PITSCO
EDUCATION

LEARN TOGETHER
HANDS-ON STEM
PROGRAMS FOR CAMPS AND COMMUNITIES

Using Pitsco products in your summer **STEM camps** or after-school programs offers children a hands-on experience like no other!

And we've made it easy for you to plan your program.

With a teacher's guide and Pitsco products, follow this sample outline to be on your way to STEM fun!

Visit **Pitsco.com/Camps** to explore a list of recommended products and corresponding teacher guides.

SAMPLE PROGRAM: THE POWER OF AIR

DAY 1	DAY 2	DAY 3	DAY 4
BALLOON CARS	**SAIL CARS**	**KAZOON KITES**	**STRAW ROCKETS**
Balloon Car Explore-A-Pak (15790)	Sail Car Maker Project (42962)	KaZoon Kites – Getting Started Package (23613)	Straw Rockets Maker Project (42963)
Balloon Car Elementary STEM Activity Guide (41526)	Sail Car Elementary STEM Activity Guide (41527)	KaZoon Kites Elementary STEM Activity Guide (42608)	Straw Rocket Elementary STEM Activity Guide (41525)

Cost: $912.80

Students served: 30 (60 if working in pairs)

Cost per student: $15-$30

30+ hours of instruction
Unlimited fun!

PROGRAM TOPICS

Rocketry
Solar Cars
Structures
Racing
Air
Siege Machines
Maker/Engineering

ROCKETRY

STRAW ROCKETS

HOURS	GRADES 3-5
	Straw Rocket Elementary STEM Activity Guide
1	Straw Rocket Construction
1	Straw Rocket Testing
1	Lesson 1: Straw Rockets and Newton's Laws
1	Lesson 2: How Gravity and Mass Affect Performance
3	Challenge: The Great Rocket Fin Caper

HOURS	GRADES 6-8
	Straw Rockets Teacher's Guide
1	Varying Rocket Length
1	Varying Nose Cone Mass
2	Varying Launch Angles
2	Calculating Average Velocity
2	Engineering Challenge I
2	Varying Rocket Length II
2	Mass vs Range
2	Varying Launch Angles II
4	Engineering Challenge II

Suggested course of activities

SOLID-FUEL ROCKETS

HOURS	GRADES 6-8
	Solid-Fuel Rockets Teacher's Guide
2	Solid-Fuel Rocket Construction
1	Investigating Average Velocity
2	Investigating Energy I
1	Calculating Apogee – Similar Triangles
2	Designing Fins
2	Engineering Challenge I
1	Investigating Maximum Velocity
2	Investigating Energy II
1	Calculating Apogee – Trigonometry
2	Determining Optimum Ballast
2	Engineering Challenge II

Suggested course of activities

WATER ROCKETS

HOURS	GRADES 6-8
	Water Rockets Teacher's Guide
2	Water Rocket Construction
1	Fuel Pressure Testing I
1	Fuel Pressure Analysis I
1	Fuel Volume Testing I
1	Fuel Volume Analysis I
1	Computing Apogee I
3	Fin Design I
1	Fuel Pressure Testing II
1	Fuel Pressure Analysis II
1	Fuel Volume Testing II
1	Fuel Volume Analysis II
1	Computing Apogee II
3	Fin Design II

Suggested course of activities

STRAW, SOLID-FUEL, AND WATER ROCKETS

HOURS	GRADES 6-8
	User Guide (construction and testing only)
2	Water Rocket Construction
2	Water Rocket Testing
2	Straw Rocket Construction
2	Straw Rocket Testing
2	Solid-Fuel Rocket Construction
2	Solid-Fuel Rocket Testing

