



CRS

COMMUNITY RESOURCES FOR SCIENCE
practical support for great science teaching

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Sample Materials 4th Grade Earth Science

Classroom Books

A Rock is Lively

Amazon.com

<http://www.amazon.com/>

by - Dianna Hutts Aston, Sylvia Long. From dazzling blue lapis lazuli to volcanic snowflake obsidian, an incredible variety of rocks are showcased in all their splendor. Poetic in voice and elegant in design, this book introduces an array of facts, making it equally perfect for classroom sharing and family reading.

\$10-15

BrainJuice: Science, Fresh Squeezed!

Amazon.com

http://www.amazon.com/BrainJuice-Squeezed-Carol-Diggory-Shields/dp/1593540051/ref=sr_1_1?
ISBN: 1593540051

This collection of 41 poems is divided into four sections: "Earth and Space Sciences," "Life Sciences," "Chemistry," and "Physics." All of the selections are brief; some are quite clever and others are forced. Some children might find the new words to "The Itsy-Bitsy Spider and the Water Cycle" easy to remember and therefore a help with learning about this process. The same is true of "Inside of Old Smokey," which describes the ins and outs of volcanoes. Related tidbits and facts highlighted by green border

\$10-15

California gold-rush plays

Alameda County Public Libraries

<http://alam1.aclibrary.org/search~S30/?searchtype=t&searcharg=california+gold-rush+plays&search=812.3 CALIFORNIA>

edited, with an introduction, by Glenn Loney, 180 pages. Joaquin Murieta De Castillo / Charles E.B. Howe, A live woman in the mines / Alonzo Delano, Two men of sandy bar / Bret Harte.

FREE

Coal (True Books: Natural Resources)

Amazon.com

http://www.amazon.com/Roadside-Geology-Northern-Central-California/dp/0878424091/ref=sr_1_
ISBN: 0516293664

by Christin Ditchfield.

\$6-7

| | |
|--|---|
| Coal, Energy and Crisis | \$2-3 |
| Amazon.com | |
| <i>http://www.amazon.com</i> | |
| ISBN: 0817852026 | |
| by Lillie D. Chaffin. Describes the methods currently being used to mine "black gold" and explores the problems that confront coal miners, mine owners, manufacturers, and consumers. | |
| Coal: How It Is Found and Used (Earth Resources Series) | \$4-5 |
| Amazon.com | |
| <i>http://www.amazon.com/Coal-Found-Michael-C-Hansen/dp/B004ZLBA9A/ref=sr_1_1?s=books&ie</i> | Alameda County Public Library call #J662.62 HANSEN Oakland Public Library #662.62 HANSEN |
| ISBN 0894902865 | |
| by Michael C. Hansen . Out of Print. Explains what coal is, its different varieties and uses, how it is formed and mined, where it is found, and how coal has changed the history of the world. | |
| DK Pockets: Rocks and Minerals | \$6-7 |
| Amazon.com | |
| <i>http://www.amazon.com</i> | |
| ISBN: 1564586634 | |
| By S. Fuller. How can platinum help reduce pollution? What makes rubies red and sapphires blue? Why is graphite used to make pencils? The answers to these questions and many more are packed within the pages of Pockets. Can be purchased at Amazon Marketplace.com for \$1.48. | |
| Earth Science for Every Kid: 101 Easy Experiments That Really Work | \$10-15 |
| Amazon.com | |
| <i>http://www.amazon.com</i> | Also available in libraries. |
| by Janice VanCleave. Intended for children in grades K to 6, it contains 101 thoroughly tested and safe experiments relating to earth science. Each experiment has a clear purpose, list of materials and step-by-step illustrated instructions. In addition, without giving too much away, it provides hints as to what may be expected from a given experiment and offers a full explanation of the outcome in understandable terms. Most materials necessary for the experiments are readily available around the house. | |
| Earthquakes | \$4-5 |
| Amazon.com | |
| <i>http://www.amazon.com/Earthquakes-reillustrated-Lets-Read---Find-Out-Science/dp/0064451887/</i> | |
| ISBN: 0064451356 | |
| ByF. Branley, M. Lloyd (Illustrator). With the increasing coverage of earthquakes worldwide, readers' interest should be piqued for this lucid introduction. Veteran photo-essayist Simon has produced another characteristically concise and involving precis. Facts abound, concerning such topics as the Pacific Ring of Fire; faults, especially the San Andreas; strike- and dip-slips; seismographs; the Richter and Mercali Intensity Scales; sand boils; and more. As in all of Simon's work, the high-quality photos and the book's spacious, accessible design enhance and extend the clarity of his exposition. | |
| Event-Based Science Series: Gold Rush | \$15-20 |
| Amazon.com | |
| <i>http://www.amazon.com</i> | |
| ISBN: 0201495996 | |

Show students how science applies to everyday life by engaging them in tasks directly related to a real-world event. Each project begins with actual media coverage of an event shown on video prompting students to work in teams and use their scientific knowledge to complete hands-on activities based on a particular topic. The Teacher's Guide includes student activity pages, one or more videos, and helpful teaching tips.

