

SUPPLIES

There are many good sources of hands-on materials for use in science and mathematics classrooms. In fact, most materials can be found at a local grocery, drug, or hardware store. For some materials, however, it is advantageous to know of a good supplier who provides materials at a reasonable cost. As we have purchased materials for workshops, schools, and youth-serving organizations, we have found a few supplies and suppliers that merit a special notation, either because they offered a hard-to-find product, offered it at a good price, or both. Certainly, this list of supplies and suppliers is not exhaustive, nor do we imply that these suppliers are the only good ones to use. We can only say that we have received good service and/or a good price on materials. For a more complete list of suppliers of science and mathematics hands-on materials, printed materials, and software, check the annual edition of *Science and Children* or *Science Scope* (see the Book List for references) which includes the annual supplement listing publishers and companies which sell these materials.

Electrical Supplies

Batteries: Size D batteries are available from a variety of sources. In general, regular batteries do not heat the wires as quickly as do alkaline batteries when children create short circuits, so they may be better for younger children. Watch for half-price sales on batteries at local electronics stores such as Radio Shack™. Suppliers: Radio Shack; Burt Harrison.

Battery and Light Bulb Holders: These vary considerably in size, price and quality. Paying a little more often is worthwhile since the metal parts on cheaper holders often bend or break, making them unusable. Supplier for light bulb holders: Burt Harrison. Suppliers for battery holders: Radio Shack, Delta.

Buzzers, Singing Chips and Other Noise-makers: A variety of noise-makers are available at surplus and hobby shops. Look for buzzers which run at DC voltages of 1.5 volts to 9 volts (that is, on one to six size D batteries); the “DC” indicates that the buzzers run on “direct current” which batteries produce as opposed to “alternating current” (AC) which is supplied through household wiring. In the past, American Science and Surplus has carried a supply of computer chips which “sing” a song via a piezo disc microphone; these chips were used in the “singing” greeting cards available a few years ago. You may be able to purchase several for your class. Suppliers: American Science and Surplus, Radio Shack.

Electrical gadgets: We have found many small electrical gadgets in surplus and other catalogs that are good to incorporate into projects and to have available so that students can expand their work beyond simple circuits. Look for gadgets which run at DC voltages of 1.5 volts to 9 volts (that is, on one to six size D batteries); the “DC” indicates that the gadgets run on “direct current” which batteries produce as opposed to “alternating current” (AC) which is supplied through household wiring. Suppliers: American Science and Surplus, Radio Shack.

Flashlight bulbs: When ordering bulbs, check the voltage they require. If you connect a bulb that is rated for 1.5 volts (one size D battery) to three batteries (4.5 volts), the bulb will most likely burn out. If you want to screw the bulb into a socket, don't buy bayonet bulbs; they are designed to pop into a special type of socket. Suppliers: Burt Harrison; Delta.

Knife switches and alligator clips: These are optional items since circuits can be held together with tape and a simple switch can be made from two paper clips. However, manufactured switches and clips make it easier and more fun for students to experiment with circuits and to assure that good connections are being made between wires. For alligator clips, smaller ones work as well as larger ones and cost considerably less. If, however, younger children will be working with the circuits, larger clips may be easier to handle. You can get a similar result by using wooden or plastic clothespins to hold together wires or aluminum foil strips. Suppliers: Radio Shack; Burt Harrison.

Motors: A wide variety of small electrical motors are available through surplus catalogs, school suppliers, and electronics catalogs. Look for DC motors which run at voltages of 1.5 volts to 9 volts (that is, on one to six size D batteries); the “DC” indicates that the motors run on “direct current” which batteries produce as opposed to “alternating current” (AC) which is supplied through household wiring. Be sure that the motors you purchase either have wires to connect to the battery pack or have small tabs to which you can connect wires. Also, look for a shaft on the motor to which students can connect a fan blade or other apparatus. Suppliers: American Science and Surplus; Delta.

Wire for building circuits: 22-gauge insulated wire is good for small electrical projects which use size D batteries. Don’t feel you have to have this exact type of wire; other gauges work as well (for example, 18 to 24 gauge), and you can also use aluminum foil strips if your activities only involve one or two batteries at a time. To insulate the foil strips, you can cover them on both sides with cellophane or masking tape. Supplier: Burt Harrison.

Wire cutters and strippers: Although you can use a sharp knife to strip the insulation from wires, this becomes very time-consuming when preparing materials for 30 or more students. Invest in a wire cutter and stripper. One quick squeeze cuts the wire in two and a second squeeze neatly strips the insulation from the wire. We especially like “Mr. Jaws,” available from Burt Harrison. Suppliers: Burt Harrison, Delta, American Science and Surplus, or any local hardware store.

Magnets

Bolts for Electromagnets: Any 2-3 inch (5-8 cm) bolt that you find at the hardware store is fine as long as it is made of iron or steel and not of aluminum. To be sure, take a magnet along to the store; buy bolts that are attracted to the magnet. You can use large nails for this activity, but bolts have the advantage of being easier to handle and having a flat end rather than a sharp point. Supplier: Local hardware store.

Iron Filings: You can buy iron filings from a teacher supply catalog at a reasonable cost. Remember that you can use them over and over again. If they get stuck to a magnet, try to remove them with another magnet which is inside a plastic bag. One alternative to buying filings is to make your own by rubbing two plain steel wool pads together. However, this is a lot of work considering that purchased filings cost so little. Supplier: Delta.

Iron filing boxes: You can buy clear, sealed plastic boxes that contain fine iron filings. These make viewing magnetic fields very easy. Supplier: Discovery Magnets.

Magnets: For the purposes of most of the activities in this book, most any shape or size of magnet will work. However, for the activity, *Which Way is North?*, bar magnets work best. Museum bookstores and teacher supply catalogs have nice bar magnets but they are fairly expensive. Another source of nice bar magnets is veterinary supply catalogs and/or a local meat packing company or veterinarian’s office; they may have a supply of cow magnets, which are considerably cheaper than those sold in teacher supply catalogs.

