

RAFT RESPONSE TO BSA STEM PROJECT REQUIREMENTS

Science Everywhere (all activities can be done outside)							
Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Air -- a Pressing Matter</a>			Air Pressure, Atmosphere, Weather	Students are in for a surprise when they attempt to lift a mat that is held in place by only the air that is pressing down from above	4th - 12th	Properties of Gasses (CA Science Standards: Grade 5, 1.g); Earth's Atmosphere (CA Science Standards: Grade 5, 4.e); Earth Systems (CA Science Standards: Grade 6, 4.e)	Science Everywhere
<a href="#">Air Pressure -- Feel It!</a>			Sir Pressure, Atmosphere, Weather	Let your students experience air pressure in a new way with this easily made device that will add a pressure equal to one atmosphere to a square centimeter of skin. Subjects: Physical Science, Earth/Space Science	4th - 12th	Earth's Atmosphere (CA Science Standards: Grade 5, 4.e); Earth Systems (CA Science Standards: Grade 6, 4.e)	Science Everywhere
<a href="#">Air Under Pressure</a>	Yes		Gases, Pressure, Vacuum	Explore a compressed gas and a partial vacuum with this air pressure demonstrator. Subjects: Physical Science, Earth/Space Science	4th - 12th	Atmosphere exerts a pressure (CA Science Standards: Grade 5, 4.e) Balanced Forces (CA Science Standards: Grade 8, 2.c); Ideal Gas Law (CA Science Standards: HS. Chemistry. 4.h)	Science Everywhere
<a href="#">As the Clouds Go Bye</a>			Weather, clouds, water cycle	Make a cloud "mirror" and use to do small scale observations of the clouds and sky. Subjects: Earth/Space Science	4th - 8th	Water vapor can form clouds (CA Science Standards: Grade 5, 3.c) Role of water cycle in weather patterns (CA Science Standards: Grade 5, 4.b) Sun powers wind (CA Science Standards: Grade 6, 4.a)	Science Everywhere
<a href="#">Auto Sunshade Solar Collector</a>			Solar Heating, Radiant Energy, Sunlight Absorption	Explore heating with sunlight using a solar collector that is easy to make and store. Subjects: Physical Science, Earth/Space Science	3rd - 12th	Sun and solar energy (CA Science Standards: Grade 3, 1.a& 2.b Grade 6, 4.a-b)	Science Everywhere

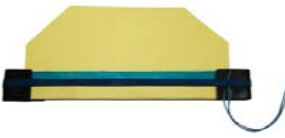
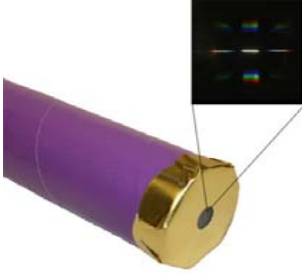
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<a href="#">Baby It's Cold Outside</a>			Environments, Habitats, Adaptations	This diorama helps students visualize life and ecology in an arctic environment. Subjects: Life Science, Earth/Space Science	K-6th	Varying Life forms from different environments (CA Science Standards: Grade 3, 3.b) Ecosystems/ Plant and Animal Survival (CA Science Standards: Grade 4, 3.a & 3.b) Different types of animals inhabit the earth (CA Science Standards: Grade K, 2.0) Earth is composed of land, air, and water (CA Science Standards: Grade K, 2.a)	Science Everywhere Tech Talk
<a href="#">Ball-oon Moon</a>			Solar Heating, Radiant Energy, Sunlight Absorption	Students use balloons to approximate the relative sizes of the Earth and Moon and estimate the relative distance between them using the scale of the inflated balloons. Subjects: Earth/Space Science, Math	3rd - 8th	Relative position and size of planets & satellites (CA Science Standards: Grade 8, 4.e) Units & Ratios (CA Math Standards: Grade 7, Measurement & Geometry, 1.0) Earth's Satellite: the Moon (CA Science Standards: Grade 3, 4.d; Grade 5, 5.b)	Science Everywhere Tech Talk
<a href="#">Be Prepared</a>			Natural Hazards, Emergency Preparedness, Community Studies	Evaluate potential natural hazards and develop plans to address the dangers. Subjects: Earth/Space Science, Social Studies	4th - 12th	Natural Hazards (CA Science Standards: HS Earth Sciences, 9.b) Wind and Water Shape Land (CA Science Standards: Grade 4, 5.a, 5.c) Earthquakes, Volcanoes, Landslides, & Floods Change Habitat (CA Science Standards: Grade 6, 2.d) Map Skills (CA Social Science Standards: Grades 4-5, Analysis skills, Chronological & Spatial thinking, 4)	Science Everywhere Tech Talk


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<a href="#">Bernoulli or Not?</a>			Forces, Pressure, Fluids, Properties of Gases, Ball Blower	A blown column of air will suspend the ball in mid-air... but for how long? Subjects: Physical Science	K - 12th	Forces and resulting motion (CA Science Standards: Grade 2, 1.a-1.e; Grade 8, 2.b-2.e; HS Physics, 1.0 Properties of gases (CA Science Standards: Grade 5, 1.g; Grade 8, 3.e; HS Chemistry. 4.a)	Science Everywhere
<a href="#">Better Wind Vane</a>	Yes		Wind, Weather, Fluids, Atmosphere	This easily made wind vane will point to the source of a real or a student generated wind! Subjects: Physical Science, Earth/Space Science	1-8th	Tools for observing weather (Grade 1, 3.a) Weather patterns (Grade 5, 4 a-d) Sun powers wind (Grade 6, 4.a) Investigation and Experimentation (Grades 1-8)	Science Everywhere
<a href="#">Born From an Egg</a>			Biology, Animals Sorting & Classifying	In this activity for primary learners, students sort animals into 2 categories: those born from an egg and those not from an egg. Subjects: Life Science	K-3	Different types of animals inhabit the earth (CA Science Standards: Grade K,2) Animal life cycles (CA Science Standards: Grade 2, 2 and 2.b) Sorting objects (CA Science Standards: Grade K, 2.d)	Science Everywhere
<a href="#">Breaking Through Barriers</a>	Yes		Light, Color, Filters, Waves	Explore polarized light using polarizing filter material. The displays of many common electronic devices are covered with a polarizing filter to cut the glare. Subjects: Physical Science, Life Science	3 - 12th	Tools for observing weather (Grade 1, 3.a) Weather patterns (Grade 5, 4 a-d) Sun powers wind (Grade 6, 4.a) Investigation and Experimentation (Grades 1-8)	Science Everywhere Tech Talk
<a href="#">Bug Pooter</a>	Yes		Arthropods, Observation, Classification, Insect	Create a pooter, or "bug vac" to gently collect and study small creepy crawlies. Subjects: Life Science	K-10th	Observe Insects (CA Science Standards: Grade K, 2.a) Decomposers (CA Science Standards: Grade 4, 2.c) Classify insects (CA Science Standards: Grade 7. 3.d)	Science Everywhere