Suggested course of activities

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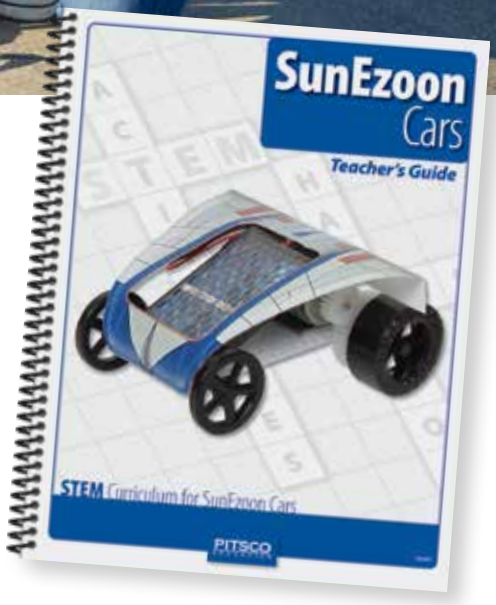
SOLAR CARS

SUNEZOON SOLAR CAR

HOURS	GRADES 6-8
	SunEzoon Cars Teacher's Guide
1	Solar Car Construction
1	Investigating Gears
1	Measuring Speed
2	Graphing Distance vs Time
2	Changing Gears
2	Engineering Challenge I
1	Investigating Gears II
1	Calculating Acceleration
2	Graphing Speed vs Time
2	Fast Gears
2	Engineering Challenge II

Suggested course of activities



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STRUCTURES

LARGE STRUCTURES

HOURS	GRADES K-2
	Large Structures Elementary STEM Activity Guides (2-Pack)
1	Large Structures Building Basics
1	Vol. 1, Lesson 1: Relating Plane Shapes to Solid Shapes
1	Vol. 1, Lesson 2: Creating Shapes Using Defining Attributes
1	Vol. 1, Challenge: Making Connections
2	Vol. 2, Lesson 1: Engineering the ABCs
2	Vol. 2, Lesson 2: Building Geometric Solid Sense
1	Vol. 2, Challenge: Building Geometric Bridge Challenge

Suggested course of activities

STRAW STRUCTURES

HOURS	GRADES 3-5
	Straw Structures Elementary STEM Activity Guide
1	Straw Structure Construction
1	Lesson 1: Simple Shapes, Strong Structures
1	Lesson 2: Skyscrapers and Forces
2	Challenge: Skyscraper Challenge

Suggested course of activities

EXPLORING STRUCTURES IN LITERATURE

HOURS	GRADES K-2
	Linking Literature to Structures – Teacher Book
2	**Introduction to Structures in Literature**
2	**Sailing for Souvenirs** *We're Sailing Down the Nile* by Laurie Krebs and Anne Wilson
2	**Direct That Golf Ball** *Curious George Plays Mini Golf* adapted by Marcy Goldberg Sacks
2	**Mudge's Terrific Tree House** *Henry and Mudge and the Tall Tree House* by Cynthia Rylant
2	**Pigeon Perch** *Curious George Builds a Home* adapted by Monica Perez
2	**Swift Swine Sled Design** *The Three Little Pigs' Sledding Adventure* by Stephen Krensky
1	**Unit Wrap-Up**

Suggested course of activities

HOURS	GRADES 3-5
	Linking Literature to Structures – Teacher Book
2	**Introduction to Structures Engineering Challenges**
3	**Everlasting Egyptians** *Mummies Made in Egypt* by Aliki
3	**Lunch Lifter** *Mama Provi and the Pot of Rice* by Sylvia Rosa-Casanova
3	**Personal Palace** *If I Built a House* by Chris Van Dusen
3	**Trust the Trusses** *Twenty-One Elephants and Still Standing* by April Jones Prince
3	**Simple Siege** *Castle Under Siege!* by Andrew Solway
1	**Unit Wrap-Up**

Suggested course of activities

TOOTHPICK BRIDGES

HOURS	GRADES 3-5
	Toothpick Bridges Elementary STEM Activity Guide
2	Lesson 1: Bridges: What Are They Good For?
1	Lesson 2: Bridges and Newton's Third Law
3	Lesson 3: Building a Bridge (need to allot time for drying)