Everybody Needs a Rock

Amazon.com

<http://www.amazon.com>

By Byrd Baylor. Everybody needs a rock -- at least that's the way this particular rock hound feels about it in presenting her own highly individualistic rules for finding just the right rock for you.

\$6-7

Also available at the Alameda County Library: JPB BAYLOR.

Eyewitness: Rocks and Minerals

Amazon.com

<http://www.amazon.com>

ISBN: 0789458047

By R. F. Symes, Colin Keates (Photographer), Andreas Einsiedel (Photographer). ...a mini museum between the covers of a book.

\$10-15

Follow the Water from the Brook

Amazon.com

<http://www.amazon.com>

ISBN 0064451151

by Arthur Dorros. This book recounts water's journey as it shapes the earth through erosion. The course of water is traced as it flows from brooks to streams to rivers, over waterfalls, through canyons and dams, to eventually reach the ocean. A suggested reading for the GEMS River Cutters unit.

\$4-5

Alameda Co Library
Call # J551.48 Dorros.
Berkeley Public
Library Call # 551.48
D737f Oakland Public
Library Call # juvenile
551.48 Dorros

FOSS Science Stories Single Copy Set (Spanish Grades 3-4)

Delta Education

<http://www.delta-education.com/>

WX-542-1270

Titles: Earth Materials, Human Body, Ideas and Inventions, Magnetism and Electricity, Measurement, Physics of Sound, Structures of Life, Water. Science Stories for grades 3-4 use a variety of writing styles, accompanied with full color illustrations and photos to enrich the science experience. The literature styles include: narrative tales, expository articles, technical readings and historical accounts. Other purchasing options: a CLASSROOM SET (64 books, 8 ea. of 8 titles) is \$324.

\$45-50

How Did We Find Out About Coal?

Amazon.com

http://www.amazon.com/How-Did-Find-About-Coal/dp/0802764002/ref=sr_1_1?s=books&ie=UTF8

ISBN 0802764010

by Isaac Asimov. Out of Print. Presents a history of fire, considers wood as a fuel, and discusses the formation of coal and the history of its use as a fuel.

\$2-3

How Mountains Are Made

Amazon.com

http://www.amazon.com/Mountains-Made-Lets-Read---Find-Out-Science/dp/0064451283/ref=sr_1

ISBN: 0064451283

\$4-5

K. Zoehfeld, J Graham Hale (Illustrator). In this clear, concise presentation, four children introduce the subject of mountain formation by taking a hike in their local community. The youngsters appear throughout the book, commenting in dialogue bubbles about specific facts, giving demonstrations of ways mountains change, or making humorous asides. They provide continuity and keep the tone light while information is related to explain why fossils of sea animals are found atop mountains, the various layers in the earth, why volcanoes form, and the effects of erosion.

If You Are a Hunter of Fossils

\$6-7

Amazon.com

[http://www.amazon.com/Hunter-Fossils-Reading-Rainbow-Book/dp/0689707738/ref=sr_1_1?s=bo](http://www.amazon.com/Hunter-Fossils-Reading-Rainbow-Book/dp/0689707738/ref=sr_1_1?s=books&ie=UTF8&qj=1)
ISBN: 0689707738

By Byrd Baylor. A fossil hunter who is looking for signs of an ancient sea in the rocks of a western Texas mountain describes how the area must have looked millions of years ago. The illustrations and poetic language invite the reader into the world of geology.

Igneous Rocks (2000) English Language

\$20-25

Amazon.com

<http://www.amazon.com>

Physical Geography of Igneous rocks

Magic School Bus: Inside the Earth

\$4-5

Amazon.com

<http://www.amazon.com>

ISBN: 0590407600

On a special field trip in the magic school bus, Ms Frizzle's class learns at first hand about different kinds of rocks and the formation of the earth.

Available at Alameda County Public Libraries: J551 COLE and Berkeley Public Library 551 C675m.

Make Things Fly: Poems About the Wind

\$3-4

Amazon.com

[http://www.amazon.com/Make-Things-Fly-Poems-About/dp/0689815441/ref=sr_1_1?s=books&ie=](http://www.amazon.com/Make-Things-Fly-Poems-About/dp/0689815441/ref=sr_1_1?s=books&ie=UTF8&qj=1)
ASIN: 0689815441

by Dorothy M. Kennedy, This is a collection of 27 weather poems about wind written by familiar names in children's literature. The pencil illustrations enhance the moving, sweeping, sometimes wild and sometimes gentle, movements that the words evoke. A perfect read aloud to introduce the subject of wind.

Mojave

\$0-1

Amazon.com

[http://www.amazon.com/Mojave-Diane-Siebert/dp/0690045670/ref=sr_1_1?s=books&ie=UTF8&qj=](http://www.amazon.com/Mojave-Diane-Siebert/dp/0690045670/ref=sr_1_1?s=books&ie=UTF8&qj=1)
ISBN 0690045670

by Diane Siebert; illustrated by Wendell Minor

Siebert's words do an excellent job at describing the ecology of the Mojave from the desert's point of view. The young reader will meet the landscapes, the rocks, the animals, the plants, the weather and the sounds of the desert. A suggested reading for the GEMS River Cutters unit.

