NOVA *Awards*

Down and Dirty

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1. Choose A **OR** B **OR** C and complete ALL the requirements.

   A. Watch an episode or episodes (about one hour total) of a show about Earth, the weather, geology, volcanoes, or oceanography. Then do the following:

      1. Make a list of at least two questions or ideas from what you watched.

      2. Discuss two of the questions or ideas with your counselor.

      Some examples include - but are not limited to - shows found on PBS ("NOVA"), Discovery Channel, Science Channel, National Geographic Channel, TED Talks (online videos), and the History Channel. You may choose to watch a live performance or movie at a planetarium or science museum instead of watching a media production. You may watch online productions with your counselor's approval and under your parent's supervision.

      Video on Volcanos   Video on Oceans   Video on Weather

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B. Read (about one hour total) about Earth, the weather, geology, volcanoes, or oceanography.. Then do the following:

1. Make a list of at least two questions or ideas from what you read.
2. Discuss two of the questions or ideas with your counselor.

Books on many topics may be found at your local library. Examples of magazines include but are not limited to

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2. Complete ONE adventure from the following list for your current rank **OR** complete option A or B. (Choose an Adventure you have not already earned.) Discuss with your counselor what kind of science, technology, engineering, and math was used in the adventure or option.

Wolf:

Collections and Hobbies

Digging in the Past

Grow Something

Bear:

Super Science

Webelos:

Adventures in Science

Earth Rocks

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Other Options: Complete A <u>OR</u> B

A. Complete 2 of the following:

1. Explain to your den or an adult what Geology means
2. Collect samples of igneous, sedimentary and metamorphic rocks and explain how each was formed
3. Collect samples of 3 minerals. Explain to your family or den what a mineral is and show and tell about the minerals you collected
4. With your family or den, make a mineral test kit and test minerals according to the Mohs scale of mineral hardness. Record your results.

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Other Options:

B. Complete both of the following:

1. Create a fossil cast.

2. Create a dinosaur dig. Be a paleontologist and dig through a dinosaur dig made by another member of your den. Show and explain the ways a paleontologist works carefully during a dig.

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What is a Fossil?

A Fossil is any preserved remains, impressions or traces of a once living thing from the past. A fossil cast is when the object is covered by dirt and rock and it becomes mineralized, eventually becoming made of stone.

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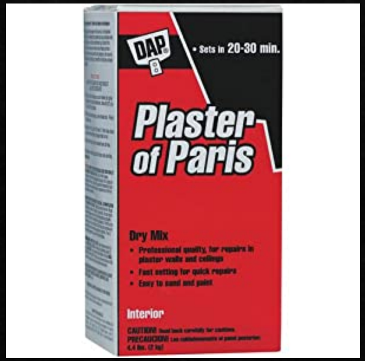
How to make a Fossil Cast?

Check Out This Video

You will need some modeling clay or play-doh, plaster of paris, water and paint (optional)



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B. Rock On

1. What minerals are common in your state? Make a collection of 3 to 5 common minerals and explain how they are used.

2. Are these minerals found in sedimentary, igneous or metamorphic rocks?

3. Explain or demonstrate the difference in formation of the three major types of rocks? What types of rocks are common in your area?

4. Share you collection and what you have learned with your counselor.

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What is a mineral?

A mineral is a building block of rocks. Rocks are MADE of minerals. Rocks might consist of one type, or many types of mineral.

What kinds of minerals are common in California?

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Common California Minerals to look for:

Quartz

Found near streams and beaches throughout California. Found in all 3 different rock types.

Halite

Found near salty, dry lakes beds such as the Salton Sea and Searles Lake near Trona, CA. Since Halite is formed from evaporation, it is only found in Sedimentary rocks.

Pyrite

All over the state, including at the Silver Lake mine in San Bernardino! Can be found with Quartz in Igneous rocks and in Sedimentary rocks like Shale and Limestone.

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What are the three major rock types, and how are they formed?

Igneous

Metamorphic

Sedimentary

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C. Weather Changes Our World

1. Make three weather instruments out of materials around your home. (Examples include a rain gauge, weather vane, barometer, anemometer, and weather journal.) Use these and another method that is readily available (i.e., thermometer, eyes, older person's joints, etc.) for a total of four methods to monitor and predict the weather for one week. Keep a log of your findings. Which instrument provided the most accurate information?

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Rain Gauge – This can help to measure how much rain has fallen in a storm. You can make one at home using the following materials:

A glass jar

A ruler

A flat block of wood

Some glue

Watch the video to

find out how to build

Earth Science NOVA

Barometer – A Barometer is a device used to measure air pressure. When air pressure drops, it tends to rain. When the pressure rises, it tends to be warm.

To make your

Barometer,

Watch this video

And follow the

Directions.