HOURS	GRADES 6-8
	Toothpick Bridges Teacher's Guide
3	Investigating Shapes and Strength
3	Bridge Construction
1	Calculating Efficiency
3	Maximizing Load Capacity
4	Engineering Challenge I
3	Investigating Static Forces
2	Calculating Building Costs
2	Maximizing Efficiency
3	Engineering Challenge II

Suggested course of activities

BALSA BRIDGES

HOURS	GRADES 6-8
	Balsa Bridges Teacher's Guide
1	Investigating Beam Strength
2	Testing Joint Strength
3	Designing a Bridge (need to allot time for drying)
4	Engineering Challenge I
2	Investigating Lamination
2	Testing Joint Strength II
2	Designing for Efficiency
8	Engineering Challenge II

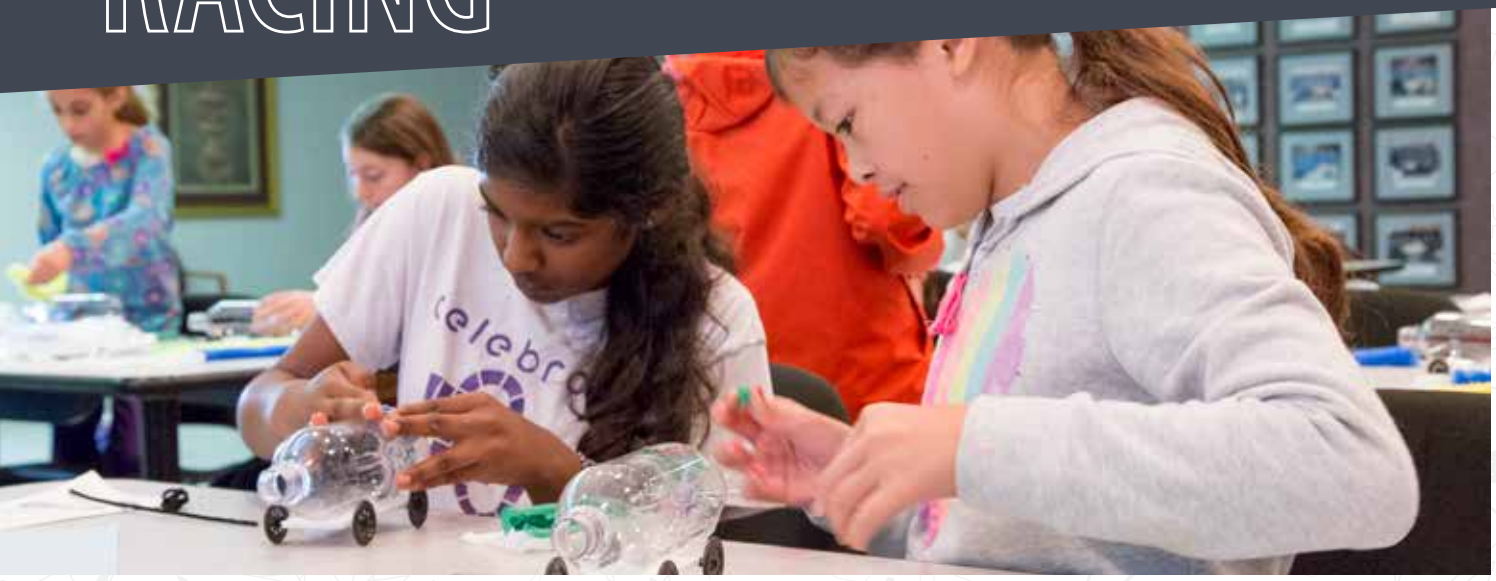
Suggested course of activities

TOOTHPICK AND BALSA BRIDGES

HOURS	GRADES 6-8
	User Guide (construction and testing only)
2	Toothpick Bridge Construction
4	Balsa Bridge Construction
2	Finish Bridge Construction
2	Toothpick Bridge Testing
2	Balsa Bridge Testing