Alameda Co. Library
Call # J811.54
SIEBERT

Mountain Dance

\$10-15

Amazon.com

[http://www.amazon.com/Mountain-Dance-Avenues-Thomas-Locker/dp/0152026223/ref=sr_1_1?s=](http://www.amazon.com/Mountain-Dance-Avenues-Thomas-Locker/dp/0152026223/ref=sr_1_1?s=books&ie=UTF8&qj=1)
ISBN: 0152026223

by Thomas Locker, This is a poetic description of various kinds of mountains and how they are formed and erode. Lush oil paintings and brief text provide an introduction to scientific terms such as fault-block, shy dome, and folded mountains. The author wrote a companion book, WATER DANCE.

Planet Earth/Inside Out

\$6-7

Amazon.com

http://www.amazon.com/Planet-Earth-Inside-Gail-Gibbons/dp/0688158498/ref=sr_1_1?s=books&i
ISBN: 0688158498

By G. Gibbons. From Pangaea to recycling, Gibbons skims the surface of geology, touching on plate tectonics, volcanoes, earthquakes, and climates. Simple, full-color drawings illustrate the concepts. While some parts of the diagrams are labeled and arrows are used to indicate movement, there aren't enough captions to explain some of the geological processes depicted. Also, two of the three examples of sedimentary rocks, which are defined as "...most of the time...made from fragments of rock that have been s

Podria Ser Una Roca (It Could Still Be a Rock)

\$20-25

Amazon.com

<http://www.amazon.com>

Rock identification

Rocas y minerales

\$10-15

Amazon.com

<http://www.amazon.com>

Appropriate for ages 4-10. Rocks and Minerals exploration.

Shaping the Earth: Erosion (Exploring Planet Earth)

\$4-5

Amazon.com

http://www.amazon.com/Shaping-Earth-Erosion-Exploring-Planet/dp/0761314148/ref=sr_1_1?s=b
ISBN: 0761314148

by Sandra Downs, Sandra Friend . Describes how the Earth's remarkable landscape has been sculpted by erosion and deposition, two forces that work continuously creating and destroying landforms, causing mountains, canyons, caves, and glaciers. The book addresses the effects of wind, waves, floods, rain, and acid rain as well as natural processes that cause mechanical weathering such as freezing and thawing and the drilling action of plant roots. Interesting scenarios examine the delicate balance of nature such as one blade of deep-rooted grass initiating a large sand dune. Human interventions, both helpful and harmful, are also included. Vivid, descriptive writing and spectacular color photography (and a few black-and-white shots) illustrate the consequences of the erosive forces. While the vocabulary is occasionally difficult because of the geological terminology involved, the frequent illustrations and a comprehensive glossary help to clarify unfamiliar terms. Many famous landforms are mentioned in the text and readers are invited to take a virtual field trip around the world using the recommended Web sites.

Sierra

Amazon.com

http://www.amazon.com/Sierra-Trophy-Picture-Books-Siebert/dp/0064434419/ref=sr_1_2?s=book
ISBN 0064434419

by Diane Siebert; illustrated by Wendell Minor

Long narrative Poem in the voice of a mountain in the Sierra Nevada. It begins with the lines:

I am the mountain

tall and grand

and like a sentinel I stand.

Dynamic verse and glorious mural-like colored illustrations depict the forces shaping the earth as well that the plant, animal and human roles in the ecosystem. A suggested reading for the GEMS River Cutters unit.

\$7-8

Alameda Co. Library
Call # JPB SIEBERT
Berkeley Public
Library Call # 8110Si
15s Oakland Public
Library Call # juvenile
811.54 SIEBERT

Simple Earth Science Experiments with Everyday Materials

Amazon.com

<http://www.amazon.com>

by Louis V. Loeschig. Although the presentations do not reflect true scientific methodology and analysis, the material is well organized, with each activity divided into sections: "You need," "What to do," "What happens," and "Why." A wealth of activities and demonstrations, with many classic classroom ones, are presented, touching on everything from earthquakes and glaciers to time, soil, gravity, and conservation. The headings for chapters and activities are appealing (though not particularly informative

\$5-6

Stone Wall Secrets

Amazon.com

<http://www.amazon.com>

ISBN: 0884481956

By K. Thorson. What can the rocks in old stone walls tell us about how the earth's crust was shaped, melted by volcanoes, carved by glaciers, and worn by weather? As Adam and his grandfather work together to repair the family farm's old stone walls, Adam learns how fascinating geology can be, and how the everyday landscape provides intriguing clues to the past. Available at Powell's Books.com. Out of Stock as of 9/25/3.

\$15-20

Stone Wall Secrets: Teacher's Guide

Amazon.com

<http://www.amazon.com>

ISBN: 0884481964

By R. Deike. Joining a host of texts accompanied by teacher's guides, Stone Wall Secrets Teacher's Guide stands above the rest because of the quality of the text it elaborates upon and because of its extraordinarily well-planned lessons. Ruth Deike has incorporated the imagery and discoveries of Stone Wall Secrets with hands-on classroom activities that illustrate basic earth science concepts for students Grades 3-7.

