

ACTIVITY

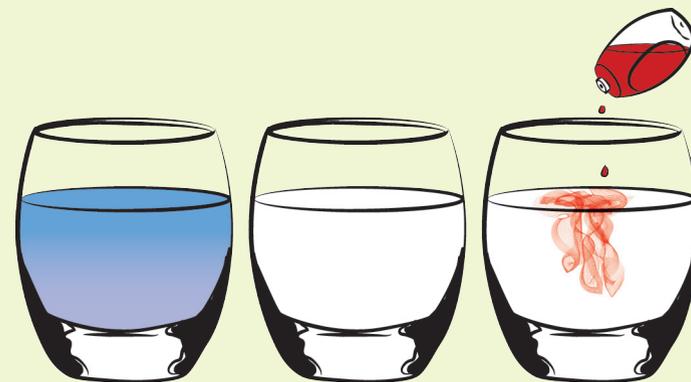
Discover Water Density

Whether an object or a substance sinks or floats depends on its density. An object will float if it's less dense than the liquid it's placed in. It will sink if it's denser than the liquid it's placed in. Compare how different levels of salinity affect water density.

YOU'LL NEED

- 3 small clear drinking glasses
- Microwave
- 3 tablespoons of salt
- Spoon
- Blue food coloring
- Red food coloring
- Tall, skinny clear glass or small cylindrical beaker
- Syringe, eyedropper, turkey baster, or nasal aspirator

1. Fill three small drinking glasses halfway with tap water.
2. Put all three glasses in the microwave and heat them for about 1 minute (time will vary depending on your microwave). The water in each glass should be lukewarm.
3. Set the glasses in a row on a flat surface where you can work.
4. Add 2 tablespoons of salt to the first glass, 1 tablespoon of salt to the second glass, and no salt to the third.
5. Stir the salt in the first two glasses until the salt has dissolved completely.
6. Add four drops of blue food coloring to the first glass and stir.
7. Add four drops of red food coloring to the third glass and stir.



8. Carefully pour some water from the second glass into a new glass (a tall, skinny glass or a small cylindrical beaker works well). The skinny glass should be about a third full.
9. Fill a syringe, eyedropper, turkey baster, or nasal aspirator with the blue water from the first glass and use it to slowly add the blue water to the skinny glass.
10. Take a moment to observe. What happens to the blue water? Remember, the blue water has the most salt.
11. Add more blue water until a blue layer forms at the bottom of the skinny glass.
12. Next, slowly add red water to the skinny glass, using the syringe, eyedropper, baster, or nasal aspirator. What happens? Remember, the red water has no salt at all.
13. Add more red water until a red layer forms on the top of the clear water.
14. Now that you've seen density in action, try to answer this question: Which is denser, salt water or fresh nonsalty water?



Surfers are familiar with another type of movement in the ocean—waves. The wind creates most waves, which can be slow and rolling or choppy and rough. Other waves, such as tsunamis, form when a powerful force disturbs the water in the ocean. An underwater earthquake, a volcanic eruption, or a large landslide can trigger a tsunami, a series of large waves that can travel as fast as 500 miles (800 km) per hour. That's as fast as an airplane flies! When a tsunami reaches land, it often destroys everything in its path.

Ocean **tides**, the rise and fall of the sea, are another way the ocean moves. If you've ever built a sand castle high up on the beach only to have it destroyed by waves later on in the day, you've experienced ocean tides.

As the moon circles the Earth, its gravity pulls on the side of the Earth that's closest to it. By pulling the Earth and the ocean a little bit closer, the moon causes high tide on the side of the Earth that's closest to it and on the side of the Earth that's farthest away.

Most places on Earth experience two high tides and two low tides per day. For example, when high tide is happening at the top and bottom of the earth, low tide is happening on the left and right sides, and vice versa. During low tide, the ocean gets pulled back and the waves don't come up as far, revealing more of the beach.

Low tide is a great time to discover all the creatures that live in the stretch of beach between the tides. In fact, near-shore ecosystems are some of the easiest to study and explore because they are close to the coasts. Let's journey there now.