Cow magnets are 3-4 inch bar magnets in smooth, seamless, stainless steel cases. Beef cattle swallow the magnets like medicine capsules. The magnets remain in their first stomach (cows have more than one). When the cow accidentally eats small pieces of iron or steel (such as a piece of a “tin” can or wire fencing), it is attracted to the magnet and remains in the cow’s first stomach, thus preventing injury to the lower part of the digestive system. The magnets are recovered at the meat packing plant, sterilized, and reused. You can either get new cow magnets from a veterinary or farm supply catalog, or get clean, used ones from a local veterinarian, cattle farmer, or meat packing company.

For other activities, you can use a variety of magnet types and shapes, including doughnut, round, disc, and horseshoe magnets. Look for magnets that are large enough for children to hold and easily identify poles, strong enough to pick up a few paper clips, and have no sharp edges. Suppliers: American Science and Surplus; Delta, Discovery Magnets.

Mathematics

Cubes: Many companies make cubes, however, few make 1 inch wooden cubes. We found the size of the cubes to be important with activities such as *Shapes and Sizes* and *Capacity and Volume*. Supplier: Burt Harrison.

Dominos: Wooden and plastic dominos are available in a variety of bright colors. Make sure students keep colors separated when they have finished working with the dominos. Supplier: Cuisinaire.

Geoboards: Geoboards are sturdy wood or plastic boards with pegs or nails spaced at regular intervals. We recommend the wooden boards with nails; if a nail falls out or is broken, you can replace it. With plastic geoboards, when a plastic peg is broken off, it is difficult or impossible to repair. Be sure to store geoboards with the original foam covers in place. Suppliers: Creative Publications, American Science and Surplus (plastic).

Mirrors: Large plastic mirrors (4 x 6 inches or 10 x 15 cm) are ideal for children to safely handle. The larger size is especially useful for younger children. Since some companies don't provide dimensions for mirrors in their catalogs, call to verify size before ordering. Supplier: Creative Publications.

Spinners: You can make spinners for numbers or colors from cardboard and brass paper fasteners or can use alternative ways of drawing numbers or colors (such as drawing slips of paper from a bag or rolling dice). However, for activities such as *Fair Spinners*, it is important to have a good spinner that is equally likely to land on any number. Storing spinners in their plastic slips and in a box where they won't get crushed helps keep them spinning freely. Supplier: Creative Publications.

Tangrams: You can make tangrams from cardboard, but the ones we use are made from brightly colored, sturdy plastic and are quite inexpensive. Be sure that students keep colors separate and return all seven pieces to the plastic bag when they are finished. When students work as partners with tangrams, make sure each partner has a different color set of tangrams; this makes it easier for students to separate their set of tangrams from their partner's when the activity is finished. Supplier: Creative Publications.

SUPPLIERS

Below are a list of suppliers, vendors and web sites that offer materials for use in science and mathematics classrooms. To the best of our knowledge these are dependable companies. We cannot, however, be responsible or guarantee any merchandize and/or services they provide.

American Science and Surplus

7410 North Lehigh Ave
Niles, IL 60714
(888) 724-7587
www.sciplus.com

Carolina Biological Supply

2700 York Road
Burlington, NC 27215
(800) 334-5551
www.carolina.com

Delta Education

80 Northwest Blvd.
P.O. Box 3000
Nashua, NH 03061-3000
(800) 258-1302
www.delta-education.com

ETA/Cuisenarie

500 Greenview Court
Vernon Hills, IL 60061
(800) 445-5985
www.eta-cuisenarie.com

McGraw Hill Divisions

Creative Publications
Wright Group Company
Everyday Math
220 East Daniel Dale Road
DeSoto, TX 75115
(800) 442-9685
www.mhschool.com
SRA – (888) 772-4543
www.sraonline.com
Wright Group – (800) 648-2970
www.wrightgroup.com
www.creativepublications.com

Nasco Science

P.O. Box 3837
Modesto, CA 95352
(800) 558-9595
www.eNASCO.com

Pearson Learning/Dale Seymour Publications

P.O. Box 2500
145 South Mt. Zion
Lebanon, IN 46052
(800) 321-3206
fax: (800) 393-3156
Scott Foresman Program
www.scottforesmancatalog.com

Sargent-Welch

P.O. Box 5229
Buffalo Grove, IL 60089-5229
(800) 727-4368
www.sargentwelch.com
(offers catalog of suppliers for
Science & Math)

Science Kit and Boreal Laboratories

777 East Park Drive
P.O. Box 5003
Tonawanda, NY 14150-5003
(800) 828-7777
www.sciencekit.com

The Magnet Source

Master Magnetics, Inc.
607 S. Gilbert St.
P.O. Box 279
Castle Rock, CO 80101
(800) 525-3536
www.magnetsource.com

