THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Barbie Science Kits	Multi-Subject	549003	Barbie STEM Kit (with Barbie Scientist Doll)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
Barbie Science Kits	Multi-Subject	549003	Barbie STEM Kit (with Barbie Scientist Doll)	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				
Barbie Science Kits	Multi-Subject	549003	Barbie STEM Kit (with Barbie Scientist Doll)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
Barbie Science Kits	Multi-Subject	549003	Barbie STEM Kit (with Barbie Scientist Doll)	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
Barbie Science Kits	Multi-Subject	549004	Barbie STEM Kit (with Nikki Scientist Doll)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
Barbie Science Kits	Multi-Subject	549004	Barbie STEM Kit (with Nikki Scientist Doll)	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				
Barbie Science Kits	Multi-Subject	549004	Barbie STEM Kit (with Nikki Scientist Doll)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
Barbie Science Kits	Multi-Subject	549004	Barbie STEM Kit (with Nikki Scientist Doll)	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
Barbie Science Kits	Earth Science	549010	Barbie Crystal Geology	2-ESS1-1	Earth's Systems: Processes that Shape the Earth	Use information from several sources to provide evidence that Earth events can occur quickly or slowly				
Barbie Science Kits	Earth Science	549010	Barbie Crystal Geology	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.				
Barbie Science Kits	Earth Science	549010	Barbie Crystal Geology	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*				
Barbie Science Kits	Chemistry	549012	Barbie Fundamental Chemistry Set	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	2-LS2-1	Interdependent Relationships in Ecosystems	Plan and conduct an investigation to determine if plants need sunlight and water to grow				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	3-LS1-1	Inheritance and Variation of Traits: Life Cycles and Traits	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	3-LS4-3	Interdependent Relationships in Ecosystems	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.				
Barbie Science Kits	Biology	549015	Barbie Plant Science Kit	K-PS3-2	Weather and Climate	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area				
	Chemistry	550002	Glow Stick Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.				
	Chemistry	550002	Glow Stick Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*				

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
FEAK	Chemistry	550009	Crystal Nightlight	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	4	6	
FEAK	Chemistry	550009	Crystal Nightlight	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	4	6	
FEAK	Chemistry	550009	Crystal Nightlight	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	4	6	
FEAK	Chemistry	550009	Crystal Nightlight	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	4	6	
FEAK	Physics	550014	Ultralight Airplanes	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	5	6	
FEAK	Physics	550014	Ultralight Airplanes	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	5	6	
FEAK	Physics	550014	Ultralight Airplanes	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	5	6	
FEAK	Physics	550014	Ultralight Airplanes	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	5	6	
FEAK	Physics	550014	Ultralight Airplanes	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	4-PS3-3	Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide	8	5	6	
FEAK	Physics	550020	Rubber Band Racers	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	5	6	
	Crystals & Materials	550022	Glowing Crystal Geode	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	5	6	
FEAK	Chemistry	550023	Chewing Gum Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	8	5	6	
FEAK	Chemistry	550023	Chewing Gum Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	8	5	6	
FEAK	Chemistry	550023	Chewing Gum Lab	2-PS1-4.	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	5	6	
FEAK	Chemistry	550023	Chewing Gum Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	5	6	
FEAK	Chemistry	550023	Chewing Gum Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	5	6	
FEAK	Chemistry	550024	Gummy Candy Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	6	5	7	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
FEAK	Chemistry	550024	Gummy Candy Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	6	5	7	
FEAK	Chemistry	550024	Gummy Candy Lab	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	6	5	7	
FEAK	Chemistry	550024	Gummy Candy Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	5	7	
FEAK	Chemistry	550024	Gummy Candy Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	5	7	
	Robotics & Programming	550025	Flying Ornithopters	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	5	7	
	Robotics & Programming	550025	Flying Ornithopters	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	5	7	
FEAK	Chemistry	550026	Gross Gummy Candy Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	6	5	7	
FEAK	Chemistry	550026	Gross Gummy Candy Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	6	5	7	
FEAK	Chemistry	550026	Gross Gummy Candy Lab	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	6	5	7	
FEAK	Chemistry	550026	Gross Gummy Candy Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	5	7	
FEAK	Chemistry	550026	Gross Gummy Candy Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	5	7	
FEAK	Chemistry	550028	Rainbow Gummy Candy Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	6	5	7	
FEAK	Chemistry	550028	Rainbow Gummy Candy Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	6	5	7	
FEAK	Chemistry	550028	Rainbow Gummy Candy Lab	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	6	5	7	
FEAK	Chemistry	550028	Rainbow Gummy Candy Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	5	7	
FEAK	Chemistry	550028	Rainbow Gummy Candy Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	5	7	
FEAK	Chemistry	550029	Super Duper Bubble Gum Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	6	4	7	
FEAK	Chemistry	550029	Super Duper Bubble Gum Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	6	4	7	
FEAK	Chemistry	550029	Super Duper Bubble Gum Lab	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	6	4	7	
FEAK	Chemistry	550029	Super Duper Bubble Gum Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	4	7	
FEAK	Chemistry	550029	Super Duper Bubble Gum Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	4	7	
FEAK	Alternative Energy	550030	Solar-Powered Rovers	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	8	5	6	
FEAK	Biology	550032	Gross Anatomy	2-PS1-1	Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	8	5	5	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
FEAK	Biology	550032	Gross Anatomy	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances				
FEAK	Chemistry	550033	Glow-in-the-Dark Science Lab	2-PS1-1	Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	8	5	5	
FEAK	Chemistry	550033	Glow-in-the-Dark Science Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	5	5	
Signature	Physics	550101	Gumball Machine Maker	2-PS1-3	Matters and its interactions	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	3-PS2-1	Motion and Stability: Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	3-PS2-2	Motion and Stability: Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	4-PS3-3	Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	K-2-ETS1-1	Enginering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	K-P2S2-2	Motion and Stability: Forces and Interactions	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.	6	12	29	
Signature	Physics	550101	Gumball Machine Maker	K-PS2-1	Forces and Interactions: Pushes and Pulls	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.	6	12	29	
	Physics	551005	Amazing Gyroscope	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object				
	Physics	551005	Amazing Gyroscope	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion				
SPARK	Geology & Earth Science	551007	Crystal Geode	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	3	46	Crystal Geode - 3L Version Spark 2020 (MBE INTL)
SPARK	Geology & Earth Science	551007	Crystal Geode	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	3	46	Crystal Geode - 3L Version Spark 2020 (MBE INTL)
SPARK	Geology & Earth Science	551007	Crystal Geode	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	3	46	Crystal Geode - 3L Version Spark 2020 (MBE INTL)
SPARK	Chemistry	551102	Molecule Beads	2-PS1-1	Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	8	2	46	Molecule Beads - 3L Version Spark 2020 (MBE INTL)
SPARK	Chemistry	551102	Molecule Beads	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	46	
SPARK	Astronomy & Space	551103	Bouncing Planets	2-PS1-1	Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	8	2	46	Bouncing Planets - 3L Version Spark 2020 (MBE INTL)
SPARK	Astronomy & Space	551103	Bouncing Planets	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	46	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
SPARK	Geology & Earth Science	551104	Amazing Minerals	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	1	46	Amazing Minerals - 3L Version Spark 2020 (MBE INTL)