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 <a href="#">Buzz Off</a>	Yes	Yes	Sound, Waves, Forces and Motion	Give this little noisemaker a whirl to learn about the effects of air passing over a taut rubber band. As it vibrates, the rubber band can generate a surprising range of deep rumbling tones. How can the pitch be changed?	K-8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grades K-8) Forces and Motion (CA Science Standards: Grade 8, 2.0; Grade 2, 1.c)	Science Everywhere
<a href="#">Car On A Roll</a>	Yes		Motion, Momentum, Friction, Simple machines	With this simple model "car" students can explore the science of motion and more! Subject: Physical Science	2 - 8th	Simple machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1) Forces (CA Science Standards: Grade 8, 2)	Science Everywhere
<a href="#">Catching Your Breath</a>	Yes		Anatomy, Health, Lung structure & Function	This quick and simple model may help your students appreciate living with lung disease...and possibly convince them to stay away from smoking. Subjects: Life Science	4 - 12th	Lung Structure and Function (CA Science Standards: Grade 5, 2.b) Health and Drug Awareness (Upper Elementary and above)	Science Everywhere
 <a href="#">Colors of Light</a>	Yes	Yes	Light, Color, Electromagnetic Spectrum	White light is actually a combination of different colors. This easy-to-build spectroscope creates a rainbow pattern (spectrum) by separating incoming light into its component colors. The interesting patterns it displays can be used to identify different sources of light. Experiment with a variety of colored filters and see how the images change!	K-12th	Color of light (CA Science Standards: Grade 3, 2.c) Energy carried by light (CA Science Standards: Grade 6, 3.a) Vision and the electromagnetic spectrum (CA Science Standards: Grade 7, 6.a) Electromagnetic waves (CA Science Standards: HS Physics, 4.e) Observations and data collection in all grades	Science Everywhere Tech Talk


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<a href="#">Dinosaur Name Game</a>			Scientific Terminology, Classic Root Words, Vocabulary	Animal names sometimes seem long and daunting; but if you know the roots, they are actually quite descriptive of the animal itself (i.e. tyranno=tyrant; saurus=lizard; rex=king; Tyrannosaurus Rex="Tyrant Lizard King"). In this fun and creative activity, students build models of fictitious animals using classic root words. Subjects: Life Science, Language Arts	4 - 12th	Scientific Terminology (Supporting Science Education in All Grades) Word Analysis and Vocabulary Development (CA English-Language Arts Standards for Reading: Grade 4, 1.3 and 1.4; Grade 5, 1.4; Grade 7, 1.2; Grades 11 & 12, 1.2)	Science Everywhere
 <a href="#">Floating Garden of Magnets</a>	Yes	Yes	Magnetic Fields, Crystal Patterns, Atoms and Molecules, Geometry	Magnets floating in water move easily and adjust their position based on changes in the number and location of other magnets around them. Beautiful designs emerge as magnets float to find their positions in the pattern. This activity demonstrates the effects of magnetic fields and also illustrates how crystal molecules form. Subject: Physical Science	2 - 12th	Magnets can make some objects move without touching them. (CA Science Standards: Grade 2, 1.f) Magnets have two poles and that like poles repel each other while unlike poles attract each other. (CA Science Standards: Grade 4, 1.f) Atoms and molecules form solids by building up repeating patterns. (CA Science Standards Grade 8, 3.c) Observation skills (CA Science Standards: Investigation & Experimentation, all grades)	Science Everywhere
<a href="#">Folded Flutterbys</a>	Yes		Art, Butterflies, Shapes, Squares, diagonals	Children will develop finger dexterity and eye-hand co-ordination as they create brightly colored butterflies to hang from a string or mobile. Reinforce the concept of the diagonal while accordion folding a square from corner to diagonal corner. Subjects: Life Science, Art	1 - 4th	Three-dimensional art forms using texture and symmetry (CA Visual Arts Standards: Grade K-4, Creative Expression, 2.0) Animals: structures (CA Science Standards: Grade K, 2.c), habitats (Grade 1,2.a), Life Cycles (Grade 2, 2.b)	Science Everywhere

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<a href="#">Freaky Fractals</a>	Yes	Yes	Fractals, Patterns, Exponents, Exponential Growth, Decalcomania	A fractal is an amazing geometric pattern which, when viewed closely, shows itself to be constructed of ever-smaller parts similar to the original. Fractal patterns are everywhere: trees, shells, leaves, ferns, flowers, vegetables, rivers, coastlines, mountains, geologic faults, planetary orbits, circulatory systems, music, clouds, weather, and even lightning bolts!	K - 12th	Creating and Participating in the Visual Arts (CA Visual Arts Standards: Grades K - 12, Creative Expression, 2.0) Describing Repeated Patterns (CA Visual Arts Standards: Grade 1, Artistic Perception, 1.1) Exponents (CA Math Standards; Number Sense, Grade 5, 1.4; Grade 7, 2.1; HS Algebra, 2.0) Exponential Growth (CA Math Standards: HS Probability and Statistics, 4.0)	Science Everywhere
<a href="#">Gasping for Air</a>	Yes		Lung structure & Function, Asthma, Health	Use straws to demonstrate how an asthma attack can affect a person's breathing. Subject: Life Science	4 - 12th	Lung Structure and Function (CA Science Standards: Grade 5, 2.b) Health and Drug Awareness (Upper Elementary and above)	Science Everywhere
 <a href="#">Glove-a-phone</a>	Yes		Sound, Vibration, Music, Instruments, Properties of Materials	How can a plastic glove, a straw, and a tube be combined to make a "musical" instrument? Build a Glove-a-Phone to discover one way to accomplish this feat. Once you learn the proper technique, your Glove-a-Phone can be heard a surprisingly long way off! How is the sound produced? Careful observation is needed to answer that question. Subjects: Physical Science, Art	K - 8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grades K-8) Playing classroom instruments (CA Music Standards: Creative Expression, 2.0; Grades K-8)	Science Everywhere

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 <a href="#">Gravity Defying Frog</a>	Yes	Yes	Balance, Cause and Effect, Center of Mass, Stable Equilibrium	Move the center of gravity of a paper frog to create a gravity defying illusion! How can the frog spin around with most of its body suspended in mid-air? Use moveable weights to discover what forces are needed to keep the frog balanced on its head. Conceal the weights to heighten the mystery! Subjects: Physical Science	K - 8th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Science Everywhere
<a href="#">Journaling Your Trash</a>	Yes		Recycling, Waste Reduction, Observations, Written Communication, Trash Journal, Resources	Students create a journal out of reused materials, and then collect observations and reflect on their trash attitudes and actions. Subjects: Earth/ Space Science, Language Arts	K - 12th	Narratives and Descriptions (CA English Standards: Grade 1 and above, Writing Strand) Communicating Observations (CA Science Standards: Grade 1 and above) Resources (CA Science Standards: Grade 6, 6.0)	Science Everywhere
<a href="#">Leaf Mixture Chromatography</a>	Yes		Photosynthesis, Chromatography, Properties of Mixtures	Explore the science behind the many colorful hues displayed by autumn leaves. Subjects: Physical Science, Life Science	3 - 12th	Effect of colored reflected light on the perception of objects (Grade 3, 2.c) Plants get energy from sunlight (Grade 5, 2.f; Grade 6, 5.a) Chromatography (HS Chemistry, 6.f) Energy in sunlight is captured by chloroplasts	Science Everywhere Tech Talk
<a href="#">Mind Mixer</a>	Yes		Attributes. Sorting, Observations	Students strengthen observation and classification skills as they sort cats and mice. Subjects: Physical Science	K - 3	Compare & sort objects (CA Science Standards: Grade K, 4.d; Grade 2, 4.c) Observation skills to support Investigation and Experimentation (CA Science Standards: Grade K-3)	Science Everywhere