RECOMMENDED BOOK LIST

- Abruscato, Joe and Jack Hassard. 1977. *The whole cosmos catalog of science activities*. Glenview, IL: Scott, Foresman & Co.
- Arnold, Caroline. 1980. *Measurements: Fun, facts, and activities*. New York: Franklin Watts.
- Beaumont, V., R. Curtis, and J. Smart. 1986. *How to teach perimeter, area, and volume*. Reston, VA: National Council of Teachers of Mathematics.
- Burns, Marilyn and Bonnie Tank. 1988. *A collection of math lessons*. New Rochelle, NY: The Math Solution Publications.
- Carson, Mary. 1989. *The scientific kid*. New York: Harper & Row.
- Brown, Robert J. 1984. *333 science tricks and experiments*. Blue Ridge Summit, PA: TAB Books.
- Cobb, Vicki and Kathy Darling. 1980. *Bet you can't!* New York: Avon.
- Cobb, Vicki and Kathy Darling. 1983. *Bet you can!* New York: Avon.
- De Bruin, Jerry. 1986. *Creative hands-on science experiences*. Carthage, IL: Good Apple.
- Ehrlich, Robert. 1990. *Turning the world inside out*. Princeton, NJ: Princeton University Press.
- Erickson, Tim. 1986. *Off and running: The computer offline activity book*. Berkeley, CA: Lawrence Hall of Science.
- Erickson, Tim. 1989. *Get it together: Math problems for groups grades 4-12*. Berkeley, CA: Lawrence Hall of Science.
- Fosler, Leslie. 1989. *Checkboard Press mathematics encyclopedia*. New York: Checkboard Press.
- Goldman, Jane F. 1988. *The curiosity shop: A science sampler for the primary years*. Minneapolis, MN: T.S. Denison.
- Graf, Rudolf F. 1964. *Safe and simple electrical experiments*. New York: Dover.
- Herbert, Don. 1980. *Mr. Wizard's supermarket science*. New York: Random House.
- Hoffman, Jane. 1989. *Backyard scientist, series two*. Irvine, CA: Backyard Scientist.
- Kaye, Peggy. 1987. *Games for math*. New York: Pantheon Books.

- Kulm, Gerald. 1989. *Challenge of the unknown: Community leader's resource guide*. Washington, DC: American Association for the Advancement of Science (AAAS).
- Kulm, Gerald. 1990. *Math power*. Washington, DC: American Association for the Advancement of Science (AAAS).
- Lambert, D. 1987. *Maps and globes*. New York: The Book Wright Press.
- Luce, Marnie. 1969. *Points, lines, and planes*. Minneapolis, MN: Lerner Publications Company.
- Macauley, David. 1988. *The way things work*. Boston, MA: Houghton-Mifflin.
- Maddux, Hilary C. 1986. *The challenge of the unknown teaching guide*. New York: W. W. Norton.
- Mandell, M. 1989. *Simple science experiments with everyday materials*. New York: Sterling.
- Marson, Ron. 1983. *TOPS learning systems: Magnetism*. Canby, OR: TOPS Learning Systems.
- Matyas, Marsha L., June B. Combs, and Emily Ehrenfeld. 1992. *Girls, science and mathematics: Linkages for the future*. Washington, DC: American Association for the Advancement of Science (AAAS).
- National Science Teachers Association (NSTA). 1990. *Magnetic moments: Science teaching that works*. (videotape). Washington, DC: NSTA.
- North Carolina Museum of Life and Science. 1992. *Sharing science with children: A survival guide for scientists and engineers*. Durham, NC: North Carolina Museum of Life and Science.
- Reuben, Gabriel. 1960. *Electricity experiments for children*. New York: Dover.
- Shimek, William. 1990. *Patterns: What are they?* Minneapolis, MN: Lerner Publications Company.
- Skolnick, Joan, Carol Langbort, and Lucille Day. 1982. *How to encourage girls in math and science*. Palo Alto, CA: Dale Seymour.
- Smith, Henry. 1982. *Amazing air*. New York: Lothrop, Lee and Shepard.
- Stenmark, Jean Kerr, Virginia Thompson, and Ruth Cossey. 1986. *Family math*. Berkeley, CA: Lawrence Hall of Science.
- Strongin, Herb. 1985. *Science on a shoestring*. Menlo Park, CA: Addison-Wesley.
- Thomas Alva Edison Foundation. 1988. *The Thomas Edison book of easy and incredible experiments*. New York: John Wiley.
- Walpole, Brenda. 1988. *175 Science experiments to amuse and amaze your friends*. New York: Random House.

Watson, Phillip. 1982. *Super motion: Science club series*. New York: Lothrop, Lee and Shepard.

Wilkes, Angela. 1990. *My first science book*. New York: Alfred A. Knopf.

Williams, Robert A., Robert E. Rockwell, and Elizabeth A. Sherwoök. 1989. *The scientific kid*. New York: Harper & Row.

Wylar, Rose. 1986. *Science fun with toy boats and planes*. New York: Julian Messner.

RECOMMENDED JOURNALS AND MAGAZINES

From the National Science Teachers Association, 1742 Connecticut Avenue, NW, Washington, DC 20009-1171, (202) 328-5800:

Science and Children (for elementary school teachers)

Science Scope (for middle/junior high school teachers)

The Science Teacher (for secondary school teachers)

From the National Council of Teachers of Mathematics; 1906 Association Drive, Reston, VA 22091, (703) 620-9849:

Arithmetic Teacher (for elementary and middle school teachers)

From the American Chemical Society, 1155 16th Street, NW, Washington, DC 20036, (202) 452-2113:

WonderScience (activities for elementary school children)

From the American Association for the Advancement of Science, Directorate for Education and Human Resources Programs, 1333 H Street, NW, Washington, DC 20005, (202) 326-6670:

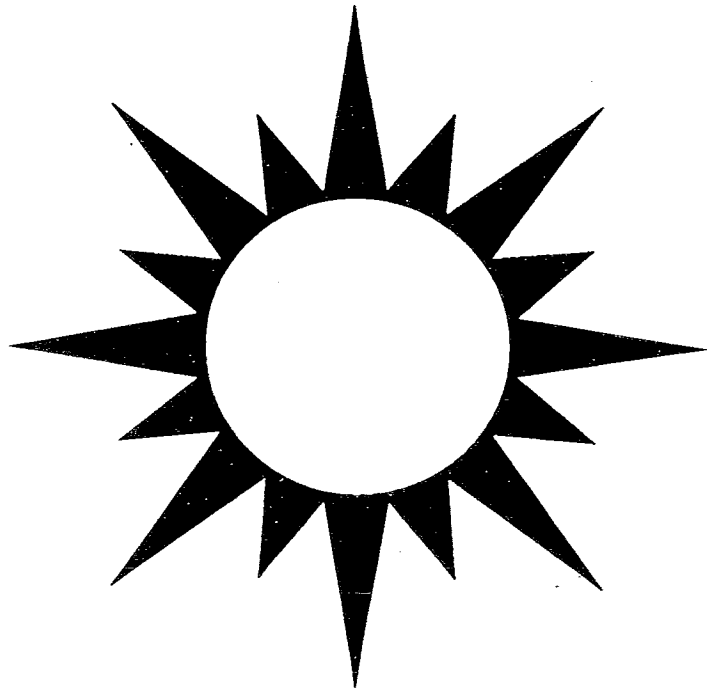
Science Books & Films (reviews of educational materials)

