEM Activity: Watch It Fly! 78, Explore It: What can cause the size and shape of a shadow to change? 82–83, Investigate It: What forces affect the motion of a rocket? 94–97, Apply It: Using the Scientific Method 98–99, Performance-Based Assessment 132–133, Investigate It: How do seeds grow? 178–179, STEM Activity: What heats up air? 190–193, Apply It: Using the Scientific Method 332–333, Steps for Investigation 337, Data Collecting 362, Try It: How can you design a strong glue? 364–367, STEM Activity: Is Your Arm a Simple Machine? 368, Explore It: Which transport system works best? **TE Only:** 41a–41d, Activity Card Support 83a–83d, Activity Card Support 99d, Performance Expectation Activity 133a–133d, Activity Card Support 179a–179d, Activity Card Support

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
SEPS.4 Analyzing and interpreting data Investigations produce data that must be analyzed in order to derive meaning. Because data patterns and trends are not always obvious, scientists and engineers use a range of tools to identify the significant features in the data. They identify sources of error in the investigations and calculate the degree of certainty in the results. Advances in science and engineering makes analysis of proposed solutions more efficient and effective. They analyze their results by continually asking themselves questions; possible questions may be, but are not limited to: "Does this make sense?" "Could my results be duplicated?" and/or "Does the design solve the problem with the given constraints?"	**SE/TE:** 4, STEM Activity: Trap and Store 41, Investigate It: What are some ways to separate a mixture? 179, STEM Activity: What heats up air? 54, Try It: How can you make a paper helicopter drop slowly? 83, Investigate It: What forces affect the motion of a rocket? 97, Apply It: Using the Scientific Methods 133, Investigate It: How do seeds grow? 149, STEM Activity: Let It Self-Water! 152, Do the Math! 179, Investigate It: What heats up air? 192–193, Apply It: Using Scientific Methods 342, Interpret Data 364–367, STEM Activity: Is Your Arm a Simple Machine? **TE Only:** 41b–41d, Activity Card Support 83b–83d, Activity Card Support 133b–133d, Activity Card Support 179b–179d, Activity Card Support
SEPS.5 Using mathematics and computational thinking In both science and engineering, mathematics and computation are fundamental tools for representing physical variables and their relationships. They are used for a range of tasks such as constructing simulations; solving equations exactly or approximately; and recognizing, expressing, and applying quantitative relationships. Mathematical and computational approaches enable scientists and engineers to predict the behavior of systems and test the validity of such predictions. Scientists and engineers understand how mathematical ideas interconnect and build on one another to produce a coherent whole.	**SE/TE:** 4, STEM Activity: Trap and Store 26, Do the Math! 72, Do the Math! 94–97, Apply It: How is motion affected by mass? 152, Do the Math! 164, Do the Math! 172, Do the Math! 178–179, Investigate It: What heats up air? 209, Do the Math! 213, Do the Math! 280, Do the Math! 284, Explore It: How are the sizes of the inner and outer planets different? 341, Organize Data

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
SEPS.6 Constructing explanations (for science) and designing solutions (for engineering) Scientists and engineers use their results from the investigation in constructing descriptions and explanations, citing the interpretation of data, connecting the investigation to how the natural and designed world(s) work. They construct or design logical coherent explanations or solutions of phenomena that incorporate their understanding of science and/or engineering or a model that represents it, and are consistent with the available evidence.	**SE/TE:** 6, STEM Activity: Trap and Store 70-71, Newton's Second Law 73, Newton's Third Law 94–97, Apply It: Using Scientific Methods 133, Investigate It: How do seeds grow? 148–149, STEM Activity: Let It Self-Water! 243, Investigate It: Where is the hurricane going? 343, Make Inferences 380–387, Part 2, Lesson 3: What is the design process?
SEPS.7 Engaging in argument from evidence Scientists and engineers use reasoning and argument based on evidence to identify the best explanation for a natural phenomenon or the best solution to a design problem. Scientists and engineers use argumentation, the process by which evidence-based conclusions and solutions are reached, to listen to, compare, and evaluate competing ideas and methods based on merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.	**SE/TE:** 65, Unlock the Big Question 81, Got It? 83, Investigate It: What forces affect the motion of a rocket? 97, Apply It: Using Scientific Methods 102, Try It: How can temperature affect seed growth? 108, My Planet Diary 120, Explore It: Which bird beak can crush seeds? 125, Got It? 144, Try It: What is in a local ecosystem? 275, Got It? 344–347, Part 1, Lesson 4: How do scientists support their conclusions? **TE Only:** 99e, Performance Expectation Activity 195b, Performance Expectation Activity 313c, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
SEPS.8 Obtaining, evaluating, and communicating information Scientists and engineers need to be communicating clearly and articulating the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity. Communicating information and ideas can be done in multiple ways: using tables, diagrams, graphs, models, and equations, as well as, orally, in writing, and through extended discussions. Scientists and engineers employ multiple sources to obtain information that is used to evaluate the merit and validity of claims, methods, and designs.	**SE/TE:** 7, STEM Activity: Trap and Store 22, Explore It: How can water change state? 41, Investigate It: What are some ways to separate a mixture? 59, STEM Activity: Watch it fly! 66, Explore It: How can forces affect motion? 78, Explore It: What can cause the size and shape of a shadow to change? 97, Apply It: Using Scientific Methods 106, STEM Activity: Come in Out of Nature! 126, Explore It: How do butterflies grow and change? 149, STEM Activity: Let It Self-Water! 276, Explore It: How does distance affect orbiting time? 336–343, Part 1, Lesson 3: How do scientists collect and interpret data?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
Physical Science (PS)	
5.PS.1 Describe and measure the volume and mass of a sample of a given material.	**SE/TE:** 2, Try It: How are weight and volume affected when objects are combined? 18, Mass 19, Volume EM1, Measurements
5.PS.2 Demonstrate that regardless of how parts of an object are assembled the mass of the whole object is identical to the sum of the mass of the parts; however, the volume can differ from the sum of the volumes. (Law of Conservation of Mass)	For supporting content, please see **SE/TE:** 2, Try It: How are weight and volume affected when objects are combined? **TE Only:** 99b, Performance Expectation Activity
5.PS.3 Determine if matter has been added or lost by comparing mass when melting, freezing, or dissolving a sample of a substance. (Law of Conservation of Mass)	**SE/TE:** 16, Explore It: What are some properties of solids? 34, Explore It: What happens when air heats up? 36, Chapter 1, Lesson 5: How does matter change? **TE Only:** 99b, Performance Expectation Activity
5.PS.4 Describe the difference between weight being dependent on gravity and mass comprised of the amount of matter in a given substance or material.	**SE/TE:** 9, Chapter 1, Lesson 1: What makes up matter? 54, Try It: How can you make a paper helicopter drop slowly? 64, Chapter 2, Lesson 1: What are forces?

