LEGO education™

Main Criteria: California Content Standards
Secondary Criteria: LEGO® Education BricQ Motion Essential, LEGO® Education SPIKE™ Essential
Subject: Technology Education
Grades: 1, 2, 3, 4, 5
Correlation Options: Show Correlated

California Content Standards
Technology Education
Grade: 1 - Adopted: **2018**

CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P2.	Core Practice 2 – Collaborating Around Computing
EXPECTATION / SUBSTRAND	P2.2.	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness. LEGO® Education SPIKE™ Essential Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
EXPECTATION / SUBSTRAND	P2.4.	Evaluate and select technological tools that can be used to collaborate on a project. LEGO® Education SPIKE™ Essential Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P3.	Core Practice 3 – Recognizing and Defining Computational Problems
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally. LEGO® Education SPIKE™ Essential See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature

EXPECTATION / SUBSTRAND	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Snack Stand Great Adventures: Arctic Ride Great Adventures: Treehouse Camp
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.1.	Extract common features from a set of interrelated processes or complex phenomena. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: The Most Amazing Amusement Park Great Adventures: Cave Car
EXPECTATION / SUBSTRAND	P4.2.	Evaluate existing technological functionalities and incorporate them into new designs. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: The Most Amazing Amusement Park Great Adventures: Cave Car
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes. _LEGO® Education SPIKE™ Essential_ See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature

EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue. *LEGO® Education SPIKE™ Essential* Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it. *LEGO® Education SPIKE™ Essential* Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P6.**	**Core Practice 6 – Testing and Refining Computational Artifacts**
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases. *LEGO® Education SPIKE™ Essential* Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature

EXPECTATION / SUBSTRAND	P6.2.	Identify and fix errors using a systematic process. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest See it! Hear It! Build It!: Lesson 1 Illumination See it! Hear It! Build It!: Lesson 2 Musical Vibrations See it! Hear It! Build It!: Lesson 3 Transparency See it! Hear It! Build It!: Lesson 4 Communicate with Light or Sound See it! Hear It! Build It!: Lesson 5 Learning from Using Ideas from Nature
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Algorithms
EXPECTATION / SUBSTRAND	K-2.AP.10.	Model daily processes by creating and following algorithms to complete tasks. (P3.2, P4.4) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Snack Stand Great Adventures: Arctic Ride
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Control
EXPECTATION / SUBSTRAND	K-2.AP.12.	Create programs with sequences of commands and simple loops, to express ideas or address a problem. (P5.2) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Great Adventures: Animal Alarm Great Adventures: Treehouse Camp Great Adventures: Underwater Quest
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Modularity

EXPECTATION / SUBSTRAND	K-2.AP.13.	Decompose the steps needed to solve a problem into a sequence of instructions. (P3.2) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Snack Stand Great Adventures: Arctic Ride Great Adventures: Treehouse Camp
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Program Development**
EXPECTATION / SUBSTRAND	K-2.AP.14.	Develop plans that describe a program's sequence of events, goals, and expected outcomes. (P5.1, P7.2) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Underwater Quest
EXPECTATION / SUBSTRAND	K-2.AP.16.	Debug errors in an algorithm or program that includes sequences and simple loops. (P6.2) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest
EXPECTATION / SUBSTRAND	K-2.AP.17.	Describe the steps taken and choices made during the iterative process of program development. (P7.2) _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest

California Content Standards

Technology Education

Grade: 2 - Adopted: 2018

CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P2.**	**Core Practice 2 – Collaborating Around Computing**

EXPECTATION / SUBSTRAND	P2.2.	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
EXPECTATION / SUBSTRAND	P2.4.	Evaluate and select technological tools that can be used to collaborate on a project. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P3.	Core Practice 3 – Recognizing and Defining Computational Problems
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally. _LEGO® Education SPIKE™ Essential_ Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
EXPECTATION / SUBSTRAND	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Snack Stand Great Adventures: Arctic Ride Great Adventures: Treehouse Camp
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P4.	Core Practice 4 – Developing and Using Abstractions

EXPECTATION / SUBSTRAND	P4.1.	Extract common features from a set of interrelated processes or complex phenomena. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: The Most Amazing Amusement Park Great Adventures: Cave Car
EXPECTATION / SUBSTRAND	P4.2.	Evaluate existing technological functionalities and incorporate them into new designs. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: The Most Amazing Amusement Park Great Adventures: Cave Car
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes. _LEGO® Education SPIKE™ Essential_ Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P5.	Core Practice 5 – Creating Computational Artifacts
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind

EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P6.**	**Core Practice 6 – Testing and Refining Computational Artifacts**
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind
EXPECTATION / SUBSTRAND	P6.2.	Identify and fix errors using a systematic process. _LEGO® Education SPIKE™ Essential_ Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest Science in Nature and our Daily Life: Lesson 1 Habitats Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects Science in Nature and our Daily Life: Lesson 3 Pollination Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials Science in Nature and our Daily Life: Lesson 5 Protection from Wind

| EXPECTATION /
SUBSTRAND | P6.3. | Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility.

LEGO® Education SPIKE™ Essential
Amazing Amusement Park: Classic Carousel
Amazing Amusement Park: Remix the Ride
Amazing Amusement Park: Snack Stand
Amazing Amusement Park: The Fast Lane
Amazing Amusement Park: The Most Amazing Amusement Park
Amazing Amusement Park: The Perfect Swing
Amazing Amusement Park: The Spinning Ferris Wheel
Amazing Amusement Park: Twirling Teacups
Great Adventures: The Great Desert Adventure
Great Adventures: Treehouse Camp
Great Adventures: Underwater Quest
Science in Nature and our Daily Life: Lesson 1 Habitats
Science in Nature and our Daily Life: Lesson 2 Redesigning to Make New Objects
Science in Nature and our Daily Life: Lesson 3 Pollination
Science in Nature and our Daily Life: Lesson 4 Classify and Choose Materials
Science in Nature and our Daily Life: Lesson 5 Protection from Wind |
|---|---|---|
| CONTENT STANDARD / DOMAIN / PART | | Algorithms & Programming |
| PERFORMANCE STANDARD / MODE | | Algorithms |
| EXPECTATION / SUBSTRAND | K-2.AP.10. | Model daily processes by creating and following algorithms to complete tasks. (P3.2, P4.4)

LEGO® Education SPIKE™ Essential
Amazing Amusement Park: Snack Stand
Great Adventures: Arctic Ride |
| CONTENT STANDARD / DOMAIN / PART | | Algorithms & Programming |
| PERFORMANCE STANDARD / MODE | | Control |
| EXPECTATION / SUBSTRAND | K-2.AP.12. | Create programs with sequences of commands and simple loops, to express ideas or address a problem. (P5.2)

LEGO® Education SPIKE™ Essential
Amazing Amusement Park: The Fast Lane
Amazing Amusement Park: The Perfect Swing
Amazing Amusement Park: The Spinning Ferris Wheel
Great Adventures: Animal Alarm
Great Adventures: Treehouse Camp
Great Adventures: Underwater Quest |
| CONTENT STANDARD / DOMAIN / PART | | Algorithms & Programming |
| PERFORMANCE STANDARD / MODE | | Modularity |
| EXPECTATION / SUBSTRAND | K-2.AP.13. | Decompose the steps needed to solve a problem into a sequence of instructions. (P3.2)

LEGO® Education SPIKE™ Essential
Amazing Amusement Park: Snack Stand
Great Adventures: Arctic Ride
Great Adventures: Treehouse Camp |
| CONTENT STANDARD / DOMAIN / PART | | Algorithms & Programming |
| PERFORMANCE STANDARD / MODE | | Program Development |

EXPECTATION / SUBSTRAND	K-2.AP.14.	Develop plans that describe a program's sequence of events, goals, and expected outcomes. (P5.1, P7.2) LEGO® Education SPIKE™ Essential Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Underwater Quest
EXPECTATION / SUBSTRAND	K-2.AP.16.	Debug errors in an algorithm or program that includes sequences and simple loops. (P6.2) LEGO® Education SPIKE™ Essential Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest
EXPECTATION / SUBSTRAND	K-2.AP.17.	Describe the steps taken and choices made during the iterative process of program development. (P7.2) LEGO® Education SPIKE™ Essential Amazing Amusement Park: Classic Carousel Amazing Amusement Park: Remix the Ride Amazing Amusement Park: Snack Stand Amazing Amusement Park: The Fast Lane Amazing Amusement Park: The Most Amazing Amusement Park Amazing Amusement Park: The Perfect Swing Amazing Amusement Park: The Spinning Ferris Wheel Amazing Amusement Park: Twirling Teacups Great Adventures: Animal Alarm Great Adventures: Arctic Ride Great Adventures: Boat Trip Great Adventures: Cave Car Great Adventures: The Great Desert Adventure Great Adventures: Treehouse Camp Great Adventures: Underwater Quest