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<a href="#">Moon Mobile</a>	Yes		Moon phases	Create a mobile with the 4 points and the 4 intervals known as the phases of the Moon. Subjects: Earth/ Space Science	3 - 8th	Moon Phases (CA Science Standards: Grade 3, 4.b) Solar System includes the Earth, Moon, Sun (CA Science Standards: Grade 5, 5.b) The Moon shines by reflecting sunlight (CA Science Standards: Grade 8, 4.d)	Science Everywhere Tech Talk Designed to Crunch
<a href="#">Shake Table</a>	Yes		Earthquakes, Plate Tectonics, Richter Scale	Building in earthquake country can be a tricky business. Architects and engineers run simulations using models and shake tables to test the integrity of buildings and determine necessary reinforcements. In this activity, students use a very simple, non-motorized shake table to test their structures. Subject: Physical Science, Earth/ Space Science	4 - 12th	Plate Tectonics and Earthquakes (CA Science Standards: Grade 6, 1.a; 1.d; 1.e; 2.d) Earthquake measurement (CA Science Standards: HS Earth Sciences, 3.d)	Science Everywhere
<a href="#">Shake Your Butter</a>	Yes		Biochemistry, Mixtures, Chemical Changes	No need for a huge churn to observe wonderful and tasty changes. Subjects: Physical Science, Life Science, Social Studies	K - 8th	Physical Properties of Materials (CA Science Standards: Grade K, 1.a) Liquid and solids (CA Science Standards; Grade 1, 1.a; Grade 3, 1.e) Physical & chemical properties (CA Science Standards; Grade 5, 1.f; Grade 8, 3.b & 5.d) Molecules of organisms (CA Science Standards: Grade 8, 6.c) Economy & food production of peoples, past & present (Various CA History - Social Science Standards applications)	Science Everywhere



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<a href="#">Spectrum Bracelet</a>	Yes		Light, Waves, electromagnetic Spectrum	Students can quickly and easily construct this bracelet to help them remember the electromagnetic spectrum, with visible and invisible components. Subjects: Physical Science	4 - 12th	Energy carried by light (Grade 6, 3.a) Vision and the electromagnetic spectrum (Grade 7, 6.a) Electromagnetic waves (HS, 4.e)	Science Everywhere Tech Talk
<a href="#">Staple Remover Catapult</a>	Yes		Motion & Forces, early Technology, Potential & Kinetic energy	Students can build and manipulate these scale model catapults to learn about motion, the history of science and technology, and the scientific method. Subjects: Physical Science	2 - 8th	Motion, Forces, & Machines (CA Science Standards: Grade 8, 1.0 & 2.0; Grade 2, 1.c & 1.d)	Science Everywhere
 <a href="#">The Germinator</a>	Yes		Botany, Plant Growth, Scientific Method	Gathering and charting data on root and shoot growth is fun with these quick and easy seed germinators! Subjects: Life Science	K - 8th	Plant structures and functions (Grade 3, 3. a; Grade 5, 2.0; Grade 7, 5.0) Environments affecting plant development (Grade 2, 2.e; Grade 4, 3.b) Energy entering ecosystem as sunlight (Grade 6, 5.a) Scientific experimentation (Grade 5, 6.b - 6.i; and above)	Science Everywhere
<a href="#">Thinking Like a Real Survivor</a>	Yes		Object Attributes & Properties, Creative Reuse, Recycling and Waste Reduction	Students deconstruct an object by focusing on its attributes rather than its intended function, allowing them to see the object's potential for alternate use. Subjects: Physical Science, Earth/Space Science, Art	K - 8th	Resources (CA Science Standards: Grade 6, 6.0) Properties of materials (CA Science Standards: Grade K, 1.a; Useful as review for all grades) Creative Expression strand of the CA Visual Arts Standards	Science Everywhere

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  <a href="#">Tongue Depressor Harmonica</a>	Yes		Sound, Waves, Musical Instruments	<p>People of all ages love the Kazoo-like sounds that come from this fun-to-make and easy-to-play instrument. The RAFT harmonica uses a rubber band vibrating between tongue depressors to make sound. Changing the length of the rubber band changes the sound. Start your own harmonica band today!</p> <p>Subjects: Physical Science, Life Science, Art</p>	K - 8th	<p>Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grades K-3) Playing classroom instruments (CA Music Standards: Creative Expression, 2.0; Grades K-8)</p>	<p>Science Everywhere Tech Talk</p>

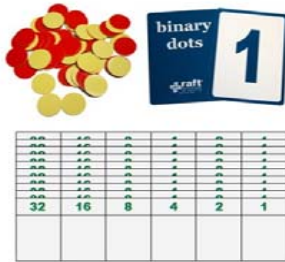
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Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Discipline
<a href="#">2 Tubaphones</a>	Yes		Sound, Vibration, Musical Instruments	Make an instrument with an adjustable pitch to explore the science of sound waves and the art of music! Subjects: Physical Science	2 - 8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and experimentation (CA Science Standards: Grades 2-8)	Tech Talk
<a href="#">3D Topo Views</a>			Geography, Map Reading, Spatial Thinking	This modeling activity can be used to teach topographic map-reading skills. Students draw a fictitious topographic map, and then transfer the map to stacking lids, producing a great 3-dimensional effect. Subjects: Earth/ Space Science	4 - 12th	Topographic Maps (CA Science Standards; Grade 5, 7.f; HS Investigation and Experimentation, 1.h) Map Construction and interpretation (CA Science Standards: Grade 7, 7.d; HS Earth Science, 9.g) 2-Dimensional representations of 3-Dimensional objects (CA Math Standards, Measurement and Geometry, Grade 4, 3.6)	Tech Talk
<a href="#">9 Digits in a 3 by 3 Matrix</a>	Yes		Addition, Number Patterns, Casting Out Nines	Students explore addition problems with two 3 digit numbers and discover patterns that help find solutions and double check arithmetic answers. Subjects: Math	3 - 8th	Standard Algorithms for the Addition of Multidigit Numbers (CA Math Standards: Grade 4, Number Sense, 3.1) Mathematical Problem Solving (CA Math Standards; Grade 3 & up, Mathematical Reasoning)	Tech Talk
<a href="#">Abacus Variations</a>	Yes		Math, Place Value, Historical Math Tools, Addition	This easily created version of an abacus can teach place value and show how different cultures calculate. Abaci can even be based on math systems other than base 10! Subjects: Math	1-8th	Place Value (CA Math Standards: Number Sense, Grade 1, 1.4; Grade 2, 1.1 and 1.2; Grade 3, 1.3 and 1.5) Addition and Subtraction (CA Math Standards: Number Sense, Grade 1, 2.5; Grade 2, 2.2)	Tech Talk
<a href="#">Absorbing the Rays</a>			Electromagnetic Spectrum, Ultraviolet (UV) Radiation, UV Protection	Using UV beads as detectors, the ability of sunglasses to protect the eyes from UV radiation from the Sun is tested. Subjects: Physical Science, Earth/Space Science	4 - 12th	Solar energy reaching Earth's surface (CA Science Standards: Grade 6, 4.b) Absorbed light and the EMS (CA Science Standards: Grade 7, 6.f & 6.a; HS Physics, 4.e)	Tech Talk