SPARK	Crystals & Materials	551105	Crystal Growing	2-PS1-1	Matter and Its Interactions	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties	8	3	46	Crystal Growing - 3L Version Spark 2020 (MBE INTL)
SPARK	Crystals & Materials	551105	Crystal Growing	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	3	46	Crystal Growing - 3L Version Spark 2020 (MBE INTL)
SPARK	Crystals & Materials	551105	Crystal Growing	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	3	46	Crystal Growing - 3L Version Spark 2020 (MBE INTL)
Signature	Alternative Energy	555001	Air+Water Power	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	15	31	
Signature	Alternative Energy	555001	Air+Water Power	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	15	31	
Signature	Alternative Energy	555001	Air+Water Power	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	15	31	
Signature	Alternative Energy	555001	Air+Water Power	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	15	31	
Signature	Alternative Energy	555001	Air+Water Power	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	15	31	
Signature	Alternative Energy	555001	Air+Water Power	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	15	31	
Signature	Engineering	555004	Remote-Control Machines	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	10	40	
Signature	Engineering	555004	Remote-Control Machines	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	10	40	
Signature	Engineering	555004	Remote-Control Machines	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	10	40	
Signature	Engineering	555004	Remote-Control Machines	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	10	40	
Signature	Engineering	555004	Remote-Control Machines	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	10	40	
	Alternative Energy	555006	Solar Power	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
	Alternative Energy	555006	Solar Power	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object				
	Alternative Energy	555006	Solar Power	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents				
	Alternative Energy	555006	Solar Power	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.				
	Alternative Energy	555006	Solar Power	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
	Alternative Energy	555006	Solar Power	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
	Alternative Energy	555006	Solar Power	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
Engineering Makerspace	Engineering	555060	Geared-Up Gadgets	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	5	20	
Engineering Makerspace	Engineering	555060	Geared-Up Gadgets	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	5	20	
Engineering Makerspace	Engineering	555060	Geared-Up Gadgets	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	5	20	
Engineering Makerspace	Engineering	555060	Geared-Up Gadgets	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	6	5	20	
Engineering Makerspace	Engineering	555060	Geared-Up Gadgets	K-PS2-2	Forces and Interactions: Pushes and Pulls	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.*	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	4-PS3-3	Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	6	5	20	
Engineering Makerspace	Engineering	555061	Kinetic Machines	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	6	5	20	
Engineering Makerspace	Engineering	555062	Alien Robots	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	10	21	
Engineering Makerspace	Engineering	555062	Alien Robots	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	6	10	21	
Engineering Makerspace	Engineering	555062	Alien Robots	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	10	21	
Engineering Makerspace	Engineering	555062	Alien Robots	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	6	10	21	
Engineering Makerspace	Engineering	555062	Alien Robots	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	10	21	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Engineering Makerspace	Engineering	555063	Off-Road Rovers	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	4-PS3-3	Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	6	10	21	
Engineering Makerspace	Engineering	555063	Off-Road Rovers	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	6	10	21	
Engineering Makerspace	Engineering	555064	Terrain Walkers	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	6	8	20	
Engineering Makerspace	Engineering	555064	Terrain Walkers	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	6	8	20	
Kids First	Multi-Subject	567001	Stepping into Science	1-ESS1-1	Space Systems: Patterns and Cycles	Use observations of the sun, moon, and stars to describe patterns that can be predicted.	5	29	16	
Kids First	Multi-Subject	567001	Stepping into Science	1-ESS1-2	Space Systems: Patterns and Cycles	Make observations at different times of year to relate the amount of daylight to the time of year	5	29	16	
Kids First	Multi-Subject	567001	Stepping into Science	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	5	29	16	
Kids First	Multi-Subject	567001	Stepping into Science	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	5	29	16	
Kids First	Multi-Subject	567001	Stepping into Science	K-ESS2-1	Weather and Climate	Use and share observations of local weather conditions to describe patterns over time	5	29	16	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Kids First	Multi-Subject	567001	Stepping into Science	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live	5	29	16	
Kids First	Multi-Subject	567001	Stepping into Science	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.	5	29	16	
Kids First	Physics	567002	Intro to Engineering	1-PS4-1	Waves: Light and Sound	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate	5	21	16	
Kids First	Physics	567002	Intro to Engineering	1-PS4-4	Waves: Light and Sound	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.*	5	21	16	
Kids First	Physics	567002	Intro to Engineering	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	5	21	16	
Kids First	Physics	567002	Intro to Engineering	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	5	21	16	
Kids First	Physics	567002	Intro to Engineering	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	5	21	16	
Kids First	Biology	567003	The Human Body	1-LS1-1	Structure, Function, and Information Processing	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*	5	26	16	
Kids First	Biology	567003	The Human Body	1-LS3-1	Structure, Function, and Information Processing	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents	5	26	16	
Kids First	Biology	567003	The Human Body	1-PS4-1	Waves: Light and Sound	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate	5	26	16	
Kids First	Biology	567003	The Human Body	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.	5	26	16	
Kids First	Biology	567004	Botany - Experimental Greenhouse	2-LS2-1	Interdependent Relationships in Ecosystems	Plan and conduct an investigation to determine if plants need sunlight and water to grow.	5	30	16	
Kids First	Biology	567004	Botany - Experimental Greenhouse	2-LS2-2	Interdependent Relationships in Ecosystems	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants	5	30	16	
Kids First	Biology	567004	Botany - Experimental Greenhouse	K-ESS2-2	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	5	30	16	
Kids First	Biology	567004	Botany - Experimental Greenhouse	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live	5	30	16	
Kids First	Biology	567004	Botany - Experimental Greenhouse	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.	5	30	16	
Kids First	Multi-Subject	567005	Science Laboratory	1-LS3-1	Structure, Function, and Information Processing	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents	3	10	12	
Kids First	Multi-Subject	567005	Science Laboratory	2-LS4-1	Interdependent Relationships in Ecosystems	Make observations of plants and animals to compare the diversity of life in different habitats	3	10	12	
Kids First	Multi-Subject	567005	Science Laboratory	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	3	10	12	
Kids First	Multi-Subject	567005	Science Laboratory	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	3	10	12	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Kids First	Multi-Subject	567005	Science Laboratory	K-ESS2-2	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	3	10	12	
Kids First	Multi-Subject	567005	Science Laboratory	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live	3	10	12	
Kids First	Multi-Subject	567005	Science Laboratory	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.	3	10	12	
Kids First	Engineering	567006	Automobile Engineer	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	3	10	13	
Kids First	Engineering	567007	Aircraft Engineer	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	3	10	13	
Kids First	Engineering	567007	Aircraft Engineer	K-PS2-2	Forces and Interactions: Pushes and Pulls	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.*	3	10	13	
Kids First	Engineering	567008	Amusement Park Engineer	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	3	20	13	
Kids First	Engineering	567009	Robot Engineer	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	3	10	12	