Science Education News (free newsletter)

Girls and Science: In Touch with Technology (newsletter)

Parent Enlightenment (newsletter)

Proyecto Futuro News (bulletin for teachers)



Proyecto Futuro
Physical Science and Mathematics

Alignment with Standards

New Mexico Science Content Standards, Benchmarks, and Performance Standards (Approved 2003)
National Science Education Standards, National Research Council, 1996

New Mexico Museum of Natural History and Science
Fall 2005

This document aligns activities in the *Proyecto Futuro* Physical Science and Mathematics manual with science standards at the state (New Mexico) and national levels. Alignment with content standards (physical science) is provided for each activity. To reduce redundancy, the standards from Strand I: Scientific Thinking and Practice, which are addressed throughout all of the activities, are listed in a separate section at the beginning of this document.

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Proyecto Futuro Physical Science and Mathematics
Alignment with Standards
New Mexico Science Content Standards, Benchmarks, and Performance Standards
Strand I: Scientific Thinking and Practice

Standards	K-4 Benchmarks	5-8 Benchmarks
<p>Standard I: <i>Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, and predicting, and validating to think critically.</i></p>	<p>I. <i>Use scientific methods to observe, collect, record, analyze, predict, interpret, and determine reasonableness of data.</i> <u>Grade Level Performance Standards</u> Kindergarten:</p> <ol style="list-style-type: none"> Use observation and questioning skills in science inquiry (e.g., What happens when something is pushed or pulled?). Ask and answer questions about surroundings and share findings with classmates. Record observations and data with pictures, numbers, and/or symbols. <p>1st grade:</p> <ol style="list-style-type: none"> Make observations, develop simple questions, and make comparisons of familiar situations (e.g., What does the seed look like when it starts to grow?). Describe relationships between objects (e.g., above, next to, below) and predict the results of changing the relationships (e.g., When that block moves, what will happen to the one next to it?). <p>2nd grade:</p> <ol style="list-style-type: none"> Conduct simple investigations (e.g., measure the sizes of plants of the same kind that are grown in sunlight and in shade). Use tools to provide information not directly available through only the senses (e.g., magnifiers, rulers, thermometers). Make predictions based on observed patterns as opposed to random guessing. Follow simple instructions for a scientific investigation. <p>3rd grade:</p> <ol style="list-style-type: none"> Make new observations when discrepancies exist between two descriptions of the same object or phenomenon to improve accuracy. Recognize the difference between data and opinion Use numerical data in describing and comparing objects, 	<p>I. <i>Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.</i> <u>Grade Level Performance Standards</u> 5th grade:</p> <ol style="list-style-type: none"> Plan and conduct investigations, including formulating testable questions, making systematic observations, developing logical conclusions, and communicating findings. Use appropriate technologies (e.g., calculators, computers, balances, spring scales, microscopes) to perform scientific tests and to collect and display data. Use graphic representations (e.g., charts, graphs, tables, labeled diagrams) to present data and produce explanations for investigations. Describe how credible scientific investigations use reproducible elements including single variables, controls, and appropriate sample sizes to produce valid scientific results. Communicate the steps and results of a scientific investigation. <p>6th grade:</p> <ol style="list-style-type: none"> Construct appropriate graphs from data and develop qualitative and quantitative statements about the relationships between variables being investigated. Examine the reasonableness of data supporting a proposed scientific explanation. Justify predictions and conclusions based on data. <p>7th grade:</p> <ol style="list-style-type: none"> Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis. Use models to explain the relationships between variables being investigated.

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Standards	K-4 Benchmarks	5-8 Benchmarks
<p>Standard I: <i>Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.</i></p>	<p>events, and measurements.</p> <ol style="list-style-type: none"> 4. Collect data in an investigation and analyze those data. 5. Know that the same scientific laws govern investigations in different times and places (e.g., gravity, growing plants). <p>4th grade:</p> <ol style="list-style-type: none"> 1. Use instruments to perform investigations (e.g., timers, balances) and communicate findings. 2. Differentiate observation from interpretation and understand that a scientific explanation comes in part from what is observed and in part from how the observation is interpreted. 3. Conduct multiple trials to test a prediction, draw logical conclusions, and construct and interpret graphs from measurements. 4. Collect data in an investigation using multiple techniques, including control groups, and analyze those data to determine what other investigations could be conducted to validate findings. <p>II. <i>Use scientific thinking and knowledge and communicate findings.</i></p> <p><u>Grade Level Performance Standards</u> Kindergarten:</p> <ol style="list-style-type: none"> 1. Communicate observations and answer questions about surroundings. <p>1st grade:</p> <ol style="list-style-type: none"> 1. Know that simple investigations do not always turn out as planned. <p>2nd grade:</p> <ol style="list-style-type: none"> 1. Understand that in doing science it is often helpful to work with a team and share findings. 2. Make accurate observations and communicate findings about investigations. <p>3rd grade:</p> <ol style="list-style-type: none"> 1. Use a variety of methods to display data and present 	<p>8th grade:</p> <ol style="list-style-type: none"> 1. Evaluate the accuracy and reproducibility of data and observations. 2. Use a variety of technologies to gather, analyze and interpret scientific data. 3. Know how to recognize and explain anomalous data. <p>II. <i>Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.</i></p> <p><u>Grade Level Performance Standards</u> 5th grade:</p> <ol style="list-style-type: none"> 1. Understand that different kinds of investigations are used to answer different kinds of questions (e.g., observations, data collection, controlled experiments). 2. Understand that scientific conclusions are subject to peer and public review. <p>6th grade:</p> <ol style="list-style-type: none"> 1. Understand that scientific knowledge is continually reviewed, critiqued, and revised as new data become available. 2. Understand that scientific investigations use common processes that include the collection of relevant data and observations, accurate measurements, the