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<a href="#">Baby It's Cold Outside</a>			Environments, Habitats, Adaptations	This diorama helps students visualize life and ecology in an arctic environment. Subjects: Life Science, Earth/ Space Science	K - 6th	Varying Life forms from a different environment (CA Science Standards; Grade 3, 3.b) Ecosystems / Plant and Animal Survival (CA Science Standards: Grade 4, 3.a & 3.b) Ecosystems / Plant and Animal Survival (CA Science Standards; Grade 4, 3.a & 3.b) Different types of animals inhabit the earth (CA Science Standards; Grade K, 2.0) Earth is composed of land, air, and water (CA Science Standards: Grade K, 3.0)	Tech Talk
<a href="#">Back In the Groove</a>	Yes		Sound Waves, History of Technology, Phonograph record	This a great activity for investigating sound. It might just be a history lesson about records for your students; and you can tell them, "No, this will not work with CDs." Subjects: Physical Science	K - 12th	Sound waves (CA Science Standards: Grade 2, 1.g; HS Physics, 4.d) Sound waves as energy (CA Science Standards: Grade 3, 1.d; Grade 6, 3.a)	
<a href="#">Ball-oon Moon</a>			Solar Heating, Radiant Energy, Sunlight Absorption	Students use balloons to approximate the relative sizes of the Earth and Moon and estimate the relative distance between them using the scale of the inflated balloons. Subjects: Earth/Space Science, Math	3rd - 8th	Relative position and size of planets & satellites (CA Science Standards: Grade 8, 4.e) Units & Ratios (CA Math Standards: Grade 7, Measurement & Geometry, 1.0) Earth's Satellite: the Moon (CA Science Standards: Grade 3, 4.d; Grade 5, 5.b)	Science Everywhere Tech Talk

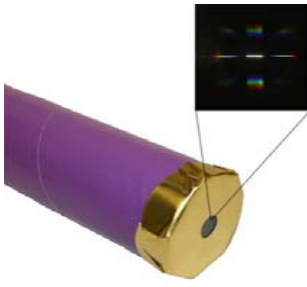

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Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Discipline
<a href="#">Be Prepared</a>			Natural Hazards, Emergency Preparedness, Community Studies	Evaluate potential natural hazards and develop plans to address the dangers. Subjects: Earth/ Space Science, Social Studies	4 - 12th	Natural Hazards (CA Science Standards: HS Earth Sciences, 9.b) Wind and Water Shape Land (CA Science Standards: Grade 4, 5.a, 5.c) Earthquakes, Volcanoes, Landslides, & Floods Change Habitat (CA Science Standards; Grade 6, 2.d) Map Skills (CA Social Science Standards: Grade 4-5, Analysis skills, Chronological & Spatial thinking, 4)	Science Everywhere Tech Talk
<a href="#">Binary Birthday Bracelets</a>	Yes		Binary Numbers, Place Value, Exponents, Number Bases; Can be done hand-in-hand with Binary Dots Activity	Learning about binary numbers (Base 2) incorporates number sense, exponents, and the conversion of numbers between different bases. Binary numbers are essential to the functioning of common digital electronic devices but are usually well hidden! Subjects: Math	4 - 12th	Number Sense and Place Value (CA Math Standards: Grades 4 and above) Factors (CA Math Standards: Number Sense, Grade 4, 4.0; Grade 5, 1.4) HS Algebra 2.0) Bases (CA Math Standards: Number Sense, Grade 7, 2.1)	Tech Talk
 <a href="#">Binary Dots</a>	Yes	Yes	Binary (Base-2), Number Bases, Place Value, Exponents, Exponential Growth; Can be done hand-in-hand with Binary Birthday Bracelets Activity	Counting in binary is quite straightforward and makes for an interesting and compelling activity for any student who can do simple addition. This uncomplicated game creates an opportunity to practice counting in binary. It reinforces understanding of place value and can be extended into a discussion of other bases and number systems. Subjects: Math	4 - 12th	Number Sense and Place Value (CA Math Standards: Grades 4 and above) Factors (CA Math Standards: Number Sense, Grade 4, 4.0; Grade 5, 1.4) HS Algebra 2.0) Bases (CA Math Standards: Number Sense, Grade 7, 2.1)	Tech Talk


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<a href="#">Bottle Bowling</a>			Addition, Motor Skills	This RAFT version of a classic game uses plastic bottles as bowling pins and a small wooden ball. It plays just like the bowling alley game, but instead of a computer keeping score, the individual players must keep track of their points. Scoring gets a bit tricky when a strike or spare is rolled, providing excellent opportunity to practice basic arithmetic. Subjects: Math	K - 8th	Addition of two- and three-digit numbers (CA Math Standards: Grade 2, Number Sense, 2.2, 2.3)	Tech Talk
<a href="#">Breaking Through Barriers</a>	Yes		Light, Color, Filters, Waves	Explore polarized light using polarizing filter material. The displays of many common electronic devices are covered with a polarizing filter to cut glare. Subjects: Physical Science, Life Science	3 - 12th	Tools for observing weather (Grade 1, 3.a) Weather patterns (Grade 5, 4 a-d) Sun powers wind (Grade 6, 4.a) Investigation and Experimentation (Grades 1-8)	Science Everywhere Tech Talk
<a href="#">Calculating Bones</a>			Multiplication, History of Math, Technology	When John Napier, a famous mathematician, invented his "Bones" or "Rods" in the early 17th century, modern calculating was born. With this simplified recreation, students can multiply large numbers quickly, with little effort and no electricity! Subjects: Math, Social Studies	K - 12th	Multiplication of multi-digit numbers (CA Math Standards: Grade 3, Number Sense, 2.4) Many students in grades above 3rd still need practice with multiplication.	Tech Talk
<a href="#">Cap Maracas</a>	Yes		Sound, Instruments, Rhythm	Explore rhythms using these simple maracas in an activity that appeals to both auditory and kinesthetic learners. Subjects: Physical Science, Art	1 - 3rd	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and experimentation (CA Science Standards: Grades K-8) Diversity of World Music (CA Music Standards: Grades K-8, Historical and Cultural Context, 3.0)	Tech Talk