Kids First	Engineering	567009	Robot Engineer	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	3	10	13	
Kids First	Engineering	567011	Boat Engineer	K-PS2-1	Forces and Interactions: Pushes and Pulls	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				
Kids First	Robotics & Programming	567012	Coding & Robotics	K-2-ETS1-2	Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	4	30	11	
Kids First	Robotics & Programming	567012	Coding & Robotics	K-PS2-2	Motion and Stability: Forces and Interactions	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.	4	30	11	
Kids First	Robotics & Programming	567013	Coding & Robotics Challenge Pack 1	K-2-ETS1-2	Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	4	8	11	
Kids First	Robotics & Programming	567013	Coding & Robotics Challenge Pack 2	K-PS2-2	Motion and Stability: Forces and Interactions	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.	4	8	11	
Kids First	Robotics & Programming	567014	Robot Safari	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	5	8	15	
Kids First	Robotics & Programming	567014	Robot Safari	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	5	8	15	
Kids First	Robotics & Programming	567014	Robot Safari	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	5	8	15	
Kids First	Robotics & Programming	567015	Robot Pet Shop	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	5	8	14	
Kids First	Robotics & Programming	567015	Robot Pet Shop	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	5	8	14	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Kids First	Robotics & Programming	567015	Robot Pet Shop	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	5	8	14	
Kids First	Robotics & Programming	567016	Robot Factory	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	5	8	15	
Kids First	Robotics & Programming	567016	Robot Factory	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	5	8	15	
Kids First	Robotics & Programming	567016	Robot Factory	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	5	8	15	
OOZE Labs	Chemistry	575001	Ooze Labs 1: Magnetic Slime	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	6	1	10	
OOZE Labs	Chemistry	575002	Ooze Labs 2: Hot Ice Crystals	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575003	Ooze Labs 3: Magic Sand	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575004	Ooze Labs 4:Thermocolor Slime	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	6	1	10	
OOZE Labs	Chemistry	575004	Ooze Labs 4:Thermocolor Slime	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	1	10	
OOZE Labs	Chemistry	575004	Ooze Labs 4:Thermocolor Slime	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575005	Ooze Labs 5: Glow-in-the-Dark Slime	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575006	Ooze Labs 6: Sunshine Slime	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575007	Ooze Labs 7: Glitter Slime	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575008	Ooze Labs Tube 8: Super-Expanding Instant Snow	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	1	10	
OOZE Labs	Chemistry	575009	Ooze Labs Tube 9: Glowing Galaxy Slime	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
OOZE Labs	Chemistry	575010	Ooze Labs 10: Quicksand Oozebleck	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	1	10	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	5-PS1-1	Structure and Properties of Matter	Develop a model to describe that matter is made of particles too small to be seen	10	216	32	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	HS-PS1-1	Matter and Its Interactions	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	10	216	32	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	MS-PS1-1	Matter and Its Interactions	Develop models to describe the atomic composition of simple molecules and extended structures	10	216	32	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	MS-PS1-3	Matter and Its Interactions	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	10	216	32	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	MS-PS1-4	Matter and Its Interactions	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	10	216	32	
Signature	Chemistry	585001	Happy Atoms: Complete Set (50 Atoms)	MS-PS1-5	Matter and Its Interactions	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	10	216	32	
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	5-PS1-1	Structure and Properties of Matter	Develop a model to describe that matter is made of particles too small to be seen	10	73	32	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	HS-PS1-1	Matter and Its Interactions	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	10	73	32	
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	MS-PS1-1	Matter and Its Interactions	Develop models to describe the atomic composition of simple molecules and extended structures	10	73	32	
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	MS-PS1-3	Matter and Its Interactions	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	10	73	32	
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	MS-PS1-4	Matter and Its Interactions	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	10	73	32	
Signature	Chemistry	585002	Happy Atoms: Introductory Set (17 Atoms)	MS-PS1-5	Matter and Its Interactions	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	10	73	32	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	5-PS1-1	Structure and Properties of Matter	Develop a model to describe that matter is made of particles too small to be seen	10	216	67	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	HS-PS1-1	Matter and Its Interactions	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms	10	216	67	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	MS-PS1-1	Matter and Its Interactions	Develop models to describe the atomic composition of simple molecules and extended structures	10	216	67	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	MS-PS1-3	Matter and Its Interactions	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	10	216	67	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	MS-PS1-4	Matter and Its Interactions	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	10	216	67	
Signature	Chemistry	585003	Happy Atoms: Educator's Bundle (250 Atoms)	MS-PS1-5	Matter and Its Interactions	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	10	216	67	
I DIG IT	Paleontology	601509	I Dig It! Dinos Dino Egg	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	5	1	19	
I DIG IT	Geology & Earth Science	601607	I Dig It! Rocks & Fossils (24-Unit Display)	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	5	1	19	
I DIG IT	Geology & Earth Science	601806	Minerals Rock! - Real Specimen (24 Unit Display)	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	7	1	19	
I DIG IT	Geology & Earth Science	601806	Minerals Rock! (24-Unit Display)	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	7	1	19	
Signature	Electrical Science	615819	Electronics: Learning Circuits	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	8	70	42	
Signature	Electrical Science	615819	Electronics: Learning Circuits	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	8	70	42	
Signature	Electrical Science	615819	Electronics: Learning Circuits	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	8	70	42	
Signature	Electrical Science	615819	Electronics: Learning Circuits	MS-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	8	70	42	
Signature	Electrical Science	615918	Electronics: Advanced Circuits	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	10	146	42	
Signature	Electrical Science	615918	Electronics: Advanced Circuits	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	10	146	42	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Electrical Science	615918	Electronics: Advanced Circuits	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	10	146	42	
Signature	Electrical Science	615918	Electronics: Advanced Circuits	MS-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	10	146	42	
Signature	Robotics & Programming	620141	CodeGamer	MS-PS4-2	Waves and Their Applications in Technologies for Information Transfer	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.	10	19	38	
Signature	Robotics & Programming	620141	CodeGamer	MS-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	10	19	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	7	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	7	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	7	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	7	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	7	38	
Signature	Robotics & Programming	620301	Gyrobot (Original)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	7	38	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	8	34	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	8	34	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	6	8	34	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	8	34	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	6	8	34	
Signature	Robotics & Programming	620302	The Amazing Tightrope-Walking Gyrobot	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	8	34	
	Alternative Energy	620318	Fuel Cell 10: Car & Experiment Kit	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.				