\$8-9

The Big Rock

Amazon.com

<http://www.amazon.com>

by Bruce Hiscock. The "big rock" is a granite boulder that began as molten rock millions of years ago. Through the ages, the mountains above it wore down, the ocean flooded the region, and then new mountains heaved the rock upward, to the surface of a New York State forest. Even though the dinosaurs and other living things have come and gone, the rock remains as a survivor of the Ice Age and silent witness to the earth's continuing evolution. Once you know its story, you will never again overlook another r

\$10-15

Also available at
Alameda County
Public Libraries: J552
HISCOCK.

Village of Round and Square Houses

\$10-15

Amazon.com

http://www.amazon.com/Village-Round-Square-Houses/dp/0316328626/ref=sr_1_1?s=books&ie=ISBN:0316328626

by Ann Grifalconi, In the real village of Tos in Cameroon, Africa, the women live in round houses and men in square houses. The events of a typical day and the eruption of Naka Mountain are vividly portrayed in vibrant chalk drawings and helps to illustrate the volcanic cycle. Use this book when investigating the area of circles and squares or when discussing how perimeter relates to shapes.

Volcano & Earthquake (DK Eyewitness Books)

\$10-15

Amazon.com

<http://www.amazon.com/Volcano-Earthquake-DK-Eyewitness-Books/dp/0756637805>

Wonderful pictures and descriptions.

Volcanoes

\$6-7

Amazon.com

http://www.amazon.com/Volcanoes-Seymour-Simon/dp/0060877170/ref=sr_1_1?s=books&ie=UTF8ISBN:0688140297

By S. Simon. From ancient myths to modern headlines, volcanoes are among the world's most amazing phenomena. Simon, award-winning author of Icebergs and Glaciers , Jupiter , Saturn , The Sun and Stars , et al., explores the subject thoroughly. Using examples like St. Helens and the volcanoes of Iceland and Hawaii, the author is able to address all aspects of his subject: the history, nature and causes of volcanoes.

Computer Software

Earth Update CD-ROM

\$35-40

The Public Connection Project at Rice University

<http://earth.rice.edu/>

EARTH UPDATE is an interactive, real-time display system of Earth images and data designed for Museums and Schools. 5 modules: ATMOSPHERE -Topics include hurricanes, weather, cloud cover, ozone hole, and much more. BIOSPHERE -Topics include bioactivity maps and much more. CRYOSPHERE -Topics include glaciers, sealevel rise, icebergs breaking off; daily data include ice coverage. GEOSPHERE -Topics include plate tectonics, seismology; daily updates include earthquake maps and volcano maps. HYDROSPHERE -Topics include El Nino, ocean currents; daily data include ocean temperature and wave height. Roughly 15% of the material represents today's data" - weather maps

Science Court: Fossils

\$120-140

Tom Snyder Productions

<http://www.tomsnyder.com>

FOSA

Grades 4-6 one computer license. Jack Jenkins is accused of planting a dinosaur fossil to halt the construction of a new cafe. Is it a fake or is the puzzling process of petrification involved? Topics covered in this title: Types of fossils, Conditions for fossilization, Fossil Record.

Sidewalk Science: Dirt

Tom Snyder Productions

<http://www.tomsnyder.com>

\$35-40

Dirt: Explorations in Earth Science features six neighborhood kids -- Ben, Kevin, Kate, Lee, Nora, and Susan -- and their pets. The action in Dirt centers around the neighborhood park and the "sidewalk scientists" efforts to improve it. In the process, the friends get hands-on experience with dirt -- by digging in it, examining its properties, using it for planting, building, painting and sculpting, by watching natural forces move it and by trying to clean it up.

Kits & Modules

Basic Rock and Mineral Collection

Acorn Naturalists

<http://www.acornnaturalists.com/store/BASIC-ROCK-AND-MINERAL-COLLECTION-P2082C0.aspx>
KIT-434

Two each of 25 igneous, sedimentary, and metamorphic specimens, identified by name and collection locale. Total of fifty 1-1/2", freshly split specimens. Perfect for introducing students to the basic principles of mineral formation and identification. Use with streak plates and scratch plates to characterize each specimen. Quality geology starter collection.

\$25-30

California Gold Rush - Suitcase exhibit

Oakland Museum of California

<http://www.museumca.org>

\$45-50

This Suitcase Exhibit introduces students to the challenges and experiences of the California Gold Rush

by providing material related to the everyday life of a '49er. Suitcase contents include:

- Replica Gold Rush era artifacts, including a gold pan, mucket, clothing, writing materials, and more
- Music, video, and a Suitcase Users' Manual that provides information about the replica objects and suggestions for classroom activities

\$40 Oakland/\$60 non-Oakland. Suitcase Exhibits are available for two-week periods.