RAFT RESPONSE TO BSA STEM PROJECT REQUIREMENTS


Tech Talk (all activities can be done outside)							
Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Discipline
 <p><a href="#">Colors of Light</a></p>	Yes	Yes	Light, Color, Electromagnetic Spectrum	White light is actually a combination of different colors. This easy-to-build spectroscope creates a rainbow pattern (spectrum) by separating incoming light into its component colors. The interesting patterns it displays can be used to identify different sources of light. Experiment with a variety of colored filters and see how the images change! Subjects: Physical Science	K - 12th	Color of light (CA Standards: Grade 3, 2.c) Energy carried by light (CA Science Standards: Grade 6, 3.a) Vision and the electromagnetic spectrum (CA Science Standards: Grade 7, 6.a) Electromagnetic waves (CA Science Standards: HP Physics, 4.e) Observations and data collection in all grade	Science Everywhere Tech Talk
<a href="#">Finger Phone</a>	Yes		Sound, Vibration, Music, Instruments	Create a musical instrument in minutes to explore the science of sound production! Subjects: Physical Science	K - 8th	Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grades K-8)	Tech Talk
<a href="#">Fraction Race!</a>	Yes		Equivalent Fractions	Roll dice, match equivalent fractions, and race bead "cars" across chenille stems "roads"! The first to race all cars to the finish line is the winner! Subjects: Math	2- 6th	Fractions as parts of a whole (CA Math Standards: Grade 2, Number Sense, 4.0, 4.1, 4.2, 4.3) Add, subtract, & compare fractions (CA Math Standards: Number Sense, Grade 3, 3.0, 3.1, 3.2; Grade 4, 1.5)	Tech Talk
 <p><a href="#">Glove-a-phone</a></p>	Yes	Yes	Sound, Vibration, Music, Instruments, Properties of Materials	How can a plastic glove, a straw, and a tube be combined to make a "musical" instrument? Build a Glove-a-Phone to discover one way to accomplish this feat. Once you learn the proper technique, your Glove-a-Phone can be heard a surprisingly long way off! How is the sound produced? Careful observation is needed to answer that question. Subjects: Physical Science, Art	K - 8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grades K-8) Playing classroom instruments CA Music Standards: Creative Expression, 2.0; Grades K-8)	Science Everywhere Tech Talk
<a href="#">Graphing Race to the Edge!</a>	Yes		Graphing, X-Y Coordinate Plane, Adding Positive and Negative Numbers	Rev up graphing skills & be the first to race all your game pieces to the target zone! Subjects: Math	4 - 8th	Coordinate Graphing of Points (CA Math Standards: Grade 4, Measurement & Geometry, 2.0; Grade 5, Algebra & Functions, 1.4) Positive and negative numbers (CA Math Standards, Number Sense: Grade 4, 1.8)	Tech Talk

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<u>Activity Kit/ Idea Sheet Name</u>	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Discipline
 <a href="#">Hovercraft</a>	Yes	Yes	Friction, Air Pressure, Motion, Inertia	Explore how a hovercraft can glide smoothly along by constructing this quick-to-assemble four-piece model. Once the hovercraft is built, test it on any smooth, flat surface. Subjects: Physical Science	4 - 12th	Motion and Forces (CA Science Standards: Grade 8, 2.a - 2.f; HS Physics, 1.b, 1.d, 1.e)	Tech Talk
<a href="#">Human Reaction Time</a>	Yes		Health, Physiology, Reaction Time, Safety issues	Reaction time is key to many things we do: operating a car, flying a plane, riding a bike, or playing sports. In space, astronauts test physical fitness with reaction tests. Subjects: Life Science	3 - 12th	Nervous System (CA Science Standards: Grade 7, 5.a & 5.b; HS Biology, 9.b, 9.c) Organisms Living in Environments and Adaptations (CA Science Standards: Grade 3, 3.0; Grade 4, 3.b)	Tech Talk
<a href="#">Leaf Mixture Chromatography</a>	Yes		Photosynthesis, Chromatography, Properties of Mixtures	Explore the science behind the many color hues displayed by autumn leaves. Subjects: Physical Science, Life Science	3 - 12th	Effect of colored reflected light on the perception of objects (Grade 3, 2.c) Plants get energy from sunlight (Grade 5, 2.f; Grade 6, 5.a) Chromatography (HS Chemistry, 6.f) Energy in sunlight is captured by chloroplasts	Science Everywhere Tech Talk
<a href="#">Making Mountain Models (includes Pop Goes the Mt)</a>	Yes		Geography, Map Reading, Spatial Thinking	This modeling activity can be used to teach topographic map-reading skills. Students draw a fictitious topographic map, and then build the mountain represented by the map's contour lines. Subjects: Earth/ Space Science	4 - 12th	Topographic Maps (CA Science Standards; Grade 6, 7.f; HS Investigation and Experimentation, 1.h) Map Construction and interpretation (CA Science Standards: Grade 7, 7.d; HS Earth Science, 9.d) 2-Dimensional representations of 3-Dimensional objects (CA Math Standards; Grade 4, Measurement and Geometry, 3.6)	Tech Talk
<a href="#">Moon Mobile</a>	Yes		Moon phases	Create a mobile with the 4 points and the 4 intervals known as the phases of the Moon. Subjects: Earth/ Space Science	3 - 8th	Moon Phases (CA Science Standards: Grade 3, 4.b) Solar System includes the Earth, Moon, Sun (CA Science Standards: Grade 5, 5.b) The Moon shines by reflecting sunlight (CA Science Standards: Grade 8, 4.d)	Designed to Crunch Science Everywhere Tech Talk



RAFT RESPONSE TO BSA STEM PROJECT REQUIREMENTS

Tech Talk (all activities can be done outside)							
Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Discipline
<a href="#">Retractor Car</a>	Yes		Motion, Momentum, Friction, Simple Machines, Springs	With a little creativity, the potential energy stored in a common badge retractor can run a fun little vehicle. Learn about wheels, hubs, and axles, while making a vehicle that can really move! Subjects: Physical Science	2 - 12th	Simple Machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c: Grade 8, 1.0) Forces (CA Science Standards: Grade 8, 2.0)	Designed to Crunch Tech Talk
<a href="#">Spectrum Bracelet</a>	Yes		Light, Waves, Electromagnetic Spectrum	Students can quickly and easily construct this bracelet to help them remember the electromagnetic spectrum, with visible and invisible components. (Coding) Subjects: Physical Science	4 - 12th	Energy carried by light (Grade 6, 3.a) Vision and the electromagnetic spectrum (Grade 7, 6.a) Electromagnetic waves (HS, 4.e)	Science Everywhere Tech Talk
<a href="#">Staple Remover Catapult</a>	Yes		Motion & Forces, Early Technology, Potential & Kinetic energy	Students can build and manipulate these scale model catapults to learn about motion, the history of science and technology, and the scientific method. Subjects: Physical Science	2 - 8th	Motion, Forces, & Machines (CA Science Standards: Grade 8, 1.0 & 2.0,; Grade 2, 1.c & 1.d)	Tech Talk Swing! Designed to Crunch
 <a href="#">Tongue Depressor Harmonica</a>	Yes	Yes	Sound, Waves, Musical Instruments	People of all ages love the Kazoo-like sounds that come from this fun-to-make and easy-to-play instrument. The RAFT harmonica uses a rubber band vibrating between tongue depressors to make sound. Changing the length of the rubber band changes the sound. Start our own harmonica band today! Subjects: Physical Science, Life Science, Art	K - 8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grade K - 3) Playing classroom instruments (CA Music Standards: Creative Expression, 2.0: Grades K - 8)	Science Everywhere Tech Talk

