

Seashore Surprises

(GPN # 88)

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Publisher: Silver Burdett Press



Program Description: There's more to the beach than meets the eye! Using the book *Seashore Surprises* as a resource, LeVar goes beachcombing in southwestern Florida. Two local naturalists assist him by telling him about and showing him plant and animal life at the edge of the sea.

Only The Half Of It

Key Words: shell, univalve, bivalve, pattern

Concept: Animals with shells can be identified by the shape of the shell and the pattern found on it.

There are two kinds of shells — univalves, the one-piece shells of snails and whelks; and bivalves, the two-part shells of clams and scallops. Create a bivalve model collection. Use an encyclopedia or shell field guide for the colors and patterns of real shells.

Materials: 4" heavy paper squares (construction paper or paper cut from grocery bags), tape or glue, crayons and colored pencils

1. Hold two paper squares together and cut two oblong shell shapes. With the two shapes still together, cut a 1/2" slit into the middle from the center of one of the straightest edges.
2. Decorate the bivalves. To simulate ridges, accordion-fold each half.
3. Take one side of the bivalve shell shapes and form it into a shallow cone (like a clam shell) by sliding the paper on one side of the slit over the other so there is some overlap. Use tape or glue to hold the overlapping paper in place.
4. Repeat this with the second shape, making sure the overlap is about the same. Check to see that the two shells fit together (like a closed clam) before taping the second shape.
5. Connect the two shells by making a tape hinge at the points where the slits were cut.

Sea, Hear

Key Words: hear, white noise, sound, pitch, wave, vibrate



Concept: Sound waves inside small objects can make white noise that is similar to the sound made by ocean waves.

Have you ever put a large shell to your ear and heard a rushing surf sound? You might think the shell has trapped the sound of the ocean, but this sound can also be heard in other situations.

Materials: Tumblers and cups (glass, plastic and/or paper)

1. Gather enough tumblers and cups (a variety of sizes) so each student has one.
2. Have students hold a tumbler so it covers their ear, then have them move it about an inch away from their ear and listen to the sound.
3. Have them switch to a different size tumbler and repeat the activity. Do the sounds they hear in narrow tumblers differ from the sounds they hear in wider tumblers? How about tall and short tumblers?
4. Relocate the activity to the playground, lunchroom and/or library and have them compare the sounds they hear.

Science Note: The sound heard is called white noise. Just as white light is a mixture of colors, white noise is a mixture of different pitches of sound. At the ocean, waves splash making many different sounds that together create white noise. Students hear a similar mixture of sounds from the tumblers.

Air vibrates as a result of sound waves and wind. These vibrations overlap and mix together to create white noise in the cups. Although the vibrations are the same, some cups will have a lower or higher pitch than others. Generally, taller and wider tumblers sound lower than narrower and shorter tumblers. The sound is also influenced by what the cup is made of.

Where Have All The Shells Gone?



Key Words: shells

Concept: Shells are chipped and broken into pieces as ocean waves cause them to tumble against hard objects.

For millions of years shells have washed up on beaches. But those old shells aren't there and the new ones are usually chipped and cracked. What happens to them?

Materials: Pasta shells of various sizes (large mixed with small), coffee cans with lids, fist-sized rocks, tape, dark paper or plastic

1. Put a mixture of sizes of shell pasta in a coffee can after putting aside several whole pasta shells for later comparison. Take note of the condition of the pasta shells.
2. Place several fist-sized rocks in the can and put the lid on. Use tape to hold the lid securely on the can. Then carefully shake the can up and down like the rolling and crashing of waves at a beach.
3. After several minutes of shaking, remove the lid and pour the pasta and rocks onto a piece of dark paper or plastic. Compare the pasta from the can with the original sample. (The pasta shells cracked and chipped as they rolled against each other and against the rocks. At the beach, shells break into smaller and smaller pieces and become sand.)