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<p><u>Standard I:</u> <i>Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.</i></p>	<p>findings.</p> <ol style="list-style-type: none"> 2. Understand that predictions are based on observations, measurements, and cause-and-effect relationships. <p>4th grade:</p> <ol style="list-style-type: none"> 1. Communicate ideas and present findings about scientific investigations that are open to critique from others. 2. Describe how scientific investigations may differ from one another (e.g., observations of nature, measurements of things changing over time). 3. Understand how data are used to explain how a simple system functions (e.g., a thermometer to measure heat loss as water cools). <p>III. <i>Use mathematical skills and vocabulary to analyze data, understand patterns and relationships, and communicate findings.</i> <u>Grade Level Performance Standards</u> Kindergarten:</p> <ol style="list-style-type: none"> 1. Observe and describe the relative sizes and characteristics of objects (e.g., bigger, brighter, louder, smellier). <p>1st grade:</p> <ol style="list-style-type: none"> 1. Use numbers and mathematical language (e.g., “addition” instead of “add to,” “subtraction” instead of “take away”) to describe phenomena. <p>2nd grade:</p> <ol style="list-style-type: none"> 1. Record observations on simple charts or diagrams. 2. Measure length, weight, and temperature with appropriate tools and express those measurements in accurate mathematical language. <p>3rd grade:</p> <ol style="list-style-type: none"> 1. Use numerical data in describing and comparing objects, events, and measurements. 	<p>identification and control of variables, and logical reasoning to formulate hypotheses and explanations.</p> <ol style="list-style-type: none"> 3. Understand that not all investigations result in defensible scientific explanations. <p>7th grade:</p> <ol style="list-style-type: none"> 1. Describe how bias can affect scientific investigation and conclusions. 2. Critique procedures used to investigate a hypothesis. 3. Analyze and evaluate scientific explanations. <p>8th grade:</p> <ol style="list-style-type: none"> 1. Examine alternative explanations for observations. 2. Describe ways in which science differs from other ways of knowing and from other bodies of knowledge (e.g., experimentation, logical arguments, skepticism). 3. Know that scientific knowledge is built on questions posed as testable hypotheses, which are tested until the results are accepted by peers. <p>III. <i>Use mathematical ideas, tools, and techniques to understand scientific knowledge.</i> <u>Grade Level Performance Standards</u> 5th grade:</p> <ol style="list-style-type: none"> 1. Use appropriate units to make precise and varied measurements. 2. Use mathematical skills to analyze data. 3. Make predictions based on analyses of data, observations, and explanations. 4. Understand the attributes to be measured in a scientific investigation and describe the units, systems, and processes for making the measurement. <p>6th grade:</p> <ol style="list-style-type: none"> 1. Evaluate the usefulness and relevance of data to an investigation. 2. Use probabilities, patterns, and relationships to explain data and observations.

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<p>Standard I: <i>Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, and predicting, and validating to think critically.</i></p>	<p>2. Pose a question of interest and present observations and measurements with accuracy.</p> <p>3. Use various methods to display data and present findings and communicate results in accurate mathematical language.</p> <p>4th grade:</p> <ol style="list-style-type: none"> 1. Conduct multiple trials using simple mathematical techniques to make and test predictions. 2. Use mathematical equations to formulate and justify predictions based on cause-and-effect relationships. 3. Identify simple mathematical relationships in a scientific investigation (e.g., the relationship of the density of materials that will or will not float in water to the density of water). 	<p>7th grade:</p> <ol style="list-style-type: none"> 1. Understand that the number of data (sample size) influences the reliability of a prediction. 2. Use mathematical expressions to represent data and observations collected in scientific investigations. 3. Select and use an appropriate model to examine a phenomenon. <p>8th grade:</p> <ol style="list-style-type: none"> 1. Use mathematical expressions and techniques to explain data and observations and to communicate findings (e.g., formulas and equations, significant figures, graphing, sampling, estimation, mean). 2. Create models to describe phenomena.

**NATIONAL SCIENCE EDUCATION STANDARDS
PROCESS SKILLS**

Standard	K-4 Benchmarks	5-8 Benchmarks
<p>Standard A: Science as Inquiry <i>Abilities necessary to do scientific inquiry</i> <i>Understandings about scientific inquiry</i></p>	<ul style="list-style-type: none"> • Ask a question about objects, organisms, and events in the environment. • Plan and conduct a simple investigation. • Employ simple equipment and tools to gather data and extend the senses. • Use data to construct a reasonable explanation. • Communicate investigations and explanations. 	<ul style="list-style-type: none"> • Identify questions that can be answered through scientific investigations. • Design and conduct a scientific investigation. • Use appropriate tools and techniques to gather, analyze, and interpret data. • Develop descriptions, explanations, predictions, and models using evidence. • Think critically and logically to make the relationships between evidence and explanations. • Recognize and analyze alternative explanations and predictions. • Communicate scientific procedures and explanations. • Use mathematics in all aspects of scientific inquiry.
<p>Standard E: Science and Technology <i>Abilities of technological design</i> <i>Understandings about science and technology</i></p>	<ul style="list-style-type: none"> • Identify a simple problem. • Propose a solution. • Implement proposed solutions. • Evaluate a product or design. • Communicate a problem, design, and solution. 	<ul style="list-style-type: none"> • Design a solution or product. • Implement a proposed design. • Communicate the process of a technological design.
<p>Standard F: Science in Personal and Social Perspectives <i>Personal health</i> <i>Types of resources</i> <i>Changes in environments</i> <i>Science and technology in local challenges</i></p>	<ul style="list-style-type: none"> • Follow safety rules for personal health. • Develop an understanding of basic resources, such as air, water, and soil. • Understand changes in environments. • Invent new ways of doing things and solving problems. 	<ul style="list-style-type: none"> • Use safety precautions for personal health. • Develop an understanding of populations, resources, and environments. • Understand that internal and external processes of the earth system cause natural hazards. • Understand risks and benefits. • Build an awareness of the influences of science and technology in society.

