

8. How big are your sand grains?

Compare your sand sample to the size charts below. Imagine the black dots are grains of sand. What sizes do you find in your sample? Circle them.

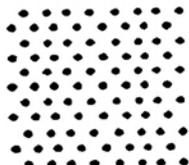
Particles from 0.06 millimeters (mm) to 2.0 mm are considered to be sand.



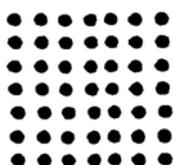
Size 2
0.25 mm



Size 3
0.5 mm

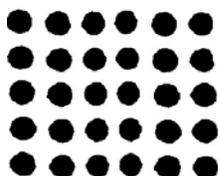


Size 4
1.0 mm

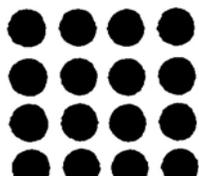


Size 5
2.0 mm

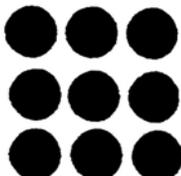
Particles larger than 2.0 mm are considered gravel.



Size 6
3.0 mm



Size 7
5.0 mm



Size 8
7.0 mm

9. Do you have mostly sand or gravel? Draw a picture of your sand grain sizes in the box.



10. Feel the beachy breeze! Wind can break up sand particles and make them more round, smooth and all about the same size. Is your sand from a windy beach or a beach with little wind?

_____ Yes, my sand grains are mostly the same size, my sample came from a windy beach!

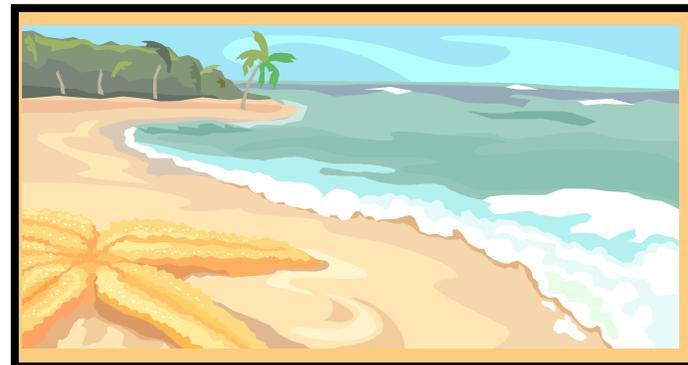
_____ No, my sand grains are all different sizes, my sample came from a beach with little wind.



This activity booklet was created by the staff of the Education Program at the NJ Sea Grant Consortium. Look for our other projects all about the sea at

www.njseagrant.org

The Science of SAND



Activity booklet created by:



NAME: _____



SAND...



Beaches are made up of bits of materials washed onto the shore by waves. Most beaches are made of sand, but sand can be made up of many different things. From beach to beach what the sand looks like depends on many things, including where it came from, what it is made of and how it made its way onto the beach. Every grain of sand has its own story and history. Each grain is a tiny world in itself!

BE A SAND DETECTIVE!

You will need: some sand, a magnifying tool, pencil, a copy of this lab booklet.

My sand comes from _____ (if known).

1. **What's in your sand?** Look carefully at your sand with the magnifier.

Circle the things you think might be in your sand.

Bits of rocks

Pieces of shells

Pieces of coral

Pieces of glass

Pieces of plants

Other things (name them): _____.

2. **What color is your sand?** Again, look closely with your magnifier. The colors of your sand grains can tell you what rocks or particles your sand is made of. Check off the colors you see in your sand

_____ Clear or frosty white rocks (quartz).

_____ Peach, beige or reddish brown (usually feldspar).

_____ Shiny black (magnetite or basalt). Test for magnetite with a magnet!

_____ Gold, silver or brown (usually mica).

_____ Green (olivine).

_____ Pink to dark red (garnet).

_____ White, pink or milky color (probably pieces of shells or corals).

3. **What other colors did you find in your sample?** List them.

4. **Where do you think your sand ORIGINALLY came from?**

The color of a sand grain can tell us about where it came from. Based on the colors in sand, check off where your sand sample might have come from.

_____ Clear, frosty white, brown, gray, silver, red, beige, peach and black grains mixed together come mostly from mountains.

BONUS QUESTION: How do these grains get from the mountains to the beach? _____

_____ All black or green sand is usually from the lava of volcanoes.

BONUS QUESTION: Name one U.S. state with volcanoes _____

_____ White, milky or cream colored grains are usually bits of seashells.

_____ White or pink sand is usually from coral reefs in the ocean.

_____ Brown woody pieces or green sand might be from plants that came from the surrounding land or ocean.

_____ Colored glass or plastic bits is from human garbage.

5. **Sand Shape** - Draw a picture of one or two of your sand grains.



6. **How old is your sand?** When sand first breaks off from rocks, shells or coral it is usually very pointy and rough. As time goes on, the sand grain tumbles around in the ocean getting smooth and round. Smooth round grains are the oldest! Circle the grain shapes pictured below that best matches the grains in your sample. (River sand is often young sand, ocean sand is often old.)



So is your sand young, old or middle-aged? _____ Why? _____

7. **Surf's Up!** Waves wear sand down too. Based on grain shape, check off if you think your sand came from a beach with big, small, or no waves at all.

_____ Big grains of sand are probably from a beach with big, powerful waves that churn up rocks, shells and coral. Big waves also wash away the small grains.

_____ Small grains are probably from a beach with small, gentle waves. Small, fine grains of sand may also be from sand dunes. Wind carries the grains there, but they are generally small and light.

_____ Tiny grains are probably from beaches with little to no wave action.