California Content Standards
Technology Education
Grade: 3 - Adopted: 2018

CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P1.	Core Practice 1 – Fostering an Inclusive Computing Culture
EXPECTATION / SUBSTRAND	P1.1.	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P2.	Core Practice 2 – Collaborating Around Computing
EXPECTATION / SUBSTRAND	P2.1.	Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine

EXPECTATION / SUBSTRAND	P2.2.	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	P2.4.	Evaluate and select technological tools that can be used to collaborate on a project. LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P3.	Core Practice 3 – Recognizing and Defining Computational Problems
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats

EXPECTATION / SUBSTRAND	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. LEGO® Education SPIKE™ Essential Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.1.	Extract common features from a set of interrelated processes or complex phenomena. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
EXPECTATION / SUBSTRAND	P4.2.	Evaluate existing technological functionalities and incorporate them into new designs. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**

EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation

EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P6.**	**Core Practice 6 – Testing and Refining Computational Artifacts**
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation

EXPECTATION / SUBSTRAND	P6.2.	Identify and fix errors using a systematic process. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility. LEGO® Education SPIKE™ Essential Animals and Their Environments: Lesson 1 Preparing for the Weather Animals and Their Environments: Lesson 2 Life Cycles Animals and Their Environments: Lesson 3 Animal Behavior Animals and Their Environments: Lesson 4 Solving Problems When Environments Change Animals and Their Environments: Lesson 5 Animals in Their Habitats Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P7.	Core Practice 7 – Communicating About Computing
EXPECTATION / SUBSTRAND	P7.1.	Select, organize, and interpret large data sets from multiple sources to support a claim. LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		Network & The Internet
PERFORMANCE STANDARD / MODE		Network Communication & Organization

EXPECTATION / SUBSTRAND	3-5.NI.4.	Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. (P4.4) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Data & Analysis**
PERFORMANCE STANDARD / MODE		**Collection, Visualization, & Transformation**
EXPECTATION / SUBSTRAND	3-5.DA.8.	Organize and present collected data visually to highlight relationships and support a claim. (P7.1) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		**Data & Analysis**
PERFORMANCE STANDARD / MODE		**Inference & Models**
EXPECTATION / SUBSTRAND	3-5.DA.9.	Use data to highlight and/or propose relationships, predict outcomes, or communicate ideas. (P7.1) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Algorithms**
EXPECTATION / SUBSTRAND	3-5.AP.10.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (P3.3, P6.3) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Avoid the Edge - Math Extension Quirky Creations: Big Little Helper - Math Extension
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**
PERFORMANCE STANDARD / MODE		**Control**
EXPECTATION / SUBSTRAND	3-5.AP.12.	Create programs that include events, loops, and conditionals. (P5.2) _LEGO® Education BricQ Motion Essential_ Essential Combined: Lesson 1 Create A Critter _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: High Stick Hockey - Math Extension Essential Combined: Lesson 1 Create A Critter Happy Traveler: Cable Car Quirky Creations: Literary Randomizer
CONTENT STANDARD / DOMAIN / PART		**Algorithms & Programming**

PERFORMANCE STANDARD / MODE		Modularity
EXPECTATION / SUBSTRAND	3-5.AP.13.	Decompose problems into smaller, manageable tasks which may themselves be decomposed. (P3.2) LEGO® Education SPIKE™ Essential Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.14.	Create programs by incorporating smaller portions of existing programs, to develop something new or add more advanced features. (P4.2, P5.3) LEGO® Education SPIKE™ Essential Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Program Development
EXPECTATION / SUBSTRAND	3-5.AP.15.	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others. (P1.1, P5.1) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.17.	Test and debug a program or algorithm to ensure it accomplishes the intended task. (P6.2) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation

EXPECTATION / SUBSTRAND	3-5.AP.19.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2) LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Happy Traveler: Hovering Helicopter Quirky Creations: Good Morning Machine Quirky Creations: Trash Monster Machine