Suggested course of activities

RACING



BALLOON CARS

HOURS	GRADES 3-5
	Balloon Car Elementary STEM Activity Guide
2	Balloon Car Construction
1	Balloon Car Testing
2	Lesson 1: Go the Distance
2	Lesson 2: Fold-Up Speed Racer
2	Challenge: Transformation

Suggested course of activities

AP BOTTLE RACERS

HOURS	GRADES 3-8
	User Guide (construction and testing only)
2	AP Bottle Racer Construction
1	AP Bottle Racer Testing I
2	AP Bottle Racer Construction – Improvements
1	AP Bottle Racer Testing II

Suggested course of activities

FOLD-N-ROLL RACERS

HOURS	GRADES 6-8
	Fold-N-Roll Vehicles Teacher's Guide
1	Fold-N-Roll Construction
2	Determining Momentum
2	Calculating Average Velocity
4	Designing a Fold-N-Roll Pattern
5	Engineering Challenge I
2	Determining Effects of Height on PE
3	Calculating Material Costs
5	Designing a Vehicle
6	Engineering Challenge II

Suggested course of activities

Visit Pitsco.com/Camps to explore a list of recommended products and corresponding teacher guides.

AIR

KAZOON KITES

HOURS	GRADES 3-5
	KaZoon Kites Elementary STEM Activity Guide
2	KaZoon Kite Construction
1	Lesson 1: Geometry in Action
1	Lesson 2: High-Flying Fun
2	Challenge: Kite Challenge

HOURS	GRADES 6-8
	KaZoon Kites Teacher's Guide
2	KaZoon Kite Construction
1	Comparing Size and Lift
1	Calculating Area and Volume
2	Designing a Tetrahedral Kite
1	Engineering Challenge I
2	Determining How Size Affects Flight
1	Calculating Density
2	Designing Polyhedral Kites
2	Engineering Challenge II

Suggested course of activities

PARACHUTES

HOURS	GRADES 3-5
	Parachutes Elementary STEM Activity Guide
2	Parachute Construction
2	Lesson 1: Testing Shroud Length
2	Lesson 2: Parachute Targeting
2	Lesson 3: Parachute Size

Suggested course of activities

PARACHUTES

HOURS	GRADES 6-8
	Parachutes Teacher's Guide
2	Parachute Construction
1	Determining Load Capacity
2	Calculating Velocity and Acceleration
2	Designing an Egg Parachute
1	Engineering Challenge I
1	Testing Parachute Area and Speed
1	Testing Parachute Shape
2	Designing an Egg Parachute II
3	Engineering Challenge II

Suggested course of activities

HOT-AIR BALLOONS

HOURS	GRADES 6-8
	Hot-Air Balloon Teacher's Guide
2	Hot-Air Balloon Construction
1	Working with Surface Area
2	Analyzing Balloon Flight
2	Investigating Balloon Physics
3	Engineering Challenge I
1	Varying Volumes
2	Investigating Gas Laws
2	Designing for Payloads
3	Engineering Challenge II

Suggested course of activities

PARACHUTES AND HOT-AIR BALLOONS

HOURS	GRADES 6-8
	User Guide (construction and testing only)
2	Parachute Construction
1	Parachute Testing
2	Hot-Air Balloon Construction
1	Hot-Air Balloon Testing

Suggested course of activities

SIEGE MACHINGES

EZ CATAPULTS

HOURS	GRADES 3-5
	EZ Catapult Elementary STEM Activity Guide
2	EZ Catapult Construction
2	Lesson 1: Which One Would You Choose? Part 1
2	Lesson 2: Which One Would You Choose? Part 2
2	Challenge: Building Walls Challenge

Suggested course of activities

EZ TREBUCHETS

HOURS	GRADES 3-5
	EZ Trebuchet Elementary STEM Activity Guide
2	EZ Trebuchet Construction
2	Lesson 1: Testing String Length
1	Lesson 2: Testing Mass
1	Challenge: Target Challenge