## RAFT RESPONSE TO BSA STEM PROJECT REQUIREMENTS

Swing! (all activities can be done outside)							
Activity Kit/ Idea Sheet Name	Kit?		Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Balancing Your Budget</a>			Balance, Manual Dexterity, Center of Gravity	Objects are more stable when they have a low center of mass. This game allows students to investigate balance and discover that raising an object's center of mass increases its tendency to tip over...and they have fun in the process! Subjects: Physical Science	K - 8th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Swing!
<a href="#">Car On A Roll</a>	Yes		Motion, Momentum, Friction, Simple machines	With this simple model "car", students can explore the science of motion and more!	2 - 8th	Simple machines (CA Science Standards: Grade 2, 1.d) Motion (CA California Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1) Forces (CA Science Standards: Grade 8, 2)	Swing!
<a href="#">Finding Your Balance</a>			Balance, Gross Motor Skills, Senses	Young students can improve their balance and movement skills with a low and sturdy balance beam apparatus. Subjects: Physical Science, Life Science	1 - 3rd	Gross motor development and balance in young learners Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Observations and the senses (CA Science Standards: Grade K, 4.a)	Swing!
 <a href="#">Gravity Defying Frog</a>	Yes	Yes	Balance, Cause and Effect, Center of Mass, Stable Equilibrium	Move the center of gravity of a paper frog to create a gravity defying illusion! How can the frog spin around with most of its body suspended in mid-air? Use moveable weights to discover what forces are needed to keep the frog balanced on its head. Conceal the weights to heighten the mystery! Subjects: Physical Science	K - 8th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Swing!
<a href="#">Kimoto Life Capsule</a>			Center of Mass, Balance, Motion, Inertia, Characteristics of Life	Build student curiosity about motion, the center of mass, and inertia with this fun activity! Use this activity as a starting point to discuss the characteristics of "life". Subjects: Physical Science, Life Science	K - 8th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Swing!

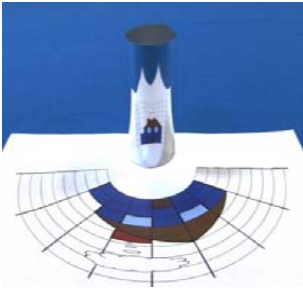
## RAFT RESPONSE TO BSA STEM PROJECT REQUIREMENTS

Swing! (all activities can be done outside)							
<u>Activity Kit/ Idea Sheet Name</u>	Kit?		Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Measuring Mass</a>			Measurement Physical Properties, Mass	How do you get really comfortable with measuring mass? Subjects: Physical Science	K - 8th	Measure weight (mass) using appropriate tools (CA Science Standards: Investigation & Experimentation, Grade 2 and above)	Swing!
<a href="#">Nail Puzzle</a>			Balance, Center of Mass, Forces	Students can investigate cause and effect, center of mass, balance, and stable equilibrium while they solve this fascinating scientific puzzle! Subjects: Physical Science	K - 12th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Swing!
<a href="#">Shake Table</a>	Yes		Earthquakes, Plate Tectonics, Richter Scale	Building in earthquake country can be a tricky business. Architects and engineers run simulations using models and shake tables to test the integrity of buildings and determine necessary reinforcements. In this activity, students use a very simple, non-motorized shake table to test their structures. Subject: Physical Science, Earth/ Space Science	4 - 12th	Plate Tectonics and Earthquakes (CA Science Standards: Grade 6, 1.a; 1.d; 1.e; 2.d) Earthquake measurement (CA Science Standards: HS Earth Sciences, 3.d)	Swing! Designed to Crunch
<a href="#">Spoon Scales</a>			Measurement Physical Properties, Mass	These balances are simple to make and sensitive enough to be used for a variety of investigations using standard or non-standard measurement units. Subjects: Physical Science	2 - 12th	Measure weight (mass) using appropriate tools (CA Science Standards: Investigation & Experimentation, Grade 2 and above)	Swing!
<a href="#">Stack 'em High</a>			Balance, Dexterity, Data Collection	This challenge is fun and simple! How many can you stack in your right hand? How about your left hand? And the best part is ...data collection opportunities abound! Subjects: Physical Science, Math	1 - 6th	Younger Students: Properties of Materials, Relative Position (CA Science Standards: Grade K, 1.a and 4.c), and Counting (CA Math Standards: Grade K, Number Sense, 1.2) Older Students: Investigation and Experimentation skills (CA Science Standards: Grade 3 and above) and Averaging (CA Math Standards: Grade 5, Statistics, Data Analysis, and Probability, 1.1)	Swing!

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<u>Activity Kit/ Idea Sheet Name</u>	Kit?		Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Staple Remover Catapult</a>	Yes		Motion & Forces, early Technology, Potential & Kinetic energy	Students can build and manipulate these scale model catapults to learn about motion, the history of science and technology, and the scientific method. Subjects: Physical Science	2 - 8th	Motion, Forces, & Machines (CA Science Standards: Grade 8, 1.0 & 2.0; Grade 2, 1.c & 1.d)	Swing! Tech Talk Designed to Crunch
<a href="#">Stepping Stones</a>			Balance, Gross Motor Skills, Senses	Young students can improve their balance and movement skills with a low and sturdy balance beam apparatus. Subjects: Physical Science, Life Science	K - 2nd	Gross motor development and balance in young learners Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Observations and the senses (CA Science Standards: Grade K, 4.a)	Swing!
<a href="#">Whirling Wonder</a>			Circular Motion, Momentum, Circuits	Build a top with a motorized spinner to explore circular motion, balance, and momentum. Subjects: Physical Science	4 - 12th	Electrical Energy (CA Science Standards: Grade 4, 1.g) Circular motion, Momentum (CA Science Standards: HS Physics 1.g, 2.e, 2.f)	Swing!
<a href="#">You Are The Tops</a>			Motion, Forces, Balance, Top Challenge, tops	In this activity, students make a top, observe its behavior, and then investigate how modifications in the design affect motion. Subjects: Physical Science	K - 12th	Observing and Measuring Motion (CA Science Standards: Grade 2, 1.a and 1.c) Motion and Forces (CA Science Standards: Grade 8, Standards 1 and 2) Observation and Experimentation (CA Science Standards: All Grades)	Swing!