	Alternative Energy	620318	Fuel Cell 10: Car & Experiment Kit	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment				
	Alternative Energy	620318	Fuel Cell 10: Car & Experiment Kit	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.				
Signature	Robotics & Programming	620365	Geckobot	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	7	38	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Robotics & Programming	620365	Geckobot	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	7	38	
Signature	Robotics & Programming	620365	Geckobot	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	7	38	
Signature	Engineering	620370	Remote-Control Machines DLX	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
Signature	Engineering	620370	Remote-Control Machines DLX	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object				
Signature	Engineering	620370	Remote-Control Machines DLX	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion				
Signature	Engineering	620370	Remote-Control Machines DLX	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.				
Signature	Engineering	620370	Remote-Control Machines DLX	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
Signature	Engineering	620373	Remote-Control Machines: Animals	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	8	40	
Signature	Engineering	620373	Remote-Control Machines: Animals	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	8	40	
Signature	Engineering	620373	Remote-Control Machines: Animals	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	8	40	
Signature	Engineering	620373	Remote-Control Machines: Animals	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	8	40	
Signature	Engineering	620373	Remote-Control Machines: Animals	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	8	40	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	10	41	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	10	41	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	10	41	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	10	41	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	10	41	
Signature	Engineering	620374	Remote-Control Machines: Space Explorers	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	10	41	
Signature	Robotics & Programming	620375	Robotics: Smart Machines	4-LS1-2	Structure, Function, and Information Processing	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	8	8	36	
Signature	Robotics & Programming	620375	Robotics: Smart Machines	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	8	36	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	10	41	
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	10	41	
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	10	41	
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	10	41	
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	10	41	
Signature	Engineering	620376	Remote-Control Machines: Custom Cars	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	10	41	
Signature	Robotics & Programming	620377	Robotics Workshop	4-LS1-2	Structure, Function, and Information Processing	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	10	10	38	
Signature	Robotics & Programming	620377	Robotics Workshop	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	10	10	38	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	8	40	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	8	40	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	8	40	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	6	8	40	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	8	40	
Signature	Engineering	620378	Remote-Control Machines: Construction Vehicles	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	8	40	
Signature	Robotics & Programming	620380	Robotics: Smart Machines - Rovers & Vehicles	4-LS1-2	Structure, Function, and Information Processing	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	8	8	36	
Signature	Robotics & Programming	620380	Robotics: Smart Machines - Rovers & Vehicles	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	8	36	
Signature	Engineering	620381	Remote-Control Machines: Farm	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	8	41	
Signature	Engineering	620381	Remote-Control Machines: Farm	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	6	8	41	
Signature	Engineering	620381	Remote-Control Machines: Farm	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	6	8	41	
Signature	Engineering	620381	Remote-Control Machines: Farm	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	6	8	41	
Signature	Engineering	620381	Remote-Control Machines: Farm	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	6	8	41	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Engineering	620381	Remote-Control Machines: Farm	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	6	8	41	
Signature	Robotics & Programming	620382	Robotics Smart Machines: Tracks & Treads	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	8	8	36	
Signature	Robotics & Programming	620382	Robotics Smart Machines: Tracks & Treads	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	8	8	36	
Signature	Robotics & Programming	620382	Robotics Smart Machines: Tracks & Treads	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	8	36	
Signature	Robotics & Programming	620383	Robotics: Hoverbots	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	8	8	37	
Signature	Robotics & Programming	620383	Robotics: Hoverbots	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	8	8	37	
Signature	Robotics & Programming	620383	Robotics: Hoverbots	3-PS2-1	Motion and Stability: Forces and Interaction	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	8	8	37	
Signature	Robotics & Programming	620383	Robotics: Hoverbots	3-PS2-2	Motion and Stability: Forces and Interaction	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	8	8	37	
Signature	Robotics & Programming	620383	Robotics: Hoverbots	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	8	37	
Signature	Robotics & Programming	620390	Air-Walker	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	5	35	
Signature	Robotics & Programming	620390	Air-Walker	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	5	35	
Signature	Robotics & Programming	620390	Air-Walker	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	5	35	
Signature	Electrical Science	620417	Electricity & Magnetism	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	8	62	42	
Signature	Electrical Science	620417	Electricity & Magnetism	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	8	62	42	
Signature	Electrical Science	620417	Electricity & Magnetism	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	8	62	42	
Signature	Electrical Science	620417	Electricity & Magnetism	MS-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	8	62	42	
Signature	Physics	620486	Sensors Alive: Bring Physics to Life	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	12	29	
Signature	Physics	620486	Sensors Alive: Bring Physics to Life	MS-PS3-2	Energy	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system	8	12	29	
Signature	Physics	620486	Sensors Alive: Bring Physics to Life	MS-PS3-3	Energy	Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	8	12	29	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Physics	620486	Sensors Alive: Bring Physics to Life	MS-PS3-4	Energy	Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	8	12	29	
Signature	Physics	620486	Sensors Alive: Bring Physics to Life	MS-PS3-5	Energy	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	8	12	29	
Signature	Robotics & Programming	620500	My Robotic Pet - Tumbling Hedgehog	3-PS2-1	Motion and Stability: Forces and Interaction	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	7	5	35	
Signature	Robotics & Programming	620500	My Robotic Pet - Tumbling Hedgehog	3-PS2-2	Motion and Stability: Forces and Interaction	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.	7	5	35	
Signature	Robotics & Programming	620500	My Robotic Pet - Tumbling Hedgehog	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	7	5	35	
Signature	Robotics & Programming	620500	My Robotic Pet - Tumbling Hedgehog	4-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Generate and compare multiple solutions that use patterns to transfer information.	7	5	35	
Signature	Robotics & Programming	620501	Mega Cyborg Hand	3-5-ETS1-1	Engineering Design	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	8	1	34	
Signature	Robotics & Programming	620501	Mega Cyborg Hand	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	8	1	34	
Signature	Robotics & Programming	620501	Mega Cyborg Hand	K-2-ETS1-1	Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	8	1	34	
Signature	Robotics & Programming	620501	Mega Cyborg Hand	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	1	34	
Signature	Alternative Energy	620615	Batteries & Energy	3-5-ETS1-1	Engineering Design	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.	10	22	31	
Signature	Alternative Energy	620615	Batteries & Energy	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem	10	22	31	
Signature	Alternative Energy	620615	Batteries & Energy	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	10	22	31	
Signature	Alternative Energy	620615	Batteries & Energy	5-PS1-3	Matter and it's interactions	Make observations and measurements to identify materials based on their properties	10	22	31	
Signature	Electrical Science	620813	Electricity: Master Lab	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	10	119	42	
Signature	Electrical Science	620813	Electricity: Master Lab	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	10	119	42	
Signature	Electrical Science	620813	Electricity: Master Lab	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	10	119	42	
Signature	Electrical Science	620813	Electricity: Master Lab	MS-PS4-3	Waves and Their Applications in Technologies for Information Transfer	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	10	119	42	
	Alternative Energy	622411	Solar Boat	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*				

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
	Alternative Energy	622411	Solar Boat	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
	Alternative Energy	622411	Solar Boat	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object				
	Alternative Energy	622411	Solar Boat	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents				
	Alternative Energy	622411	Solar Boat	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.				
