Bounce an Egg

Can you drop an egg without breaking it?

Activity Guide

Try This!

1. Put the hard-boiled egg in the bottom of one glass.
2. Put the raw egg in the bottom of the other glass.
3. Fill the glasses with enough vinegar to cover the eggs. Watch the glasses. What do you see?
4. Leave the eggs in the vinegar overnight.
5. Remove the eggs, and try dropping them gently in the bowl. (Keep track of which is which.)

What's Going On?

The eggs bounce instead of breaking, because the acid of the vinegar breaks down the calcium carbonate of the eggshell. The bubbles you noticed when you added the eggs to the vinegar were carbon dioxide, released by the reaction of the vinegar and calcium carbonate. When all the carbon has come out of the eggshells, they're no longer hard—they're soft and bouncy.

Now Try This!

1. Dump the vinegar down the sink.
2. Clean and dry the glasses.
3. Put the hard-boiled egg in a clean, dry glass.
4. Leave it sitting out for a day, then feel it again.
5. Put the raw egg in a glass, and cover it with water.
6. Leave it sitting in the water for a day, then check to see what has happened.

What's Going On?

The hard-boiled egg got hard again! It absorbed the carbon from the carbon dioxide that's in the air we breathe.

The raw egg absorbed water via *osmosis,* expanding until the soft shell burst. If you put the raw egg in salt water, it would shrink because it would lose fresh water through osmosis.

> ***Osmosis** is the diffusion of water through a semi-permeable membrane.*

Learning Objectives

- Eggshells are made of calcium carbonate.
- Eggshells dissolve in acid and produce carbon dioxide.
- The air we breathe contains carbon dioxide.
- Water moves through the semi-permeable eggshell membrane via osmosis.

Materials

- Raw egg
- Hard-boiled egg
- Vinegar
- Two drinking glasses or glass jars, one labeled “raw” and one labeled “hard-boiled”
- Mixing bowl

Credits
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