Proyecto Futuro Physical Science and Mathematics
 Alignment with Standards
NATIONAL SCIENCE EDUCATION STANDARDS
PROCESS SKILLS

Standard	K-4 Benchmarks	5-8 Benchmarks
<p>Standard G: History and Nature of Science <i>Science as a human endeavor</i> <i>Nature of science</i></p>	<ul style="list-style-type: none"> • Understand basic principles of science as a human endeavor. 	<ul style="list-style-type: none"> • Formulate and test explanations of nature using observation, experiments, and theoretical and mathematical models to understand the nature of science.

ELECTRICITY: IT'S EASY!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Static Electricity (grades K-8)	<p>K-4 Benchmark II: Know that energy is needed to get things done and that energy has different forms. <u>Grade Level Performance Standards</u></p> <p>K: 1. Observe how energy does things. 1st: 1. Observe and describe how energy produces changes. 2nd: 3. Describe the usefulness of some forms of energy and how energy can affect common objects. 4th: 1. Identify the characteristics of several different forms of energy and describe how energy can be converted from one form to another.</p> <p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy. <u>Grade Level Performance Standards</u></p> <p>5th: 3. Know that there are different forms of energy. 6th: 1. Identify various types of energy. 8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism 5-8: Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound nuclei, and the nature of a chemical. Energy is transferred in many ways.</p>
Simple Electric Circuits (grades K-8)	<p>K-4 Benchmark II: Know that energy is needed to get things done and that energy has different forms. <u>Grade Level Performance Standards</u></p> <p>K: 1. Observe how energy does things. 1st: 1. Observe and describe how energy produces changes. 2nd: 3. Describe the usefulness of some forms of energy and how energy can affect common objects. 4th: 1. Identify the characteristics of several different forms of energy and describe how energy can be converted from one form to another. 2. Recognize that energy can be stored in many ways. 4. Demonstrate how electricity flows through a simple circuit.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass. 5-8: Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound nuclei, and the nature of a chemical. Energy is transferred in many ways. 5-8: Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.</p>

ELECTRICITY: IT'S EASY!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science Standard I.(Physical Science): <i>Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</i>	National Science Standards
Simple Electric Circuits (cont.)	<p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy. <u>Grade Level Performance Standards</u> 5th: 3. Know that there are different forms of energy. 6th: 1. Identify various types of energy. 8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat. 4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: electrical current paths through parallel and series circuits.</p>	
Conductors and Insulators (grades K-8)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> K: 1. Observe that objects are made of different types of materials. 2. Observe that different materials have different properties. 1st: 2. Describe simple properties of matter. K-4 Benchmark II: Know that energy is needed to get things done and that energy has different forms. <u>Grade Level Performance Standards</u> K: 1. Observe how energy does things. 1st: 1. Observe and describe how energy produces changes. 2nd: 2. Know that heat moves more rapidly in thermal conductors than in insulators. 3. Describe the usefulness of some forms of energy and how energy can affect common objects. 4th: 1. Identify the characteristics of several different forms of energy and describe how energy can be converted from one form to another. 2. Recognize that energy can be stored in many ways. 4. Demonstrate how electricity flows through a simple circuit.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass. 5-8: Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.</p>

ELECTRICITY: IT'S EASY!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Conductors and Insulators (cont.)	<p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. Grade Level Performance Standards 8th: 2. Distinguish between metals and non-metals.</p> <p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy. Grade Level Performance Standards 5th: 3. Know that there are different forms of energy. 6th: 1. Identify various types of energy. 2. Understand that heat energy can be transferred through conduction, radiation and convection. 8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat. 4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: electrical current paths through parallel and series circuits.</p>	
Circuits and Maps: A Special Code (grades K-8)	<p>K-4 Benchmark II: Know that energy is needed to get things done and that energy has different forms. Grade Level Performance Standards K: 1. Observe how energy does things. 1st: 1. Observe and describe how energy produces changes. 2nd: 3. Describe the usefulness of some forms of energy and how energy can affect common objects. 4th: 1. Identify the characteristics of several different forms of energy and describe how energy can be converted from one form to another. 2. Recognize that energy can be stored in many ways. 4. Demonstrate how electricity flows through a simple circuit.</p> <p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Electricity in circuits can produce light, heat, sound, and magnetic effects. Electrical circuits require a complete loop through which an electrical current can pass. 5-8: Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound nuclei, and the nature of a chemical. Energy is transferred in many ways. 5-8: Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.</p>