	Alternative Energy	622411	Solar Boat	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				
	Alternative Energy	622411	Solar Boat	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
	Alternative Energy	622411	Solar Boat	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
	Alternative Energy	622817	Solar Car	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
	Alternative Energy	622817	Solar Car	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object				
	Alternative Energy	622817	Solar Car	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents				
	Alternative Energy	622817	Solar Car	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.				
	Alternative Energy	622817	Solar Car	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				
	Alternative Energy	622817	Solar Car	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
	Alternative Energy	622817	Solar Car	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
Signature	Alternative Energy	624811	Hydropower	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	12	31	
Signature	Alternative Energy	624811	Hydropower	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	12	31	
Signature	Alternative Energy	624811	Hydropower	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	12	31	
Signature	Alternative Energy	624811	Hydropower	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	8	12	31	
Signature	Alternative Energy	624811	Hydropower	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	12	31	
Signature	Alternative Energy	624811	Hydropower	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	12	31	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Physics	625314	Physics Pro (V2.0)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
Signature	Physics	625314	Physics Pro (V2.0)	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object				
Signature	Physics	625314	Physics Pro (V2.0)	5-PS1-1	Matters and its interactions	Develop a model to describe that matter is made of particles too small to be seen.	10	31	28	
Signature	Physics	625314	Physics Pro (V2.0)	MS-PS2-2	Motion and Stability: Forces and Interactions	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.				
Signature	Physics	625314	Physics Pro (V2.0)	MS-PS3-5	Energy	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.				
Signature	Physics	625412	Physics Workshop	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	37	28	
Signature	Physics	625412	Physics Workshop	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	37	28	
Signature	Physics	625412	Physics Workshop	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	37	28	
Signature	Physics	625412	Physics Workshop	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	37	28	
Signature	Physics	625412	Physics Workshop	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	37	28	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	3-5-ETS1-1	Engineering Design	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	20	39	
Signature	Engineering	625414	Structural Engineering: Bridges & Skyscrapers	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	20	39	
Signature	Engineering	625415	Mechanical Engineering: Robotic Arms	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	7	6	39	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Engineering	625415	Mechanical Engineering: Robotic Arms	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	7	6	39	
Signature	Engineering	625415	Mechanical Engineering: Robotic Arms	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	7	6	39	
Signature	Engineering	625415	Mechanical Engineering: Robotic Arms	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	7	6	39	
Signature	Engineering	625415	Mechanical Engineering: Robotic Arms	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	7	6	39	
Signature	Engineering	625416	Architectural Engineering	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	8	26	39	
Signature	Engineering	625416	Architectural Engineering	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	8	26	39	
Signature	Engineering	625416	Architectural Engineering	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	26	39	
Signature	Engineering	625416	Architectural Engineering	3-5-ETS1-1	Engineering Design	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost	8	26	39	
Signature	Engineering	625416	Architectural Engineering	3-5-ETS1-2	Engineering Design	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.	8	26	39	
Signature	Engineering	625416	Architectural Engineering	3-5-ETS1-3	Engineering Design	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.	8	26	39	
Signature	Engineering	625416	Architectural Engineering	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	26	39	
Signature	Engineering	625416	Architectural Engineering	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	26	39	
Signature	Engineering	625416	Architectural Engineering	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	26	39	
	Earth Science	625825	Power House (V 2.0)	MS-ESS2-5	Earth's Systems	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.				
	Earth Science	625825	Power House (V 2.0)	MS-ESS2-6	Earth's Systems	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates				
	Earth Science	625825	Power House (V 2.0)	MS-ESS3-3	Earth and Human Activity	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment				
	Earth Science	625825	Power House (V 2.0)	MS-ESS3-4	Earth and Human Activity	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.				
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	9	22	
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	8	9	22	
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	9	22	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	9	22	
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	9	22	
Peppermint	Multi-Subject	626020	Pepper Mint: The Great Treehouse Engineering Adventure	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	9	22	
Peppermint	Alternative Energy	626036	Pepper Mint: The Daring Escape from Hidden Island	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	7	23	
Peppermint	Multi-Subject	626037	Pepper Mint: The Fantastic Underwater Science Voyage	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	9	22	
Peppermint	Alternative Energy	626037	Pepper Mint: The Daring Escape from Hidden Island	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	7	23	
Peppermint	Multi-Subject	626037	Pepper Mint: The Fantastic Underwater Science Voyage	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	9	22	
Peppermint	Multi-Subject	626037	Pepper Mint: The Fantastic Underwater Science Voyage	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	9	22	
Peppermint	Multi-Subject	626037	Pepper Mint: The Fantastic Underwater Science Voyage	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	9	22	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	7	23	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	8	7	23	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	8	7	23	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	7	23	
Peppermint	Alternative Energy	626038	Pepper Mint: The Daring Escape from Hidden Island	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	7	23	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	7	23	
Peppermint	Physics	626038	Pepper Mint: The Magnificent Mars Expedition	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	7	23	
Peppermint	Alternative Energy	626039	Pepper Mint: The Daring Escape from Hidden Island	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	7	23	
Signature	Alternative Energy	627929	Wind Power (4.0)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	5	30	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Alternative Energy	627929	Wind Power (4.0)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	5	30	
Signature	Alternative Energy	627929	Wind Power (4.0)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	5	30	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	22	21	
Engineering Makerspace	Engineering	628154	The Big Engineering Makerspace	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	22	21	
Kids First	Physics	628318	Kids First Engineering Design	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	22	17	
Kids First	Physics	628318	Kids First Engineering Design	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	22	17	
Kids First	Physics	628318	Kids First Engineering Design	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	22	17	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Kids First	Physics	628318	Kids First Engineering Design	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and that their uses affect the environment	8	22	17	
Kids First	Physics	628318	Kids First Engineering Design	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	22	17	
Kids First	Physics	628318	Kids First Engineering Design	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	22	17	
Signature	Physics	628918	Physics Solar Workshop (V2.0)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	10	28	
Signature	Physics	628918	Physics Solar Workshop (V2.0)	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	8	10	28	
Signature	Physics	628918	Physics Solar Workshop (V2.0)	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	10	28	
I DIG IT	Paleontology	630065	I Dig It! Dinos - T. Rex Egg Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	1	18	
I DIG IT	Paleontology	630362	I Dig It! Dinos - T. Rex Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	1	18	
I DIG IT	Paleontology	630409	I Dig It! Dinos - Glow-in-the-Dark T. Rex Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	2	18	
I DIG IT	Geology & Earth Science	630447	I Dig It! Rocks - Real Minerals Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	1	18	
I DIG IT	Paleontology	630461	I Dig It! Fossils - Real Fossils Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	1	18	
I DIG IT	Paleontology	630485	I Dig It! Dinos - Glow-in-the-Dark Pterosaur Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	2	18	
I DIG IT	Paleontology	630492	I Dig It! Dinos - T. Rex Tooth Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	1	18	
Signature	Multi-Subject	630912	Master Detective Toolkit	n/a	n/a	n/a	8	26	43	
Education	Physics	631116	Elements of Science	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other				
Education	Physics	631116	Elements of Science	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*				
Education	Physics	631116	Elements of Science	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.				