Science Note: The unchipped shells sold in shops are primarily harvested from live animals. The populations of some shell animals have been declining due in part to this practice. It's best for the environment and the animals to collect imperfect shells from the beach, rather than buy perfect ones in a shop.

Twists Sand Turns



Key Words: properties, sand particles, patterns

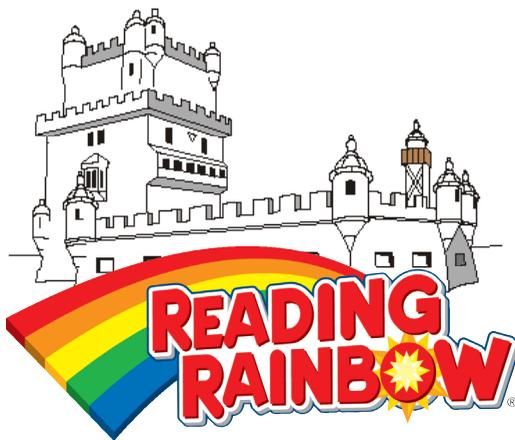
Concept: Properties of materials interact with objects to make interesting patterns.

Sand has interesting properties. Like liquid it takes the shape of a container; like a solid it can scratch hard surfaces. When it's wet, it holds its shape because water is attracted to sand particles and they attract each other. Use "sand stylers" to create sand patterns and explore the properties of sand.

Materials: Wet sand, rectangular cardboard (about 3" x 10"), scissors

1. Create sand stylers by cutting a pattern of teeth into the long edge of a light cardboard strip (e.g. from a cereal box). Patterns can be a mix or match of zig-zag teeth, waves, square teeth, sharp teeth, etc.
2. Predict what pattern each styler will make when it is dragged over the surface of wet sand. What if it is dragged in a circle, or dragged to the side and forward at the same time?
3. Drag the styler in these ways across a tray of wet sand. Were the predictions correct?

Extension: Students can record the patterns they make in the sand on paper and trade them with a partner. The partner can then work to duplicate the styler that drew the pattern. Ask them to share what clues were most helpful for duplicating the patterns.



Sand Skyscrapers

Key Words: measurement, sand, building

Concept: Changing variables will affect the height of a tower that can be built with sand.

There are sand castles and skyscrapers — how about a sand skyscraper? Explore how tall a tower of sand can stand, and what's the best way to build it.

Materials: Wet sand, water, plastic sheet/plastic leaf bags or sand box, large coffee cans, sand forms (various containers that are smaller than the coffee cans, such as cups, tumblers, and empty milk cartons), measuring stick

1. In an outside area, fill a large coffee can with wet sand — one for each group — and use this as a base for each sand skyscraper. (All bases should be the same.)
2. Have groups develop strategies and then build a sand skyscraper on this base using wet sand and sand forms.
3. Determine the tallest by measuring each. Then discuss what worked and what didn't. What are the qualities of the tallest sand skyscrapers? Is it better to have straight sides or tapering sides, to use larger or smaller sand forms, to use wet sand or barely damp sand? What advice would students give others who are just beginning this project?

Deep Breath

Key Words: air, breathe, space, grains, sand

Concept: Animals fill their needs where they live.

Many kinds of animals live in sand, especially at the seashore. Explore where these animals find air to breathe.

Materials: Clear plastic cups, dry sand, plastic wrap, water, rubber bands, bowls or buckets, measuring cups (optional)

1. Fill a cup with dry sand. Examine the cup to make sure it is full.
2. Fill a measuring cup with water and discuss how much water the sand-filled cup will hold. Pour the water in until the cup can hold no more. Discuss what happened to the water.
3. Fill another cup with dry sand and cover it with plastic wrap held in place with a rubber band. Poke two small holes (1/8" - 1/4") in the plastic wrap — one in the center and one near the edge.
4. Immerse the sand-filled cup in a bowl of water. What comes out? Where does it come from? Some animals breathe the air in the spaces between the grains of sand. (Other animals breathe through holes they make leading to the surface of the sand.)