- Delivery options: one-way UPS shipment at an additional cost of \$50 or pick up at the Museum's

security check-in (open 24 hours a day) at the 50 10th Street entrance.

- If the return is through UPS, the borrower is responsible for arranging shipment directly with UPS.

Complete Mineral Identification Kit

Acorn Naturalists

<http://www.acornnaturalists.com/store/COMPLETE-MINERAL-IDENTIFICATION-KIT-P4544C0.aspx>

\$100-120

Contains 30 minerals (5 of each sample) for use with a taxonomic key found in the laboratory identification manual (included). Students test for hardness, specific gravity, color, streak, and cleavage. Also includes a mineral testing kit which consists of a streak plate, glass plate, hand lens, magnet, acid bottle, nail, penny, and hardness scale. Perfect for Earth science lessons, grades . #KIT-14314

Geology

California Academy of Sciences

<http://www.calacademy.org/teachers/erk.php>

\$15-20

Explore the physical properties of rocks, minerals, and sand through hands-on observation and investigation. Discover the difference between igneous, metamorphic, and sedimentary rocks, learn about the rock cycle, and trace the mineral resources used to manufacture objects that you use every day. While appropriate for grades 2 - 5, this kit emphasizes 4th grade science content standards.

Lending Fee: \$20 - Loan period: 3 weeks

Kit Reservations: Advance reservation required. Call (877) 227-3311

Gold Panning Kit

Mineral Information Institute

<http://www.mii.org/>

\$10-15

12" Thermoplastic gold pan

GOLD ORE for hand panning (with guaranteed gold)

Instruction book Printed in English, French, Japanese, German, Spanish, Greek, Italian, Korean, Swedish, and Chinese.

Hand Lens

Magnet

Eyedropper

Display Vial for GOLD

"Secrets of Gold Panning" book

Hill of Fire Family Literacy Kit - VHS

GPN Educational Media

<http://shopgpn.com/>

Product Code: 126.4023KV

Family Literacy Kit Contents:

1 nylon backpack

1 30-minute VHS of Hill of Fire

1 feature book - Hill of Fire

1 laminated Family Activity Sheet

\$60-70

Episode Description:

Based on a true story of the eruption of Paricutin Volcano in Mexico, a volcano is born in a poor farmer's corn field.

At Volcano National Park in Hawaii, LeVar is only 2,000 feet from a major eruption of Kilauea Volcano. He tells about two kinds of lava and why volcanoes occur. Viewers learn what is inside our earth that causes volcanoes, as LeVar talks to volcanologists who are learning to predict eruptions. LeVar also visits an artist who creates raku pottery.

Landform Demonstration Kit

Ben Meadows Company

www.benmeadows.com

\$50-60

Recreate the geological forces that have shaped the planet, inside your classroom! Use Demonstration Kit for over 20 activities that help students develop an understanding of volcanic action, faulting and folding, and many other geologic processes. Consists of a demonstration tray, three pieces of flexible foam, three simulated rock structures, an erupting volcano, miscellaneous project materials and a comprehensive study guide.

Natural History-To-Go \$8-9
Lindsay Wildlife Experience
<http://www.wildlife-museum.org>

The museum's excellent collection of furs, feathers, nests, bones, shells, minerals, mounts and other natural history materials is available to teachers for classroom use at low fees. You can call Marti and she can help you determine the best kits that can be used for what you want to teach.

Postertube Science: Rocks and Minerals \$20-25
Delta Education
<http://www.delta-education.com/>
WW-110-4400

Looking for new activity ideas? Postertube Science kits come with a colorful classroom poster, activity materials, and an activity booklet. Students learn the 3 types of rocks; sort and classify samples; and carry out hardness, streak and acid test.

Rock Music Kit \$15-20
National Energy Foundation
<http://www.nef1.org/>

Grades K-8. The music CD includes eleven lively new schoolhouse tunes on such topics as the uses of rocks and minerals, the production and use of electricity, the rock cycle, the geological time scale, the distribution of mineral resources, and Mohs' hardness scale. An accompanying 48 page songbook and teacher's guide provides melody line musical notation, plus learning activities built around the songs. Learning activities employ a combination of hands-on science and arts-related genres such as dance, theatre, creative movement, and creative writing to drive home the science concepts. In addition, a beautiful 17 x 23" full-color poster is included with the materials. The CD only is \$12.50 plus the same s/h."

Stream Table Kit \$80-90
American Educational Products, Inc.
<http://www.amep.com/standarddetail.asp?cid=1243>
3071
Basic and smaller version of the Hydro-Geology Stream Table, this kit includes a plastic tray, drain trough, tray support and siphon tube. This economical stream table will give your students the chance to create their own landforms and follow the changes in the stream as it ages. Includes Teacher's Guide. Great for use in the classroom or as an outdoor activity. Also is used with the ESCP program
NCTM - ST

Volcanoes Discovery Kit
Randall Museum
<http://www.randallmuseum.org/>

Igneous rocks of all sorts for students to handle and explore, plus a plate tectonics map and instructions for building your own classroom volcano. Borrow a Discovery Kit for two weeks for \$10. The kit must be reserved prior to loan and picked up at the museum. Late returns are charged \$1 per day.