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Technology Education
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CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P1.	Core Practice 1 – Fostering an Inclusive Computing Culture
EXPECTATION / SUBSTRAND	P1.1.	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P2.	Core Practice 2 – Collaborating Around Computing
EXPECTATION / SUBSTRAND	P2.1.	Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine
EXPECTATION / SUBSTRAND	P2.2.	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer

EXPECTATION / SUBSTRAND	P2.4.	Evaluate and select technological tools that can be used to collaborate on a project. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P3.**	**Core Practice 3 – Recognizing and Defining Computational Problems**
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally. _LEGO® Education SPIKE™ Essential_ Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
EXPECTATION / SUBSTRAND	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. _LEGO® Education SPIKE™ Essential_ Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.1.	Extract common features from a set of interrelated processes or complex phenomena. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
EXPECTATION / SUBSTRAND	P4.2.	Evaluate existing technological functionalities and incorporate them into new designs. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground

EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes. __LEGO® Education SPIKE™ Essential__ Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations. __LEGO® Education SPIKE™ Essential__ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue. __LEGO® Education SPIKE™ Essential__ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer

EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P6.	Core Practice 6 – Testing and Refining Computational Artifacts
EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
EXPECTATION / SUBSTRAND	P6.2.	Identify and fix errors using a systematic process. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer

EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science Connections: Lesson 1 How Eyes See Science Connections: Lesson 2 Animal Structures Science Connections: Lesson 3 Energy Resources Science Connections: Lesson 4 Prepare for Natural Hazards Science Connections: Lesson 5 Information Transfer
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P7.**	**Core Practice 7 – Communicating About Computing**
EXPECTATION / SUBSTRAND	P7.1.	Select, organize, and interpret large data sets from multiple sources to support a claim. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter Science Connections: Lesson 3 Energy Resources
CONTENT STANDARD / DOMAIN / PART		**Network & The Internet**
PERFORMANCE STANDARD / MODE		**Network Communication & Organization**
EXPECTATION / SUBSTRAND	3-5.NI.4.	Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. (P4.4) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Data & Analysis**
PERFORMANCE STANDARD / MODE		**Collection, Visualization, & Transformation**

EXPECTATION / SUBSTRAND	3-5.DA.8.	Organize and present collected data visually to highlight relationships and support a claim. (P7.1) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		Data & Analysis
PERFORMANCE STANDARD / MODE		Inference & Models
EXPECTATION / SUBSTRAND	3-5.DA.9.	Use data to highlight and/or propose relationships, predict outcomes, or communicate ideas. (P7.1) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Algorithms
EXPECTATION / SUBSTRAND	3-5.AP.10.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (P3.3, P6.3) LEGO® Education SPIKE™ Essential Crazy Carnival Games: Avoid the Edge - Math Extension Quirky Creations: Big Little Helper - Math Extension
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Control
EXPECTATION / SUBSTRAND	3-5.AP.12.	Create programs that include events, loops, and conditionals. (P5.2) LEGO® Education BricQ Motion Essential Essential Combined: Lesson 1 Create A Critter LEGO® Education SPIKE™ Essential Crazy Carnival Games: High Stick Hockey - Math Extension Essential Combined: Lesson 1 Create A Critter Happy Traveler: Cable Car Quirky Creations: Literary Randomizer
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Modularity
EXPECTATION / SUBSTRAND	3-5.AP.13.	Decompose problems into smaller, manageable tasks which may themselves be decomposed. (P3.2) LEGO® Education SPIKE™ Essential Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.14.	Create programs by incorporating smaller portions of existing programs, to develop something new or add more advanced features. (P4.2, P5.3) LEGO® Education SPIKE™ Essential Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Program Development

EXPECTATION / SUBSTRAND	3-5.AP.15.	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others. (P1.1, P5.1) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.17.	Test and debug a program or algorithm to ensure it accomplishes the intended task. (P6.2) LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.19.	Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2) LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Happy Traveler: Hovering Helicopter Quirky Creations: Good Morning Machine Quirky Creations: Trash Monster Machine

California Content Standards

Technology Education

Grade: 5 - Adopted: 2018

CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P1.	Core Practice 1 – Fostering an Inclusive Computing Culture
EXPECTATION / SUBSTRAND	P1.1.	Include the unique perspectives of others and reflect on one's own perspectives when designing and developing computational products. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine

CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P2.	Core Practice 2 – Collaborating Around Computing
EXPECTATION / SUBSTRAND	P2.1.	Cultivate working relationships with individuals possessing diverse perspectives, skills, and personalities. LEGO® Education SPIKE™ Essential Happy Traveler: Big Bus Quirky Creations: Trash Monster Machine
EXPECTATION / SUBSTRAND	P2.2.	Create team norms, expectations, and equitable workloads to increase efficiency and effectiveness. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
EXPECTATION / SUBSTRAND	P2.4.	Evaluate and select technological tools that can be used to collaborate on a project. LEGO® Education SPIKE™ Essential Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P3.	Core Practice 3 – Recognizing and Defining Computational Problems
EXPECTATION / SUBSTRAND	P3.1.	Identify complex, interdisciplinary, real-world problems that can be solved computationally. LEGO® Education SPIKE™ Essential Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow

EXPECTATION / SUBSTRAND	P3.2.	Decompose complex real-world problems into manageable subproblems that could integrate existing solutions or procedures. _LEGO® Education SPIKE™ Essential_ Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P4.**	**Core Practice 4 – Developing and Using Abstractions**
EXPECTATION / SUBSTRAND	P4.1.	Extract common features from a set of interrelated processes or complex phenomena. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
EXPECTATION / SUBSTRAND	P4.2.	Evaluate existing technological functionalities and incorporate them into new designs. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
EXPECTATION / SUBSTRAND	P4.4.	Model phenomena and processes and simulate systems to understand and evaluate potential outcomes. _LEGO® Education SPIKE™ Essential_ Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
CONTENT STANDARD / DOMAIN / PART		**Computer Science Core Practices**
PERFORMANCE STANDARD / MODE	**P5.**	**Core Practice 5 – Creating Computational Artifacts**
EXPECTATION / SUBSTRAND	P5.1.	Plan the development of a computational artifact using an iterative process that includes reflection on and modification of the plan, taking into account key features, time and resource constraints, and user expectations. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow

EXPECTATION / SUBSTRAND	P5.2.	Create a computational artifact for practical intent, personal expression, or to address a societal issue. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
EXPECTATION / SUBSTRAND	P5.3.	Modify an existing artifact to improve or customize it. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices
PERFORMANCE STANDARD / MODE	P6.	Core Practice 6 – Testing and Refining Computational Artifacts

EXPECTATION / SUBSTRAND	P6.1.	Systematically test computational artifacts by considering all scenarios and using test cases. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
EXPECTATION / SUBSTRAND	P6.2.	Identify and fix errors using a systematic process. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
EXPECTATION / SUBSTRAND	P6.3.	Evaluate and refine a computational artifact multiple times to enhance its performance, reliability, usability, and accessibility. LEGO® Education SPIKE™ Essential Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation Science We Cannot See: Lesson 1 Matter Science We Cannot See: Lesson 2 Gravity Science We Cannot See: Lesson 3 Daytime and Nighttime Science We Cannot See: Lesson 4 Protect the Environment Science We Cannot See: Lesson 5 Energy Flow
CONTENT STANDARD / DOMAIN / PART		Computer Science Core Practices

PERFORMANCE STANDARD / MODE	P7.	Core Practice 7 – Communicating About Computing
EXPECTATION / SUBSTRAND	P7.1.	Select, organize, and interpret large data sets from multiple sources to support a claim. _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter Science We Cannot See: Lesson 4 Protect the Environment
CONTENT STANDARD / DOMAIN / PART		Network & The Internet
PERFORMANCE STANDARD / MODE		Network Communication & Organization
EXPECTATION / SUBSTRAND	3-5.NI.4.	Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. (P4.4) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation
CONTENT STANDARD / DOMAIN / PART		Data & Analysis
PERFORMANCE STANDARD / MODE		Collection, Visualization, & Transformation
EXPECTATION / SUBSTRAND	3-5.DA.8.	Organize and present collected data visually to highlight relationships and support a claim. (P7.1) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter
CONTENT STANDARD / DOMAIN / PART		Data & Analysis
PERFORMANCE STANDARD / MODE		Inference & Models
EXPECTATION / SUBSTRAND	3-5.DA.9.	Use data to highlight and/or propose relationships, predict outcomes, or communicate ideas. (P7.1) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Hovering Helicopter Science We Cannot See: Lesson 3 Daytime and Nighttime
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Algorithms
EXPECTATION / SUBSTRAND	3-5.AP.10.	Compare and refine multiple algorithms for the same task and determine which is the most appropriate. (P3.3, P6.3) _LEGO® Education SPIKE™ Essential_ Crazy Carnival Games: Avoid the Edge - Math Extension Quirky Creations: Big Little Helper - Math Extension

CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Control
EXPECTATION / SUBSTRAND	3-5.AP.12.	Create programs that include events, loops, and conditionals. (P5.2) **LEGO® Education BricQ Motion Essential** Essential Combined: Lesson 1 Create A Critter **LEGO® Education SPIKE™ Essential** Crazy Carnival Games: High Stick Hockey - Math Extension Essential Combined: Lesson 1 Create A Critter Happy Traveler: Cable Car Quirky Creations: Literary Randomizer
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Modularity
EXPECTATION / SUBSTRAND	3-5.AP.13.	Decompose problems into smaller, manageable tasks which may themselves be decomposed. (P3.2) **LEGO® Education SPIKE™ Essential** Happy Traveler: River Ferry Happy Traveler: Taxi! Taxi! Quirky Creations: Winning Goal Quirky Creations: Your School Creation
EXPECTATION / SUBSTRAND	3-5.AP.14.	Create programs by incorporating smaller portions of existing programs, to develop something new or add more advanced features. (P4.2, P5.3) **LEGO® Education SPIKE™ Essential** Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: Junior Pinball Happy Traveler: Get Around Town Happy Traveler: Swamp Boat Quirky Creations: High-Tech Playground
CONTENT STANDARD / DOMAIN / PART		Algorithms & Programming
PERFORMANCE STANDARD / MODE		Program Development
EXPECTATION / SUBSTRAND	3-5.AP.15.	Use an iterative process to plan and develop a program by considering the perspectives and preferences of others. (P1.1, P5.1) **LEGO® Education SPIKE™ Essential** Crazy Carnival Games: A-Maze-Ing - Math Extension Crazy Carnival Games: Avoid the Edge - Math Extension Crazy Carnival Games: Bowling Fun Crazy Carnival Games: Creative Carnival Games Crazy Carnival Games: High Stick Hockey - Math Extension Crazy Carnival Games: Junior Pinball Crazy Carnival Games: Mini Mini-Golf Happy Traveler: Big Bus Happy Traveler: Cable Car Happy Traveler: Get Around Town Happy Traveler: Hovering Helicopter Happy Traveler: River Ferry Happy Traveler: Swamp Boat Happy Traveler: Taxi! Taxi! Quirky Creations: Big Little Helper - Math Extension Quirky Creations: Good Morning Machine Quirky Creations: High-Tech Playground Quirky Creations: Literary Randomizer Quirky Creations: Loads of Laundry Quirky Creations: Trash Monster Machine Quirky Creations: Winning Goal Quirky Creations: Your School Creation

| EXPECTATION / SUBSTRAND | 3-5.AP.17. | Test and debug a program or algorithm to ensure it accomplishes the intended task. (P6.2)

LEGO® Education SPIKE™ Essential
Crazy Carnival Games: A-Maze-Ing - Math Extension
Crazy Carnival Games: Avoid the Edge - Math Extension
Crazy Carnival Games: Bowling Fun
Crazy Carnival Games: Creative Carnival Games
Crazy Carnival Games: High Stick Hockey - Math Extension
Crazy Carnival Games: Junior Pinball
Crazy Carnival Games: Mini Mini-Golf
Happy Traveler: Big Bus
Happy Traveler: Cable Car
Happy Traveler: Get Around Town
Happy Traveler: Hovering Helicopter
Happy Traveler: River Ferry
Happy Traveler: Swamp Boat
Happy Traveler: Taxi! Taxi!
Quirky Creations: Big Little Helper - Math Extension
Quirky Creations: Good Morning Machine
Quirky Creations: High-Tech Playground
Quirky Creations: Literary Randomizer
Quirky Creations: Loads of Laundry
Quirky Creations: Trash Monster Machine
Quirky Creations: Winning Goal
Quirky Creations: Your School Creation |
| EXPECTATION / SUBSTRAND | 3-5.AP.19. | Describe choices made during program development using code comments, presentations, and demonstrations. (P7.2)

LEGO® Education SPIKE™ Essential
Happy Traveler: Big Bus
Happy Traveler: Hovering Helicopter
Quirky Creations: Good Morning Machine
Quirky Creations: Trash Monster Machine |