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<u>Activity Kit/ Idea Sheet Name</u>	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">2 Tubaphones</a>	Yes		Sound, Vibration, Musical Instruments	Make an instrument with an adjustable pitch to explore the science of sound waves and the art of music! Subjects: Physical Science	2 - 8th	Sound and Sound Waves (CA Science Standards: Grade 2, 1.g; Grade 3, 1.d) Investigation and Experimentation (CA Science Standards: Grade 2 - 8)	Designed to Crunch
<a href="#">31</a>			Math, Addition, Probability	This card game helps students learn to add numbers in their heads. The objective of the game is to get as close to 31 with any number of cards, without going over 31. Subjects: Math	K - 12th	Addition (CA Math Standards: Number Sense, Grade 1: 2.1 and 2.6) Probability (CA Math Standards: Statistics, Data Analysis, and Probability: Grade 4, 2.2; Grade 6, 3.4 and 3.5; HS Probability and Statistics: 1.0 and 2.0)	Designed to Crunch
 <a href="#">Anamorphic Math/ Art</a>	Yes	Yes	Reflection, Graphing, Art, Coordinate Pairs, Geometry, Sending Codes	In this unique interdisciplinary activity, students use science, math and art skills to create a drawing on a curved grid. The coordinates used for the drawing on the curved grid are the same as they would be for a square grid. This anamorphic drawing appears distorted from the original and can be difficult to recognize...until it is viewed with a cylindrical mirror! A recognizable image "magically" appears when a science, math, and art are mixed together. Subjects: Physical Science, Life Science, Math, Art	3 - 12th	Reflection (CA Science Standards: Grade 3, 2.b; Grade 7, 6.f and 6.g.) Graphing Coordinate Pairs (CA Math Standards: Grade 4, Measurement & Geometry 2.0) Probability (CA Math Standards: Statistics, Data Analysis, and Probability: Grade 4, 2.2; Grade 6, 3.4 and 3.5; HS Probability and Statistics: 1.0 and 2.0)	Designed to Crunch
<a href="#">Black Box</a>			Scientific Method, Logic, Data Collection, Analysis	Students shake, rattle, and roll these "Black Boxes" to try to determine the insides...but no peeking. Ever!! Physical Science, Life Science, Earth/ Space Science	4 - 12th	Earth's Structure (CA Science Standards: Grade 6, 1.b) Atoms Atomic Structure (CA Science Standards: Grade 8, 3.a; HS Chemistry, 1.0; Grade 5, 1.b & 1.d)	Designed to Crunch
<a href="#">Break the Code</a>			Logic Games, Patterns, Code	In this logic game, a player uses clues to help them break a hidden code in as few guesses as possible. Subjects: Math	K - 8th	Strategies, skills, and concepts in finding solutions (CA Math Standards: 3rd grade - middle school, Mathematical Reasoning, 2.0)	Designed to Crunch


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<a href="#">Bridging the Gap</a>			Forces, Engineering, Design	How strong can a bridge be made using a limited set of materials? Subjects: Physical Science	4 - 12th	Motion and Forces (CA Science Standards: Grade 8 2.0; HS Physics, 1.b)	Designed to Crunch
<a href="#">Building Center</a>			Construction and Design, Scientific Process, Motor Development	Building with foam pieces, blocks, and boxes will help young learners explore elements of design, construction, and the scientific process in an open-ended way! Subjects: Physical Science	1 - 3rd	Scientific Process (Investigation & Experimentation, properties of materials, relative position, CA Science Standards: Grade K-2) Design Elements Physical and Motor Development	Designed to Crunch
<a href="#">Car On A Roll</a>	Yes		Motion, Momentum, Friction, Simple machines	With this simple model "car" students can explore the science of motion and more! Subject: Physical Science	2 - 8th	Simple machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1) Forces (CA Science Standards: Grade 8, 2)	Designed to Crunch
<a href="#">Coming Full Circle</a>			Observations, Innovation Skills, Analogies, Attributes	Challenge a group of students to make attribute connections with objects so that they are able to "link" the random items together into a circle. Subjects: Physical Science, Math	K - 8th	Observation skills (CA Science Standards: Grade K - 8, Investigation & Experimentation) Making Connections between problems (CA Math Standards: Grade 1 - 3, Mathematical Reasoning, 3.0)	Designed to Crunch
<a href="#">Commutative Cookies</a>	Yes		The Commutative Property of Multiplication, Patterns & Relationships	Display the same number of "chocolate chips" in two different arrangements of "cookies" with the commutative property of multiplication!!! Subjects: Math	3 - 4th	Recognize & Use the Commutative Property of Multiplication (CA Math Standards, Algebra & Functions, Grade 3, 1.5) Use Symbols to Represent Numbers (CA Math Standards, Algebra & Functions, Grade 4, 1.1)	Designed to Crunch
<a href="#">Egg Drop</a>			Motion & Force, Design Challenges, Properties of Materials	Students design and build a "vehicle" to prevent a dropped egg from breaking apart. Subjects: Physical Science	4 - 12th	Motion, Forces, & Machines (CA Science Standards: Grade 8, 1.0 & 2.0; HS Physics, 1.0) Investigation and Experimentation (CA Science Standards: all grades)	Designed to Crunch
<a href="#">Envelope Kite</a>			Wind, Lift, Ratios	Make a kite to explore the wind, life, and stability from an envelope or sheet of paper. Subjects: Earth/ Space Science, Math	3 - 8th	Wind (CA Science Standards: Grade 6, 4.a) Ratios (CA Math Standards: Grade 6, Number Sense, 1.2)	Designed to Crunch

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<u>Activity Kit/ Idea Sheet Name</u>	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Fender Bender Boxcars</a>			Motion, Momentum, Friction, Simple machines	This simple model of a car can be used to experience and to explore the science of motion. The low friction wheel and axle combination, one of the six simple machines, can be used with an inclined plane to collect data on the distances traveled by the car. Use different materials to cover the inclined plan or vary the weight in the cars to serve as variables for the experiments.	K - 8th	Simple Machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1.0) Forces (CA Science Standards: Grade 8, 2.0)	Designed to Crunch
<a href="#">Finger Print Detective</a>			Life Science, Genetics, Forensic Science	Using a simple ink stamp pad, students can solve a classroom mystery by exploring how each person has unique fingerprints. Subjects: Life Science	4 - 12th	Genetics (CA Science Standards: Grade 7, 2.0; HS Biology, 2.0 & 3.0) Investigation and Experimentation (Scientific Thought Process) (CA Science Standards: all grades)	Designed to Crunch
<a href="#">Fingerprint Fun</a>			Classification, Patterns in Nature, Observation Skills	Fingerprint reading is a fun way to strengthen observation and classification skills. Subjects: Life Science	K - 8th	Investigation and Experimentation (CA Science Standards: Grades 2-7)	Designed to Crunch
<a href="#">Foam Tipped Stop Rocket</a>			Forces, Motion, Gravity, Newton's Laws	Make a foot powered rocket that will shoot out and upward with surprising force!	2 - 12th	Push and pulls, objects fall (CA Science Standards: Grade 2, 1.c-1.e) Motion and Forces (CA Science Standards: Grade 8, 2.0; HS Physics, 1.b, 1.d, 1.e) Investigation and Experimentation (CA Science Standards: grades 2 & above)	Designed to Crunch
<a href="#">Forest Ranger Measuring Tape</a>			Geometry, Pi, Diameter, Circumference	Measuring the diameter of a tree without cutting it down can be a bit tough. Rangers apply Pi to make these useful measuring devices. Subjects: Math	4 - 8th	Measurement & Geometry, Circles, and Pi (CA Math Standards: Grade 6, 1.2; Grade 7, 2.0; HS Geometry) Irrational numbers (CA Math Standards: Grade 7, Number Sense, 1.4; HS	Designed to Crunch