Suggested course of activities

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CATAPULTS

HOURS	GRADES 6-8
	Catapults Teacher's Guide
2	Catapult Construction
1	Relating Speed and Mass
1	Transportation Design
2	Measuring Elasticity
4	Engineering Challenge I
1	Calculating Altitude
2	Relating Force and Range
3	Modifying the Catapult
7	Engineering Challenge II

Suggested course of activities

EZ CATAPULTS AND EZ TREBUCHETS

HOURS	GRADES 3-5
	User Guide (construction and testing only)
2	EZ Catapult Construction
1	EZ Catapult Testing
2	EZ Trebuchet Construction
1	EZ Trebuchet Testing

Suggested course of activities

TREBUCHETS

HOURS	GRADES 6-8
	Trebuchets Teacher's Guide
2	Trebuchet Construction
1	Investigating Effects of Ammunition Mass
1	Calculating Potential Energy
2	Modifying the Trebuchet I
4	Engineering Challenge I
2	Finding Initial Velocity
2	Relating Mass and Range
2	Modifying the Trebuchet II
2	Engineering Challenge II

Suggested course of activities

CATAPULTS AND TREBUCHETS

HOURS	GRADES 6-8
	User Guide (construction and testing only)
2	Catapult Construction
1	Catapult Testing
2	Trebuchet Construction
1	Trebuchet Testing

Suggested course of activities

MAKER/ENGINEERING

SAIL CAR

HOURS	GRADES 3-5
	Sail Car Elementary STEM Activity Guide
2	Sail Car Construction
2	Lesson 1: Sailing Away
2	Lesson 2: Sail Off into the Distance
2	Lesson 3: Need for Speed
2	Challenge: Obstacle Course

Suggested course of activities

INVENTION EXPLORE-A-PAK

HOURS	GRADES 3-8
	User Guide (construction and testing only)
1	Prompt 1: General Problem with Many Solutions
2	Prompt 2: Specific Problem with Guidelines
1	Prompt 3: The Word Problem
2	Prompt 4: The Memo