Signature	Crystals & Materials	631727	Nanotechnology	HS-PS2-6	Motion and Stability: Forces and Interactions	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials	15	41	44	
I DIG IT	Paleontology	632120	Giant Dinosaur Skeleton Kit	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	6	1	18	
	Biology	634026	Pocket Microscope: Nature Discovery Kit	2-LS4-1	Interdependent Relationships in Ecosystems	Make observations of plants and animals to compare the diversity of life in different habitats				
	Biology	634026	Pocket Microscope: Nature Discovery Kit	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.				

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
	Biology	634026	Pocket Microscope: Nature Discovery Kit	4-LS1-1	Structure, Function, and Information Processing	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.				
	Biology	634026	Pocket Microscope: Nature Discovery Kit	MS-LS1-1	From Molecules to Organisms: Structures and Processes	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells				
Kids First	Biology	634032	Big & Fun Microscope	K-ESS2-2	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.	4	24	12	
Kids First	Biology	634032	Big & Fun Microscope	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live	4	24	12	
Kids First	Biology	634032	Big & Fun Microscope	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.	4	24	12	
Kids First	Biology	635213	Kids First Biology Lab	2-LS4-1	Interdependent Relationships in Ecosystems	Make observations of plants and animals to compare the diversity of life in different habitats	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	3-LS1-1	Inheritance and Variation of Traits: Life Cycles and Traits	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	4-LS1-1	Structure, Function, and Information Processing	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	MS-LS1-1	From Molecules to Organisms: Structures and Processes	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	MS-LS1-2	From Molecules to Organisms: Structures and Processes	Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	MS-LS1-3	From Molecules to Organisms: Structures and Processes	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells	8	11	17	
Kids First	Biology	635213	Kids First Biology Lab	MS-LS1-6	From Molecules to Organisms: Structures and Processes	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms	8	11	17	
	Biology	635214	My Discovery Microscope	K-ESS2-2	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.				
	Biology	635214	My Discovery Microscope	K-ESS3-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live				
	Biology	635214	My Discovery Microscope	K-LS1-1	Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment	Use observations to describe patterns of what plants and animals (including humans) need to survive.				
Signature	Biology	635602	TKx400i Dual-LED Microscope	4-LS1-1	Structure, Function, and Information Processing	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	10	70	27	
Signature	Biology	635602	TKx400i Dual-LED Microscope	5-LS1-1	From Molecules to Organisms: Structures and Processes	Support an argument that plants get the materials they need for growth chiefly from air and water.	10	70	27	
Signature	Biology	635602	TKx400i Dual-LED Microscope	MS-LS1-1	From Molecules to Organisms: Structures and Processes	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	10	70	27	
Signature	Biology	635602	TKx400i Dual-LED Microscope	MS-LS1-3	From Molecules to Organisms: Structures and Processes	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells	10	70	27	
Signature	Biology	635602	TKx400i Dual-LED Microscope	MS-LS1-6	From Molecules to Organisms: Structures and Processes	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms	10	70	27	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Biology	636815	TK2 Scope	4-LS1-1	Structure, Function, and Information Processing	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	10	25	27	
Signature	Biology	636815	TK2 Scope	5-LS1-1	From Molecules to Organisms: Structures and Processes	Support an argument that plants get the materials they need for growth chiefly from air and water.	10	25	27	
Signature	Biology	636815	TK2 Scope	MS-LS1-1	From Molecules to Organisms: Structures and Processes	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	10	25	27	
Signature	Biology	636815	TK2 Scope	MS-LS1-3	From Molecules to Organisms: Structures and Processes	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells	10	25	27	
Signature	Biology	636815	TK2 Scope	MS-LS1-6	From Molecules to Organisms: Structures and Processes	Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms	10	25	27	
Signature	Chemistry	640118	CHEM C1000 (V2.0)	5-PS1-2	Structure and Properties of Matter	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved	10	125	33	
Signature	Chemistry	640118	CHEM C1000 (V2.0)	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	10	125	33	
Signature	Chemistry	640118	CHEM C1000 (V2.0)	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	10	125	33	
Signature	Chemistry	640118	CHEM C1000 (V2.0)	MS-PS1-2	Matter and Its Interactions	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	10	125	33	
Signature	Chemistry	640118	CHEM C1000 (V2.0)	MS-PS1-6	Matter and Its Interactions	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes	10	125	33	
Signature	Chemistry	640125	CHEM C2000 (V2.0)	5-PS1-2	Structure and Properties of Matter	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved	11	250	33	
Signature	Chemistry	640125	CHEM C2000 (V2.0)	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	11	250	33	
Signature	Chemistry	640125	CHEM C2000 (V2.0)	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	11	250	33	
Signature	Chemistry	640125	CHEM C2000 (V2.0)	MS-PS1-2	Matter and Its Interactions	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	11	250	33	
Signature	Chemistry	640125	CHEM C2000 (V2.0)	MS-PS1-6	Matter and Its Interactions	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes	11	250	33	
Signature	Chemistry	640132	CHEM C3000 (V2.0)	5-PS1-2	Structure and Properties of Matter	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved	12	333	33	
Signature	Chemistry	640132	CHEM C3000 (V2.0)	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	12	333	33	
Signature	Chemistry	640132	CHEM C3000 (V2.0)	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	12	333	33	
Signature	Chemistry	640132	CHEM C3000 (V2.0)	MS-PS1-2	Matter and Its Interactions	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	12	333	33	
Signature	Chemistry	640132	CHEM C3000 (V2.0)	MS-PS1-6	Matter and Its Interactions	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes	12	333	33	
OOZE Labs	Chemistry	642105	Ooze Labs Chemistry Station	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	20	9	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
OOZE Labs	Chemistry	642105	Ooze Labs Chemistry Station	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	20	9	
OOZE Labs	Chemistry	642106	Ooze Labs: UFO Alien Slime Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	10	8	
OOZE Labs	Chemistry	642107	Ooze Labs: Soap & Bath Bomb Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	6	10	8	
OOZE Labs	Crystals & Materials	642108	Ooze Labs: Colorful Crystal Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	6	11	8	
Kids First	Geology & Earth Science	642113	Kids First (Level 3) Crystals, Rocks & Minerals	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	18	17	