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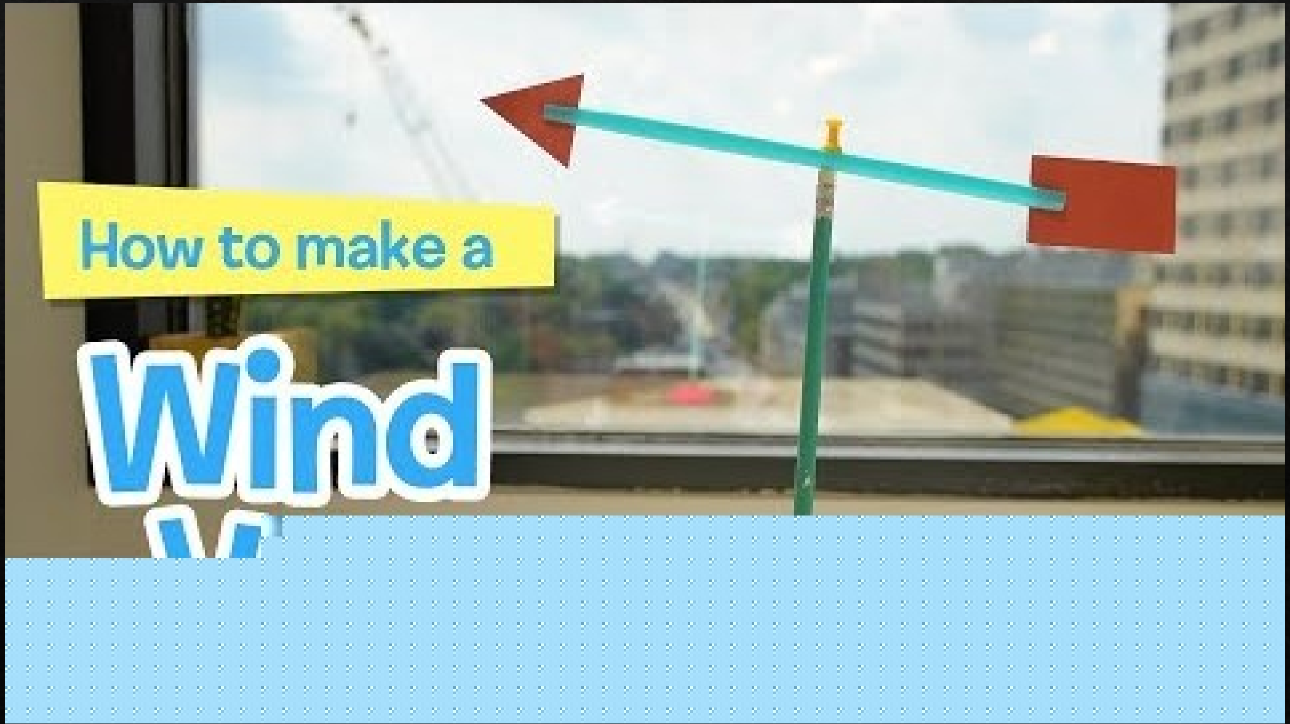
A Weather Vane can tell you what way the wind is blowing and if the wind changes you will be prepared. Watch the video to find out how to make your Weather Vane!



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A Food Web is the interaction between living and non-living things in our world. It includes Food Chains, Habitats, Climates and more!

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The food chain is broken up into different levels.

- Producers make food from the Sun, Soil and Water. Trees, Plants and Algae are producers.
- Primary Consumers eat plants. Insects are an example of a primary consumer.
- Other consumers eat the animals that eat plants. Such as snakes, hawks and frogs.
- Decomposers such as fungi and bacteria break down dead plants and animals, giving nutrients to the soil, feeding the producers.

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4. Temperate or Subtropical Rainforest

Describe the three main levels of the rain forest (canopy, understory, and forest floor). Make a drawing or model showing examples of animals and plants that live at each level. Choose an animal or plant from each level and explain how it is adapted to its particular place in the rain forest.

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The Canopy is the part of the rainforest that gets the most sunlight. It is where a lot of animals who live in trees live because it is where a lot of fruit grows. Here you can find birds, bats, monkeys, sloths and more!

How might one of these animals be adapted to living in the Canopy?

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The Understory doesn’t get as much light as the Canopy, but is still up in the trees. This part of the rainforest can include snakes, lizards, ants, spiders and more!

How might one of these animals be adapted to living in the Understory?

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The Polar Bear

3 Adaptations

1 – They have a thick layer of

________ to keep warm in the water

2 – The paws have this ‘P’ word their paw-pads to grip the ice

3 -

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Now you choose! Walrus, Penguin, Beluga Whale or pick your own!

3 Adaptations

1 –

2 –

3 -

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7. Tide Pools

Explain how a tide pool is formed and describe several animals that are found in tide pools. Make a model or draw a diagram of a tide pool at a high intertidal zone and a low intertidal zone. Include animals found in tide pools and explain how they adapt to their constantly changing environment.

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What is a tide pool and how is it formed?

A Tide Pool is an area on the beach where the ocean and the land meet that sometimes is under the water, and sometimes is above water.

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End of Day 3