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Activity Kit/ Idea Sheet Name	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
 <a href="#">Gravity Defying Frog</a>	Yes	Yes	Balance, Cause and Effect, Center of Mass, Stable Equilibrium	Move the center of gravity of a paper frog to create a gravity defying illusion! How can the frog spin around with most of its body suspended in mid-air? Use moveable weights to discover what forces are needed to keep the frog balanced on its head. Conceal the weights to heighten the mystery! Subjects: Physical Science	K - 8th	Motion (pushes and pulls) (CA Science Standards: Grade 2, 1.c) Balanced Forces (CA Science Standards: Grade 8, 2.0) Observation and Science Process Skills (CA Science Standards: Grade K-8, Investigation and Experimentation)	Designed to Crunch
<a href="#">Half a Meter Stick</a>			Measurement, Metric System, Data Collection	Students can easily measure the length of objects with their very own Half-a Meter Sticks...always handy for multitudes of measurement and data collection opportunities. Subjects: Math	K - 12th	Investigation and Experimentation (CA Science Standards: Grades 2 and above) Measurement and Geometry (CA Math Standards: Grade 2 and above)	Designed to Crunch
<a href="#">Leonardo's Arched Bridge</a>	Yes		Forces, Engineering, Design	Create a bridge building challenge and explore a self supporting bridge designed by Leonardo Da Vinci. Be amazed by the bridge's ingenuity and simplicity! Subjects: Physical Science	4 - 12th	Motion and Forces (CA Science Standards: Grade 8 2.0; HS Physics, 1.b) Observation and Science Process Skills (CA Science Standards: Grades 4 - 12, Investigation and Experimentation)	Designed to Crunch
<a href="#">Let's Get Rolling</a>			Motion, Momentum, Friction, Simple machines	This simple model of a car can be used to experience and to explore the science of motion. The low friction wheel and axle combination, one of the six simple machines, can be used with an inclined plane to collect data on the effects of different surfaces and of varying the weight in the car on the distances traveled. Subjects: Physical Science	2 - 12th	Simple machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1) Forces (CA Science Standards: Grade 8, 2)	Designed to Crunch
<a href="#">Mars Our Next Door Neighbor</a>			Astronomy, Solar System: Mars, Planetary Geography	Everybody loves Mars! These little globes of Mars are fun to make, and they introduce students to some of the main geographic features of the Martian surface. Subjects: Earth/Space Science	K - 12th	Objects in the Sky (CA Science Standards: Grade 3, 4.b; 4.c; 4.d) Solar System (CA Science Standards: Grade 5, 5.b; Grade 8, 4.e)	Designed to Crunch



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<u>Activity Kit/ Idea Sheet Name</u>	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Meet My Function Machine</a>	Yes		Functions, Variables, Algebraic Equations	Create a function machine that transforms an input number into a unique output number. Exchange function machines and discover the rule behind the function!	3 - 8th	Functions & Algebraic Expressions (CA Math Standards: Algebra & Functions, Grade 3, 2.0, 2.1, 2.2; Grade 4, 1.0, 1.5; Grade 5, 1.2; Grade 6, 1.4) Express quantitative relationships (CA Math Standards: Grade 7, Algebra & Functions, 1.0, 1.1; Grade 8, Algebra I, 18.0)	Designed to Crunch
<a href="#">Moon Mobile</a>	Yes		Moon phases	Create a mobile with the 4 points and the 4 intervals known as the phases of the Moon. Subjects: Earth/ Space Science	3 - 8th	Moon Phases (CA Science Standards: Grade 3, 4.b) Solar System includes the Earth, Moon, Sun (CA Science Standards: Grade 5, 5.b) The Moon shines by reflecting sunlight (CA Science Standards: Grade 8, 4.d)	Designed to Crunch Science Everywhere Tech Talk
<a href="#">On Target With Paper Airplanes</a>			Problem Solving, Design, Data Collection	Create, test, and evaluate paper airplanes as a simple and fun introduction to the basics of research engineering. Subjects: Physical Science, Math	4 - 8th	Observations & the Scientific Process (CA Science Standards: Grades 4 - 8 , Investigation & Experimentation)	Designed to Crunch
<a href="#">Place Your Number Value</a>	Yes		Place Value, Rounding, Addition & Subtraction	This fast-paced game reinforces place value, rounding, and comparison of number values! It may be customized to include decimals, fractions, and/or negative numbers. Subject: Math	1 - 8th	Place Value of whole numbers (CA Math Standards, Number Sense: Grade 1, 1.1; Grade 2, 1.0, 1.1; Grade 3, 1.0, 1.3; Grade 4, 1.0, 1.2, 1.3)	Designed to Crunch
<a href="#">Puff Rocket</a>			Forces, Motion, Gravity, Newton's Laws	Explore forces and motion with a straw "rocket" and an easily made launcher. Subjects: Physical Science, Earth/Space Science	K - 8th	Push and pulls, objects fall (CA Science Standards: Grade 2, 1.c-1.e)	Designed to Crunch
<a href="#">Retractor Car</a>	Yes		Motion, Momentum, Friction, Simple Machines	With a little creativity, the potential energy stored in a common badge retractor can run a fun little vehicle. Learn about wheels, hubs, and axles, while making a vehicle that can really move! Subjects: Physical Science	2 - 12th	Simple Machines (CA Science Standards: Grade 2, 1.d) Motion (CA Science Standards: Grade 2, 1.b, 1.c; Grade 8, 1.0) Forces (CA Science Standards: Grade 8, 2.0)	Designed to Crunch

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<u>Activity Kit/ Idea Sheet Name</u>	Kit?	Online?	Main Topics	Description	Grade Level(s)	Standards	STEM Disciplines
<a href="#">Shake Table</a>	Yes		Earthquakes, Plate Tectonics, Richter Scale	Building in earthquake country can be a tricky business. Architects and engineers run simulations using models and shake tables to test the integrity of buildings and determine necessary reinforcements. In this activity, students use a very simple, non-motorized shake table to test their structures. Subject: Physical Science, Earth/ Space Science	4 - 12th	Plate Tectonics and Earthquakes (CA Science Standards: Grade 6, 1.a; 1.d; 1.e; 2.d) Earthquake measurement (CA Science Standards: HS Earth Sciences, 3.d)	Designed to Crunch
<a href="#">Spy Writing</a>			Color, Light, Filters, Vision, Colors	Students can create, send, receive, and decode hidden messages in this fun activity that teaches about color and filters. Subject: Physical Science	K - 8th	Light and Color (CA Science Standards: Grade 3, 2.c, 2.d) White light, colors, and vision (CA Science Standards: Grade 7, 6.e)	Swing!
<a href="#">Staple Remover Catapult</a>	Yes		Motion & Forces, early Technology, Potential & Kinetic energy	Students can build and manipulate these scale model catapults to learn about motion, the history of science and technology, and the scientific method. Subjects: Physical Science	2 - 8th	Motion, Forces, & Machines (CA Science Standards: Grade 8, 1.0 & 2.0; Grade 2, 1.c & 1.d)	Designed to Crunch Tech Talk Swing!
<a href="#">Stomp Rocket</a>			Forces, Motion, Gravity, Newton's Laws	While the launch of this stomp rocket won't be quite as impressive as the launch of the space shuttle, its simplicity and surprising power will be sure to please. Subjects: Physical Science	K - 12th	Push and pulls, objects fall (CA Science Standards; Grade 2, 1.c-1.e) Motion and Forces (CA Science Standards: Grade 8, 2.0; HS Physics, 1.b, 1.d, 1.e) Investigation and Experimentation (Scientific Method) (CA Science Standards: grades 2 & above)	Designed to Crunch Tech Talk Swing!