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
Earth and Space Science (ESS)	
5.ESS.1 Analyze the scale of our solar system and its components: our solar system includes the sun, moon, seven other planets and their moons, and many other objects like asteroids and comets.	**SE/TE:** 265–269, Chapter 6, Lesson 1: How does Earth move? 272, Characteristics of the Sun 276, Explore It: How does distance affect orbiting time? 284, Explore It: How are the sizes of the inner and outer planets different? 277–283, Chapter 6, Lesson 3: What are the inner planets? 285–289, Chapter 6, Lesson 4: What are the outer planets? 291–295, Chapter 6, Lesson 5: What are asteroids, meteors, comets, and moons?
5.ESS.2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	**SE/TE:** 81, Chapter 2, Lesson 4: How are shadows formed? 264, Explore It: How does sunlight strike Earth's surface? 265–269, Chapter 6, Lesson 1: How does Earth move? 272, Lightning Lab 274, Constellations 275, Stars on the Move **TE Only:** 313d, Performance Expectation Activity
5.ESS.3 Investigate ways individual communities within the United States protect the Earth's resources and environment.	**SE/TE:** 169, Changes Caused by Humans 175, 177, Chapter 4, Lesson 4: How do humans impact ecosystems? **TE Only:** 195d, Performance Expectation Activity

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
5.ESS.4 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	**SE/TE:** 206–208, The Water Cycle 210–215, Chapter 5, Lesson 2: What are the spheres of Earth? 218, Barometric Pressure 220, Winds 221, Water in the Atmosphere 222, Circulation **TE Only:** 207, Differentiated Instruction 313a, Performance Expectation Activity
Life Science (LS)	
5.LS.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.	**SE/TE:** 114, Explore It: How can plants survive in the desert? 132–133, Investigation It: How do seeds grow? 146–149: STEM Activity: Let It Self-Water! 160–163, 165, Chapter 4, Lesson 2: How do organisms interact in ecosystems? **TE Only:** 133a–133d, Activity Card Support 161, Science/Language Arts 195c, Performance Expectation Activity
5.LS.2 Observe and classify common Indiana organisms as producers, consumers, decomposers, or predator and prey based on their relationships and interactions with other organisms in their ecosystem.	**SE/TE:** 158–162, Chapter 4, Lesson 2: How do organisms interact in an ecosystem?
5.LS.3 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	The *Interactive Science* program meets this standard in Grade 4, Chapter 4, Lesson 5.

Indiana Academic Standards for Science	Interactive Science ©2016 Grade 5
Engineering (E)	
3-5.E.1 Identify a simple problem with the design of an object that reflects a need or a want. Include criteria for success and constraints on materials, time, or cost.	**SE/TE:** 6–7, STEM Activity: Trap and Store 56, 58, STEM Activity: Watch It Fly! 104–107, STEM Activity: Come in Out of Nature! 146, 148, STEM Activity: Let It Self-Water! 200, 202, STEM Activity: Filter It Out! 318, 320, STEM Activity: Where's the Wind Going? 323, Problems, Decisions, and New Ideas
3-5.E.2 Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	**SE/TE:** 5–6, STEM Activity: Trap and Store 57–58, STEM Activity: Watch It Fly! 105, STEM Activity: Come in Out of Nature! 146–149, STEM Activity: Let It Self-Water! 200–203, STEM Activity: Filter It Out! 260–263, STEM Activity: Breathe Deeply! 318–321, STEM Activity: Where's the Wind Going? 364–367, STEM Activity: Is Your Arm a Simple Machine? 383, Part 2, Lesson 3: What is the design process?
3-5.E.3 Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	**SE/TE:** 82–83, Investigate It: What forces affect the motion of a rocket? 132–133, Investigate It: How do seeds grow? 146–149, STEM Activity: Let It Self-Water! 178–179, Investigate It: What heats up air? 296–297, Investigate It: How can spinning affect a planet's shape? 329–335, Part 1, Lesson 2: How do scientists investigate? 362, Try It: How can you design a strong glue? 368, Explore It! 398–401, Design It: How much weight can a model arm support? **TE Only:** 83a–83d, 133a–133d, 297a–297d, Activity Card Support