Kids First	Geology & Earth Science	642113	Kids First (Level 3) Crystals, Rocks & Minerals	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	18	17	
Kids First	Chemistry	642921	Kids First Chemistry Set	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	27	17	
Signature	Crystals & Materials	643522	Crystal Growing	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	10	15	44	
Signature	Crystals & Materials	643522	Crystal Growing	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	10	15	44	
Signature	Crystals & Materials	643522	Crystal Growing	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	10	15	44	
Signature	Crystals & Materials	643522	Crystal Growing	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	10	15	44	
Signature	Crystals & Materials	643525	Crystal Growing: Glow-in-the-Dark	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	10	15	44	
Signature	Crystals & Materials	643525	Crystal Growing: Glow-in-the-Dark	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	10	15	44	
Signature	Crystals & Materials	643525	Crystal Growing: Glow-in-the-Dark	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	10	15	44	
Signature	Crystals & Materials	643525	Crystal Growing: Glow-in-the-Dark	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	10	15	44	
Signature	Crystals & Materials	643525	Crystal Growing: Glow-in-the-Dark	MS-PS1-2	Matter and Its Interactions	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	10	15	44	
Signature	Chemistry	644895	Glowing Chemistry	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	10	22	33	
Signature	Biology	646517	Perfume Science	4-LS1-2	Structure, Function, and Information Processing	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	10	20	27	
Signature	Biology	646518	Creative Cosmetics Lab	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable Properties.	8	16	27	
Signature	Biology	646518	Creative Cosmetics Lab	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	8	16	27	
Signature	Biology	646518	Creative Cosmetics Lab	2-PS1-4	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	8	16	27	
Signature	Biology	646518	Creative Cosmetics Lab	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	8	16	27	
Signature	Biology	646518	Creative Cosmetics Lab	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	16	27	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Signature	Biology	646518	Creative Cosmetics Lab	MS-LS1-8	From Molecules to Organisms: Structures and Processes	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories	8	16	27	
Signature	Biology	646518	Creative Cosmetics Lab	MS-PS1-3	Matter and Its Interactions	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society	8	16	27	
Crystal Growing	Crystals & Materials	656034	Grow a Blue Crystal	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	45	
Crystal Growing	Crystals & Materials	656041	Grow a Green Crystal	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	45	
Crystal Growing	Crystals & Materials	656065	Grow a Yellow Crystal	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	45	
Crystal Growing	Crystals & Materials	656072	Grow a Pink Crystal	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	45	
Crystal Growing	Crystals & Materials	656073	Grow a Mystery-Color Crystal	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	8	2	45	
I DIG IT	Archaeology	657536	I Dig It! Pirate Treasure	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.				
I DIG IT	Paleontology	657550	I Dig It! Dinos - 3D T. Rex Excavation Kit	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	7	2	18	
I DIG IT	Paleontology	657550	I Dig It! Dinos - 3D T. Rex Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	2	18	
I DIG IT	Paleontology	657550	I Dig It! Dinos - 3D T. Rex Excavation Kit	3-LS4-1	Biological Evolution: Unity and Diversity	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago	7	2	18	
I DIG IT	Paleontology	665001	Archaeology: Pyramid Dig (V 2.0)	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem				
Exploration	Biology	665002	Genetics & DNA	4-LS1-1	Structure, Function, and Information Processing	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	10	20	26	
Exploration	Biology	665002	Genetics & DNA	MS-LS1-1	From Molecules to Organisms: Structures and Processes	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells	10	20	26	
Exploration	Biology	665002	Genetics & DNA	MS-LS4-4	Biological Evolution: Unity and Diversity	Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment	10	20	26	
Exploration	Biology	665002	Genetics & DNA	MS-LS4-6	Biological Evolution: Unity and Diversity	Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.	10	20	26	
Exploration	Chemistry	665003	Candy Chemistry	2-PS1-2	Structure and Properties of Matter	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*	10	25	25	
Exploration	Chemistry	665003	Candy Chemistry	2-PS1-4.	Structure and Properties of Matter	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot	10	25	25	
Exploration	Chemistry	665003	Candy Chemistry	5-PS1-2	Structure and Properties of Matter	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved	10	25	25	
Exploration	Chemistry	665003	Candy Chemistry	MS-PS1-4	Matter and Its Interactions	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed	10	25	25	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Exploration	Multi-Subject	665005	Optical Science	1-PS4-2	Waves: Light and Sound	Make observations to construct an evidence-based account that objects can be seen only when illuminated.	8	35	26	
Exploration	Multi-Subject	665005	Optical Science	1-PS4-3	Waves: Light and Sound	Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light	8	35	26	
Exploration	Multi-Subject	665005	Optical Science	4-PS4-2	Waves and their Applications in Technologies for Information Transfer	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen	8	35	26	
Exploration	Earth Science	665006	Climate & Weather	3-ESS2-2	Weather and Climate	Obtain and combine information to describe climates in different regions of the world.	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	5-ESS2-1	Earth's Systems	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	MS-ESS2-1	Earth's Systems	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	MS-ESS2-4	Earth's Systems	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	MS-ESS2-5	Earth's Systems	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	MS-ESS2-6	Earth's Systems	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates	10	23	25	
Exploration	Earth Science	665006	Climate & Weather	MS-ESS3-5	Earth and Human Activity	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	10	23	25	
Exploration	Chemistry	665012	CHEM C500	5-PS1-2	Structure and Properties of Matter	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved	10	28	26	
Exploration	Chemistry	665012	CHEM C500	5-PS1-3	Structure and Properties of Matter	Make observations and measurements to identify materials based on their properties	10	28	26	
Exploration	Chemistry	665012	CHEM C500	5-PS1-4	Structure and Properties of Matter	Conduct an investigation to determine whether the mixing of two or more substances results in new substances	10	28	26	
Exploration	Electrical Science	665036	Motors & Generators	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	MS-PS2-3	Motion and Stability: Forces and Interactions	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces	8	25	25	