Suggested course of activities

CHALLENGEPAK

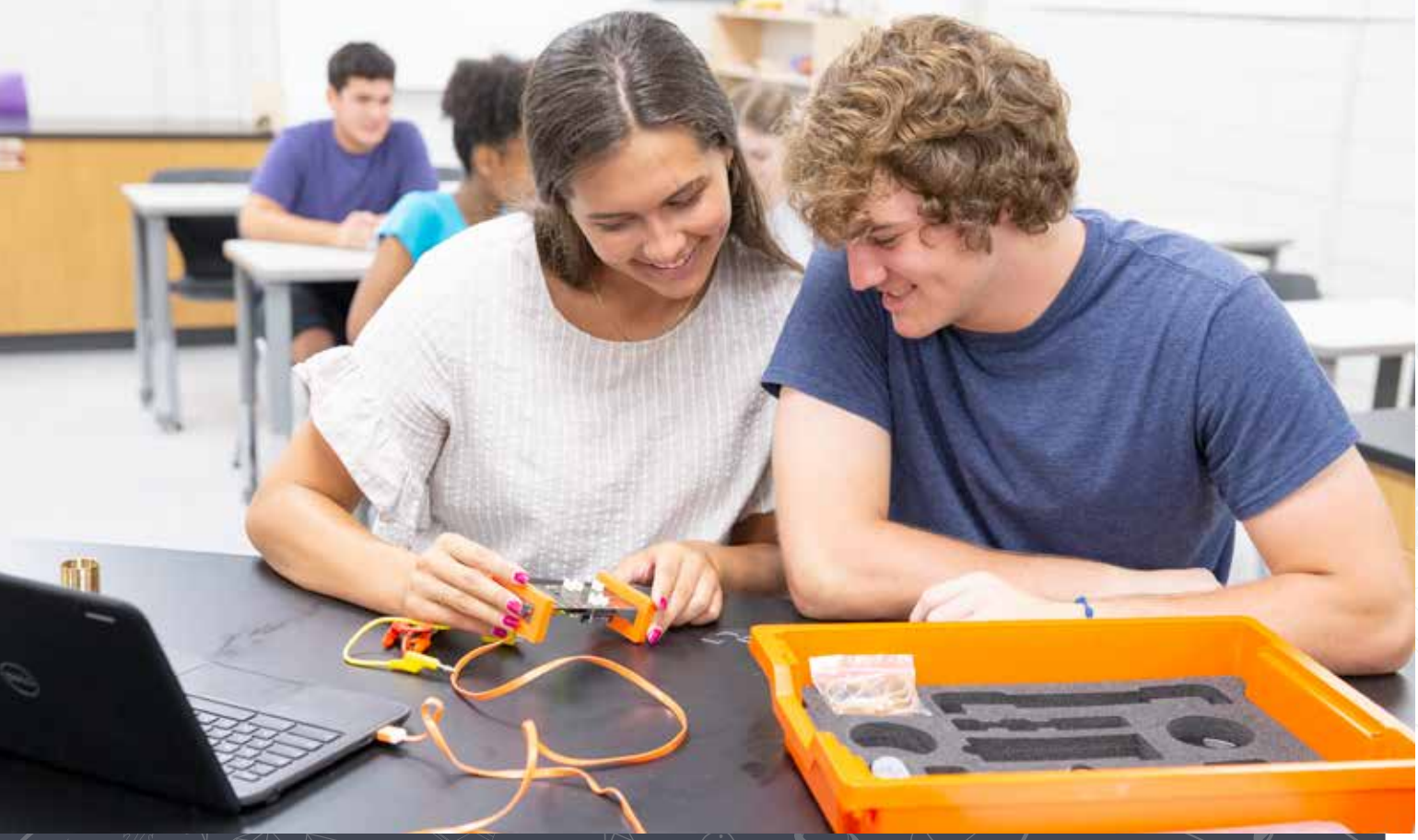
HOURS	GRADES 3-8
	Activity Guide
2	Challenge: Balloon-Powered Vehicle
1	Balloon-Powered Vehicle Competition
2	Challenge: Egg-Drop Vehicle
1	Egg-Drop Vehicle Competition
2	Challenge: Mousetrap Vehicle
1	Mousetrap Vehicle Competition
2	Challenge: Mousetrap Missile Launcher
1	Mousetrap Missile Competition

Suggested course of activities

EGG DROP

HOURS	GRADES 6-8
	Egg-Drop Vehicles Teacher's Guide
2	Egg-Drop Vehicle Construction
2	Calculating Density
2	Determining Velocity
3	Designing an Egg-Strength Tester
5	Engineering Challenge I
2	Calculating Potential Energy and Kinetic Energy
4	Determining Vehicle Volume
5	Designing a Vehicle
5	Engineering Challenge II

Suggested course of activities



ARDUINO EDUCATION SCIENCE KIT PHYSICS LAB

HOURS	GRADES 6-8

Intermediate to Advanced
Science Kit Physics Lab Online Learning Platform

.75	Lesson 1: Getting Started
1	Lesson 2: Electric Fortune Teller
1.5	Lesson 3: Buzz Wire
1	Lesson 4: Haunted House Theremin
1.5	Lesson 5: Thermo Magic Show
1.5	Lesson 6: The Drop Zone
1.75	Lesson 7: The Gravitron
1.75	Lesson 8: The Pirate Ship
1.5	Lesson 9: The Ejection Seat
1.5	Lesson 10: The Spherotron

NOTE: *Use sensors to collect data for scientific experiments.*

Suggested course of activities

NOTES

Visit Pitsco.com/Camps to browse products.

WE CAN DESIGN A PROGRAM JUST FOR YOU!

VISIT: **OR CALL US TODAY AT 800-835-0686!**

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