ELECTRICITY: IT'S EASY!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.	National Science Standards
Circuits and Maps: A Special Code (cont.)	<p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Know that there are different forms of energy.</p> <p>6th: 1. Identify various types of energy.</p> <p>8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat.</p> <p>4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: electrical current paths through parallel and series circuits.</p>	
Circuits in Series and Parallel: What's the Difference? (grades 7-8)	<p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Know that there are different forms of energy.</p> <p>6th: 1. Identify various types of energy.</p> <p>8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat.</p> <p>4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: electrical current paths through parallel and series circuits.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism</p> <p>5-8: Electrical circuits provide a means of transferring electrical energy when heat, light, sound, and chemical changes are produced.</p>
How Much Energy Do You Use? (grades 7-8)	<p>5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Know that there are different forms of energy.</p> <p>6th: 1. Identify various types of energy.</p> <p>8th: 1. Know that energy exists in many forms and that when energy is transformed some energy is usually converted to heat.</p> <p>4. Know that electrical energy is the flow of electrons through electrical conductors that connect sources of electrical energy to points of use, including: electrical current paths through parallel and series circuits, use of electricity by appliances and equipment.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism</p> <p>5-8: Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound nuclei, and the nature of a chemical. Energy is transferred in many ways.</p> <p>Content Standard F: Science and Technology in Society</p> <p>5-8: Technology influences society through its products and processes. Technology influences the quality of life and the ways people act and interact.</p>

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science Standard I (Physical Science): <i>Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</i>	National Science Standards
Can You Push Against Air and Win? (grades K-6)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> 1st: 1. Observe that the three states of matter have different properties. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u> 5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 3. Analyze the separate forces acting on an object at rest or in motion, including how multiple forces reinforce or cancel one another to result in a net force that acts on an object.</p>	<p>Content Standard B: Properties of Objects and Materials K-4: Materials can exist in different states—solid, liquid, and gas.</p> <p>Content Standard B: Position and Motion of Objects K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>
Air Pressure Power (grades K-6)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> 1st: 1. Observe that the three states of matter have different properties. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u></p>	<p>Content Standard B: Properties of Objects and Materials K-4: Materials can exist in different states—solid, liquid, and gas.</p> <p>Content Standard B: Position and Motion of Objects K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Air Pressure Power (cont.)	<p>K 1. Observe that things move in many different ways.</p> <p>1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction.</p> <p>2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u> 5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature 2. Know that a force has both magnitude and direction. 3. Analyze the separate forces acting on an object at rest or in motion, including how multiple forces reinforce or cancel one another to result in a net force that acts on an object.</p>	
Trash Bag Airlift (grades K-8)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> 1st: 1. Observe that the three states of matter have different properties. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u></p>	<p><u>Content Standard B: Properties of Objects and Materials</u> K-4: Materials can exist in different states—solid, liquid, and gas.</p> <p><u>Content Standard B: Position and Motion of Objects</u> K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Trash Bag Airlift (cont.)	<p>K 1. Observe that things move in many different ways.</p> <p>1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction.</p> <p>2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>4th: 3. Describe that gravity exerts more force on objects with greater mass.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u></p> <p>5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u></p> <p>5th: 3. Identify forces in nature.</p> <p>8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 3. Analyze the separate forces acting on an object at rest or in motion, including how multiple forces reinforce or cancel one another to result in a net force that acts on an object. 8. Understand and apply Newton's Laws of Motion:....</p> <ul style="list-style-type: none"> If an object has more mass the effect of an applied force is proportionally less. 	
Hot and Cold Air (grades K-6) Hot and Cold	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u></p> <p>1st: 1. Observe that the three states of matter have different properties.</p>	<p>Content Standard B: Properties of Objects and Materials K-4: Materials can exist in different states—solid, liquid, and gas.</p> <p>Content Standard B: Position and Motion of Objects</p>

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Air (cont.)	<p>2nd: 1. Observe that properties of substances can change when they are mixed, cooled or heated. 2. Describe the changes that occur when substances are heated or cooled and change from one state of matter to another. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u> 5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye. 6. Explain the relationship between temperature and the motion of particles in each state of matter.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature.</p>	<p>K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>
Egg-in-a-Bottle (grades K-8)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> 1st: 1. Observe that the three states of matter have different properties. 2nd: 1. Observe that properties of substances can change when they are mixed, cooled or heated. 2. Describe the changes that occur when substances are heated or cooled and change from one state of matter to another. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p>	<p>Content Standard B: Position and Motion of Objects K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Egg-in-a-Bottle (cont.)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u> 5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye. 6. Explain the relationship between temperature and the motion of particles in each state of matter.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 3. Analyze the separate forces acting on an object at rest or in motion, including how multiple forces reinforce or cancel one another to result in a net force that acts on an object. 8. Understand and apply Newton's Law's of Motion: • Objects in motion will continue in motion and objects at rest will remain at rest unless acted upon by an unbalanced force. • If a greater force is applied to an object, a proportionally greater acceleration will occur.</p>	

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
	<ul style="list-style-type: none"> If an object has more mass, the effect of an applied force is proportionally less. 	
Air in Motion (grades K-8)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties.</p> <p><u>Grade Level Performance Standards</u></p> <p>1st: 1. Observe that the three states of matter have different properties. 4th: 2. Know that materials are made up of small particles that are too small to see with the naked eye.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects.</p> <p><u>Grade Level Performance Standards</u></p> <p>K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 1. Describe properties of the three states of matter. 3. Know that matter is made up of particles that can combine to form molecules and that these particles are too small to see with the naked eye.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 3. Analyze the separate forces acting on an object at rest or in</p>	<p>Content Standard B: Position and Motion of Objects</p> <p>K-4: The position and motion of objects can be changed by pushing or pulling. The size of the change is related to the strength of the push or pull.</p>

Proyecto Futuro Physical Science and Mathematics
Alignment with Standards

AIR PRESSURE: WE'RE SURROUNDED!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Air in Motion (cont.)	<p>motion, including how multiple forces reinforce or cancel one another to result in a net force that acts on an object.</p> <p>8. Understand and apply Newton's Law's of Motion:</p> <ul style="list-style-type: none"> • Objects in motion will continue in motion and objects at rest will remain at rest unless acted upon by an unbalanced force. • If a greater force is applied to an object, a proportionally greater acceleration will occur. • If an object has more mass, the effect of an applied force is proportionally less. 	