Posters/Pictures/Slides

Minerals in Our Environment FREE
USGS Distribution Center
<http://www.usgs.gov/pubprod/>

<http://geopubs.wr.usgs.gov/open-file/of00-144/> to download poster off website

Rocks and Geology in the San Francisco Bay Region FREE
USGS Distribution Center
<http://www.usgs.gov/pubprod/>

Download booklet off website <http://geopubs.wr.usgs.gov/bulletin/b2195/b2195.pdf>

Specimen

Geodes \$2-3
American Science & Surplus

<http://www.sciplus.com/>
88823

Pack of 2. Pop one of these roughly 1-1/4" dia stones into the toe of a sock, smash it with a hammer, and be the first person ever to see your real-as-Nature-makes-it geode!! Ninety percent of them are hollow with the familiar beautiful white crystals inside. Formed by volcanic action, they are found all over the world, but ours are from Mexico. There is no way to tell from the outside if they have crystal centers, but we will send you two just to raise your odds, and we haven't had a dud yet in our stores!! Much much more fun and satisfaction than buying one already cracked.

Gold-Bearing Sand Refills \$4-5
Mineral Information Institute
<http://www.mii.org/>

Gold Ore for hand panning, instruction book and vial for gold flakes.
Perfect for teachers.

After you have gold pans for your students then the only consumable is the gold-bearing sands. One package is enough for 1 to 2 students. All you will need is extra vials for your students to keep their recovered gold. Each refill contains about 6 to 10 flakes of real gold.

How Soils Are Formed Set \$25-30
Carolina Biological
<http://www.carolina.com>

Item # GEO750 -- Contains 15 primary rocks, soil samples, and derivatives of primary rocks. Effects of weathering and differences in soil particle sizes are shown. Specimens are about 1 1/2" x 1 1/2" and are number coded and keyed to a list on the inside cover of the compartmented container.

Introduction to Rocks Study Kit \$10-15
Carolina Biological
<http://www.carolina.com>

Item # GEO111 A great kit for studying the basic rock types. Includes 5 each of igneous, sedimentary, and metamorphic rocks; an activity guide; and a magnifying glass.

Investigating the Rock Cycle Classroom Project Kit, \$140-160
Carolina Biological
<http://www.carolina.com>

A graphic representation of how the major families of rocks form the dynamic process called the rock cycle. Igneous, sedimentary, and metamorphic rock specimens are mounted on an 24 x 18" wood-framed color chart. Includes item# GEO8658 Rock Cycle Chart with wooden frame and mounted specimens, 30 student charts, 30 specimens of each rock and mineral represented on the chart, one test kit with streak plate, glass plate, hand lens, magnet, dropper bottle, nail, penny, hardness scale, and Rocks and Minerals stu

rock and mineral set \$20-25
AIMS Education Foundation
<http://www.aimsedu.org/item/4108/rock-and-mineral-set/1.html>
4108

This rock and mineral set includes 12 rocks and 12 minerals. The rock set contains representative samples of igneous, metamorphic, and sedimentary rocks. The minerals have been selected to show properties such as cleavage and luster so students can perform tests for identification. Each rock and mineral is approximately 1.25" x 1.25" in size.

Rock Cycle - Past Life (2B) \$5-6
Math Science Nucleus
<http://www.ms-nucleus.org>
RC-PL2B

Learn how fossils are made and discover the components of a fossiliferous rock. Module includes 8 bags of one abalone, 3 types of marine snails, clam, scallop and one labeled bag with 8 pieces mudstone with fossils.

Rock Cycle- Rocks (4a) \$7-8
Math Science Nucleus
<http://www.ms-nucleus.org>
RC-R4A

Investigate the three different types of rocks and learn how they are formed. Module includes 8 labeled specimens each of shale, sandstone, conglomerate, mudstone with fossils, marble, schist, serpentinite, obsidian, granite, scoria, and basalt.

Teacher Guide/Reference/Curriculum

Environmental Experiments About Land

\$3-4

Amazon.com

http://www.amazon.com/Environmental-Experiments-About-Science-People/dp/0894904116/ref=sr_1_1
ISBN: 0894904116

Thomas R. Rybolt, Science activity books that focus on the environment. Both volumes are prefaced by an explanation of why studying the Earth is important. The experiments are easy to perform and deal with the observations of various phenomena, such as the differences between sand and soil and the micro-ecosystem found under a rock. Most of them call for easily available materials. Each project is followed by a discussion of what was explored, as well as a section of related activities. Adult supervision is emphasized throughout. Pen-and-ink illustrations enhance the volumes. Simple yet thorough, these series entries are excellent for teachers to use with their classes or for children to use on their own.