Exploration	Electrical Science	665036	Motors & Generators	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	8	25	25	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Exploration	Physics	665050	Magnetic Science	3-PS2-3	Forces and Interactions	Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other	8	33	26	
Exploration	Physics	665050	Magnetic Science	3-PS2-4	Forces and Interactions	Define a simple design problem that can be solved by applying scientific ideas about magnets.*	8	33	26	
Exploration	Physics	665050	Magnetic Science	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	8	33	26	
	Physics	665067	Physics Discovery (V 2.0)	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object				
	Physics	665067	Physics Discovery (V 2.0)	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object				
	Physics	665067	Physics Discovery (V 2.0)	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion				
	Physics	665067	Physics Discovery (V 2.0)	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool				
	Physics	665067	Physics Discovery (V 2.0)	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs				
	Physics	665067	Physics Discovery (V 2.0)	MS-PS2-4	Motion and Stability: Forces and Interactions	Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects				
Exploration	Alternative Energy	665068	Solar Mechanics	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	4-PS3-2	Energy	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	K-2-ETS1-1	K-2.Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	20	25	
Exploration	Alternative Energy	665068	Solar Mechanics	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	20	25	
Exploration	Physics	665069	Simple Machines	3-PS2-1	Motion and Stability: Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.	8	26	24	
Exploration	Physics	665069	Simple Machines	5-PS2-1	Motion and Stability: Forces and Interactions	Support an argument that the gravitational force exerted by Earth on objects is directed down.	8	26	24	
Exploration	Physics	665069	Simple Machines	K-2-EESTS1-3	Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	8	26	24	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Exploration	Physics	665069	Simple Machines	K-2-ESTS1-1	Engineering Design	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	8	26	24	
Exploration	Physics	665069	Simple Machines	K-2-ETS1-2	Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	8	26	24	
Exploration	Physics	665069	Simple Machines	K-PS2-1	Forces and Interactions: Pushes and Pulls	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	8	26	24	
Exploration	Physics	665069	Simple Machines	K-PS2-2	Forces and Interactions: Pushes and Pulls	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.*	8	26	24	
Exploration	Physics	665069	Simple Machines	MS-ESTS1-1	Engineering Design	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	8	26	24	
Exploration	Physics	665069	Simple Machines	MS-PS3-2	Energy	Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	8	26	24	
Exploration	Physics	665069	Simple Machines	MS-PS3-5	Energy	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	8	26	24	
FEAK	Geology & Earth Science	665081	Volcanoes & Earthquakes	4-ESS2-2	Earth's Systems	Analyze and interpret data from maps to describe patterns of Earth's features.				
FEAK	Alternative Energy	665082	SolarBots: 8-in-1 Solar Robot Kit	4-ESS3-1	Earth and Human Activity	Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	8	8	5	
	Geology & Earth Science	665105	Mineral Discovery	2-PS1-1	Structure and Properties of Matter	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.				
Exploration	Physics	665106	Gyroscopes & Flywheels	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	20	25	
Exploration	Physics	665106	Gyroscopes & Flywheels	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	20	25	
Exploration	Physics	665106	Gyroscopes & Flywheels	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	20	25	
Exploration	Physics	665106	Gyroscopes & Flywheels	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	20	25	
Exploration	Physics	665106	Gyroscopes & Flywheels	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	20	25	
Exploration	Physics	665107	Catapults & Crossbows	2-PS1-3	Structure and Properties of Matter	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	3-PS2-1	Forces and Interactions	Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	3-PS2-2	Forces and Interactions	Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	4-PS3-1	Energy	Use evidence to construct an explanation relating the speed of an object to the energy of that object	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	4-PS3-3	Energy	Ask questions and predict outcomes about the changes in energy that occur when objects collide	8	10	25	

THAMES & KOSMOS

Series	Subject / Category	Item Number	Name	NGSS Performance Expectation Code	NGSS Performance Expectation Name	Explanation	Minimum Age Recommd.	Number of Experiments	Catalog Pg Number	Notes
Exploration	Physics	665107	Catapults & Crossbows	4-PS3-4	Energy	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	K-2-ETS1-2	K-2.Engineering Design	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem	8	10	25	
Exploration	Physics	665107	Catapults & Crossbows	K-2-ETS1-3	K-2.Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs	8	10	25	
GLOBES	Geography	673017	Day & Night Globe	4-ESS2-2	Earth's Systems	Analyze and interpret data from maps to describe patterns of Earth's features.	7	5	47	
GLOBES	Geography	673018	Student Desktop Globe	4-ESS2-2	Earth's Systems	Analyze and interpret data from maps to describe patterns of Earth's features.	5	1	47	
GLOBES	Geography	673024	Kids First Light-Up Globe	4-ESS2-2	Earth's Systems	Analyze and interpret data from maps to describe patterns of Earth's features.	4	5	47	
Exploration	Astronomy & Space	676919	My Discovery Telescope	1-ESS1-1	Earths place in the Universe	Use observations of the sun, moon, and stars to describe patterns that can be predicted.	6	1	24	
Exploration	Astronomy & Space	676919	My Discovery Telescope	1-ESS1-2	Earths place in the Universe	Make observations at different times of year to relate the amount of daylight to the time of year.	6	1	24	
Signature	Astronomy & Space	677015	TK1 Telescope & Astronomy Kit	5-ESS1-1	Earth's place in the Universe	Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth.	12	20	43	
Signature	Astronomy & Space	677015	TK1 Telescope & Astronomy Kit	MS-ESS1-3	Earth's place in the Universe	Analyze and interpret data to determine scale properties of objects in the solar system.	12	20	43	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-ESTS1-1	Engineering Design	Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-ESTS1-2	Engineering Design	Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-ESTS1-3	Engineering Design	Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-ESTS1-4	Engineering Design	Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	8	10	67	School Market
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-PS2-1	Motion and Stability: Forces and Interactions	Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-PS2-2	Motion and Stability: Forces and Interactions	Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-PS2-3	Motion and Stability: Forces and Interactions	Ask questions about data to determine the factors that affect the strength of electric and magnetic forces	8	10	67	
Education	Physics	700100	Forces & Interactions: Class. Kit	MS-PS2-5	Motion and Stability: Forces and Interactions	Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.	8	10	67	