I'M ATTRACTED TO MAGNETS!

Activity	NM Science Standards, Benchmarks, and Performance Standards	National Science Standards
<p>What's a Magnet? (grades K-6)</p>	<p>NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</p> <p>K-4 Benchmark I: Recognize that matter has different forms and properties. Grade Level Performance Standards K: 1. Observe that objects are made of different types of materials. 2. Observe that different materials have different properties. 1st: 2. Describe simple properties of matter.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. Grade Level Performance Standards K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. Grade Level Performance Standards 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>
<p>Magnetic Pickups (grades K-6)</p>	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. Grade Level Performance Standards K: 1. Observe that objects are made of different types of materials. 2. Observe that different materials have different properties. 1st: 2. Describe simple properties of matter.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. Grade Level Performance Standards K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. Grade Level Performance Standards 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>

I'M ATTRACTED TO MAGNETS!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Magnetic Pickups (cont.)	<p>K: 1. Observe that objects are made of different types of materials. 2. Observe that different materials have different properties. 1st: 2. Describe simple properties of matter. 3rd: 2. Separate mixtures based on properties.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark I: Know the forms and properties of matter and how matter interacts. <u>Grade Level Performance Standards</u> 8th: 2. Distinguish between metals and non-metals.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature.</p>	

I'M ATTRACTED TO MAGNETS!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Mystery Magnets (grades K-3)	<p>K-4 Benchmark I: Recognize that matter has different forms and properties. <u>Grade Level Performance Standards</u> K: 1. Observe that objects are made of different types of materials. 2. Observe that different materials have different properties. 1st: 2. Describe simple properties of matter.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>
How Strong is Your Magnet? (grades K-8)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>

I'M ATTRACTED TO MAGNETS!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
How Strong is Your Magnet? (cont.)	<p>materials.</p> <p>3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 3. Observe that some forces produce motion without objects touching.</p> <p>4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Identify forces in nature.</p> <p>8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction.</p>	
Find the North and South Poles (grades K-6)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects.</p> <p><u>Grade Level Performance Standards</u></p> <p>K 1. Observe that things move in many different ways.</p> <p>1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction.</p> <p>2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials.</p> <p>3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 2. Describe how magnets have poles and that like poles repel each other while unlike poles attract. 3. Observe that some forces produce motion without objects touching.</p> <p>4th: 4. Describe how some forces act on contact and other forces act at a distance.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism</p> <p>K-4: Magnets attract and repel each other and certain kinds of other materials.</p>

I'M ATTRACTED TO MAGNETS!

Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Find the North and South Poles (cont.)	<p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 6. Know that Earth has a magnetic field.</p>	
Exploring Magnetic Fields (grades K-6)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 2. Describe how magnets have poles and that like poles repel each other while unlike poles attract. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 4. Know that electric charge produces electrical fields and magnets</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>

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Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Magnetic Pictures (grades K-6)	<p>produce magnetic fields. 6. Know that Earth has a magnetic field.</p> <p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u> K 1. Observe that things move in many different ways. 1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction. 2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion. 2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials. 3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others. 2. Describe how magnets have poles and that like poles repel each other while unlike poles attract. 3. Observe that some forces produce motion without objects touching. 4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects. <u>Grade Level Performance Standards</u> 5th: 3. Identify forces in nature. 8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 4. Know that electric charge produces electrical fields and magnets produce magnetic fields. 6. Know that Earth has a magnetic field.</p>	

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Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
Which Way is North? (grades K-3)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u></p> <p>K 1st: 1. Observe that things move in many different ways. and what causes them to stop, or change of direction.</p> <p>2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials.</p> <p>3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others.</p> <p>2. Describe how magnets have poles and that like poles repel each other while unlike poles attract.</p> <p>3. Observe that some forces produce motion without objects touching.</p> <p>4th: 4. Describe how some forces act on contact and other forces act at a distance.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p>
What is an Electromagnet? (grades 4-8)	<p>K-4 Benchmark III: Identify forces and describe the motion of objects. <u>Grade Level Performance Standards</u></p> <p>K 1st: 1. Observe that things move in many different ways.</p> <p>1st: 1. Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction.</p> <p>2nd: 1. Describe how the strength of a push or pull affects the change in an object's motion.</p> <p>2. Observe that electrically charged materials and magnets attract and repel each other, and observe their effects on other kinds of materials.</p> <p>3rd: 1. Recognize that magnets can produce motion by attracting some materials and have no effect on others.</p> <p>2. Describe how magnets have poles and that like poles repel each other while unlike poles attract.</p>	<p>Content Standard B: Light, Heat, Electricity, and Magnetism K-4: Magnets attract and repel each other and certain kinds of other materials.</p> <p>K-4: Electricity in circuits can produce light, heat, sound, and magnetic effects.</p> <p>5-8: Energy is a property of many substances and is associated with heat, light, electricity, mechanical motion, sound nuclei, and the nature of a chemical.</p>

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Activity	NM Science Standards, Benchmarks, and Performance Standards Strand II: Content of Science <u>Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.</u>	National Science Standards
What is an Electromagnet? (cont.)	<p>3. Observe that some forces produce motion without objects touching.</p> <p>4th: 4. Describe how some forces act on contact and other forces act at a distance.</p> <p>5-8 Benchmark III: Describe and explain forces that produce motion in objects.</p> <p><u>Grade Level Performance Standards</u></p> <p>5th: 3. Identify forces in nature.</p> <p>8th: 1. Know that there are fundamental forces in nature. 2. Know that a force has both magnitude and direction. 4. Know that electric charge produces electrical fields and magnets produce magnetic fields. 5. Know how a moving magnetic field can produce an electric current and how an electric current can produce a magnetic field. 6. Know that Earth has a magnetic field.</p>	