Fossils, Rocks, and Time

FREE

USGS Distribution Center

<http://www.usgs.gov/pubprod/>
94-0054

This 24-page booklet explains the basics of how fossils are used in establishing time sequence in geology. Topics include: Putting Events in Order, The Relative Time Scale, Rocks and Layers, Fossils and Rocks, Fossil Succession, the Numeric Time Scale, and Further Reading. Online resources at <http://pubs.usgs.gov/gip/fossils/contents.html>

More Parkland Discoveries

\$10-15

Tilden Nature Area-Tilden Regional Park

<http://www.ebparks.org>

A companion to Parkland Discoveries. Combining articles and activities, this collection is site specific with activities for use during a field trip or back in the classroom as a follow up lesson. Comes in its own 3-ring binder.

Available at all of the East Bay Parks interpretive centers (Ardenwood, Coyote Hills, Sunol, Black Diamond Mines, Crab Cove, and Tilden), or can be ordered through the mail.

Parkland Discoveries

\$4-5

Tilden Nature Area-Tilden Regional Park

<http://www.ebparks.org>

A collection of informative articles describing aspects of history and natural life in the East Bay. This award winning resource is designed to give teachers and others background information in preparation for study and/or field trips to East Bay Regional Parks.

Available at all of the East Bay Parks interpretive centers (Ardenwood, Coyote Hills, Sunol, Black Diamond Mines, Crab Cove, and Tilden), or can be ordered through the mail.

Roadside Geology of Northern and Central California

\$15-20

Amazon.com

http://www.amazon.com/Roadside-Geology-Northern-Central-California/dp/0878424091/ref=sr_1_1

by Donald W. Hyndman, David D. Alt. The book provides a plethora of information for those who wish to see the many interesting and complex geological features of the northern and central areas of California. However, in order to make the best use of this book and fully appreciate the physical and historical geology presented, the reader should have a basic background in geology. This book will even refresh the memories of those folks with a somewhat oxidized recollection of rocks, minerals, geologic structures, and the like.

Rocks and Soil Thematic Unit

\$6-7

Amazon.com

http://www.amazon.com/Rocks-Soil-Thematic-Unit-Units/dp/1557342652/ref=sr_1_1?s=books&ie=

By Janet Hale. Rocks & Soil provides lesson plans and cross-curricular activities based on the following pieces of literature: How to Dig a Hole to the Other Side of the World, The Magic School Bus™ Inside the Earth. This reproducible resource is filled with ready-to-use lessons and cross-curricular activities. Also included are management ideas, creative suggestions for the classroom, and a bibliography.

Teacher's Guide to the Sandy Beach (MARE)

\$60-70

Lawrence Hall of Science

lawrencehallofscience.org

MAR115

Visit the hidden world of the sandy beach without leaving your classroom. This guide contains 16 hands-on activities covering earth, physical, biological and environmental sciences. See the MARE Teacher's Guide to the Rocky Seashore description for information on what additional resources are included in this guide.

This Dynamic Earth

\$7-8

USGS Distribution Center

<http://www.usgs.gov/pubprod/>

0-16-048220-8

This Dynamic Earth: the story of plate tectonics includes sections like Historical perspective, Developing the theory, Understanding plate motions, "Hotspots": Mantle thermal plumes, Some unanswered questions, and Plate tectonics and people. This document is also available for download free from <http://pubs.usgs.gov/publications/text/dynamic.html>

Tools/Equipment

Gold Pan

\$5-6

Mineral Information Institute

<http://www.mii.org/>

12" Thermoplastic gold pan. -It's better than a steel pan because it doesn't rust, and it's designed to have a deep center edge and three "cheater" ridges along the edge to keep your gold from washing out. The advantages of a metal pan are: you can use it as a shovel to dig and at the end of the day you can throw it on your campfire and cook your beans in it.

Video

Bill Nye: Earthquakes

\$35-40

Disney Education Products

<http://www.edustation.disney.com>

68C03VL00

Thousands of earthquakes happen each year and Bill Nye the Science Guy trembles in his boots when he explains what causes them. Find out what makes big pieces of the Earth's crust (the plates) move and what you should have on hand in case of a quake. Bill also visits with scientists who study and measure earthquakes.

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media Library at Berkeley High School.

Bill Nye: Earth's Crust

Disney Education Products

<http://www.edustation.disney.com>

68A51VL00

Bill Nye goes to the depths of the earth (literally) to explain how the Earth's surface and its inner mantle differ.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media Library at Berkeley High School.

Bill Nye: Earth's Crust DVD

Disney Education Products

<http://www.edustation.disney.com>

77A09VL00

In "Earth's Crust," Bill goes to the depths of the Earth (literally) to explain how the Earth's surface and its inner mantle differ. In addition to the complete 26-minute episode of "Earth's Crust," this disk is loaded with incredible DVD features like: Fully indexed "chapters" correlated to National Science Standards. Interactive glossaries and quizzes. Bonus footage of never-before-seen segments, interviews, and demos. Spanish translation and closed-captioning. On-disk implementation Guide. In "Earth's Cr

\$45-50

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

Bill Nye: Erosion

Disney Education Products

<http://www.edustation.disney.com>

68E33VL00

The force of erosion, the face of the Earth, has never ceased. Erosion can make slow, almost, invisible modifications, or sudden drastic alterations to the landscape.

