

Science and Technology

WEEK 1: Physics & Astronomy

Whats Gravity Got to Do With it?	Sphero
After calculating and determining their own mass, students will investigate how much they would weigh on other planets, as well as measure how far they could jump.	Learn about orbital motion with Sphero and program your robot to replicate planetary rotation and revolution.
Classifying Stars	Snap Circuits
Students will learn about classifying stars and then work in groups to classify and document 5 stars based on their size, temperature, brightness and color.	By building open and closed circuits, students will learn the basic components of an electronic circuit, how these components work within 'constraints' to do work and how to build a circuit to accomplish a particular task.

WEEK 2: Matter and Energy

How to Make a Bouncy Ball	Sphero
Students will learn about Polymers and how they are made by experimenting with different recipes to create the perfect Bouncy Ball!	Design and test a contraption for Sphero to carry a load of pennies across a small body of water. Use engineering methods and consider the principles of buoyancy, density, and surface area.
Goo-Day (Non-Newtonian Fluids)	Scratch Coding
What is a liquid? Solid? Gas? What is viscosity? What is the definition of a Newtonian fluid? Why is Oobleck a non- newtonian fluid?	Learn the fundamentals of computer science through a block based programming language. Create a Scratch Coding account, get comfortable with Scratch commands and explore existing projects.

WEEK 3: Chemistry and Biology

Chemical versus Physical Change	Sphero
Students will conduct investigations to distinguish whether a physical or chemical change occurs when different types of matter are transformed.	Program Sphero to navigate your own original maze. Gather data about the best route through a maze and figure out how to build a program so Sphero can successfully navigate through the mayhem.
Private Eye/Owl Pellets	Scratch Coding
Students will use the dissection of owl pellets to explore food chains and energy transfer in ecosystems.	Using previous knowledge, create a closed circuit using the Scratch interface in tandem with Makey-Makey's.

Engineering

	Challenge 1	Challenge 2	Challenge 3	Challenge 4
Week 1	<p>Post it Note Tower: Students will attempt to make the tallest tower with only 15 Posted Notes.</p>	<p>Popsicle Bridge: Construct a bridge out of popsicle sticks intended to hold as much weight as possible.</p>	<p>Balloon Rocket: Design and build an air-powered rocket that can hit a distant target.</p>	<p>Unsinkable Ship: Create a ship out of only aluminum foil intended to hold as much weight as possible without sinking.</p>
Week 2	<p>Egg Drop: Work within a budget to 'purchase' materials to build a device that will protect an egg from breaking when dropped.</p>	<p>Field Trip to the Moon: Begin a simulated adventure created by NASA that will lead you through what it takes for humans to survive on the moon. Split into teams and consider what your team's objectives will be.</p>	<p>Field Trip to the Moon: Research and complete lunar station preparation tasks.</p>	<p>Field Trip to the Moon: Finalize investigations and present findings to the large group. Listen to other groups and ask questions about their findings.</p>
Week 3	<p>Catapult Challenge: In teams, quickly assemble a classic Trebuchet, and test how far, as well as how accurately it can toss a marshmallow.</p>	<p>Straw Structure: With nothing but straws and tape, students will attempt to plan, build and rebuild the tallest structure that can hold a book.</p>	<p>Sphero Chariot Challenge: Design a chariot for your Sphero that will be raced against a Sphero Autobot!</p>	<p>Sphero Chariot Challenge: Race your Sphero Chariot against a Sphero Autobot through a maze!</p>