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media

Bill Nye: Rocks and Soil

Disney Education Products

<http://www.edustation.disney.com>

68A52VL00

ROCKS & SOIL - You won't take it for "granite" when Bill Nye unearths the solid facts on volcanoes, landslides, tectonic plates, rivers, and weather, and their varied effects on the creation of rocks and soil. Check out how to unearth fossils, and discover why there's a peice of quartz in watches. Music video "If I Was a Rock" is based on Nirvana's "All Apologies".

\$35-40

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media Library at Berkeley High School.

Bill Nye: Rocks and Soil DVD

Disney Education Products

<http://www.edustation.disney.com>

77A18VL00

Bill unearths the hard facts on volcanoes, landslides, tectonic plates, rivers, weather, and their varied effects on the creation of rocks and soil. Check out how to unearth fossils in sedimentary rocks and soil and discover why there's a piece of quartz in watches. In addition to the complete 26-minute episode of "Rocks & Soil," this disk is loaded with incredible DVD features like:

*Fully indexed "chapters" correlated to National Science Standards.

*Interactive glossaries and quizzes.

*Bonus footage of

\$45-50

Bill Nye: Volcanoes \$35-40
 Disney Education Products
<http://www.edustation.disney.com>
 68C44VL00
 Bill takes a look at the hot-hot-hot world of volcanoes: what they are, how they're formed, and the different types that exist.

Some titles available at public libraries. Berkeley school teachers can borrow from the Central Media Library at Berkeley High School.

Dragonfly TV Series One - DVD \$350-400
 GPN Educational Media

<http://shopgpn.com/>
 SKU #: 897.1000D
 DragonflyTV is devoted entirely to science for kids grades 4-7. But it's not like any science show you've ever seen - because it's real kids doing real science! In every episode, real kids tell about their own investigations - how they explore the science in the things they love to do.
 This unit includes:
 897.1001D - Investigate ! & 897.1002D - Wheels & 897.1003D - Animal Behavior & 897.1004D - Water & 897.1005D - Rocks & 897.1006D - Flight & 897.1007D - Weather & 897.1008D - Technology I & 897.1009D - Plants & 897.1010D - Air & 897.1011D - Human Behavior & 897.1012D - Space & 897.1013D - Human Body I

Earthquakes and How They Are Measured \$25-30
 Amazon.com

<http://www.amazon.com/Physical-Geography-Earthquakes-They-Measured/dp/B000007QPE/ref=s>

Take a look at how earthquakes are measured in this excellent program. Seismologists from the National Earthquake Center in Golden, Colorado show how earthquake epicenters are located. You will observe an actual earthquake being captured and the measurement scales, both Mercalli, and Richter are explained. You will also see an example of triangulation in capturing earthquake data. 32 min

Eyewitness- Volcano \$10-15
 Amazon.com

http://www.amazon.com/Volcano-Eyewitness-Videos-Martin-Sheen/dp/1223007391/ref=sr_1_1?s=

This informative video gives your class lots of information about volcano formation, lava flow, and prediction techniques. 35 minutes

Can be borrowed from the Alameda County Public Library: Vid 551.21 VOLCANO. Can be borrowed from the Berkeley Public Lib VHS 551.21 V8813b .

Introduction To Rocks and Minerals (2000) English Language \$25-30
 Amazon.com

<http://www.amazon.com>

Video introduction to the study of rocks and minerals

Living Machine \$15-20
 Teacher's Video Company

<http://www.teachersvideo.com>
 Product # : 360922

58 minutes. Plate tectonics is one of the most fascinating scientific studies of the 20th century. Floating on molten rock, land masses collided, broke apart, and created new continents! With amazing visual effects, your students see this process as it happened!

Metamorphic Rocks (2000) English Language

\$25-30

Amazon.com

<http://www.amazon.com>

Physical Geography of metamorphic rock.

National Geographic's Nature's Fury

\$15-20

Amazon.com

<http://www.amazon.com>

Earthquakes, hurricanes, tornadoes, and floods - these colossal powers of nature have had dramatic consequences for human kind. Now in dramatic scenes of cataclysmic destruction and human courage, you'll journey with National Geographic Video as we learn how earthquakes create and shape our landscapes, even as they destroy cities like San Francisco and Tokyo. Discover how rotating updrafts can build into towering tornadoes that sweep the Midwest's "Tornado Alley", or how cloud disturbances can grow into the

Reading Rainbow: Hill of Fire

\$25-30

GPN Educational Media

<http://shopgpn.com/>

Product Code: 126.0023V

Based on a true story of the eruption of Paricutin Volcano in Mexico, a volcano is born in a poor farmer's corn field. At Volcano National Park in Hawaii, LeVar is only 2,000 feet from a major eruption of Kilauea Volcano. He tells about two kinds of lava and why volcanoes occur. Viewers learn what is inside our earth that causes volcanoes, as LeVar talks to volcanologists who are learning to predict eruptions. LeVar also visits an artist who creates raku pottery.

Available at Alameda
County Public Library:
Vid J028.534 HILL