

Section 2

Understanding Structures and Mechanisms

EXPLORATION 1

What makes an egg strong?

Discover that an eggshell is a strong structure.

The strength of a structure refers to its ability to support a load and the compression forces it exerts. There are various factors that contribute to the strength of a structure, including its shape and its material.

Believe it or not, an egg is actually an example of a strong structure. If you ever try squishing an egg from its top, it is surprisingly strong, considering how delicate it seems to be. But what makes an egg so strong?

My eggs are so strong!



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What makes an egg strong?

Try this experiment to discover what makes an egg an example of a strong structure.

Materials:



an egg



a jar

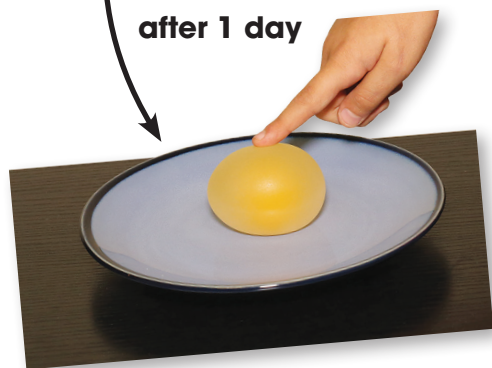


vinegar



Steps:

1. Put the egg in the jar.
2. Add enough vinegar to cover the egg. Wait for a few minutes and watch what happens to the egg.
3. Leave the egg in the vinegar for one day.
4. Remove the egg from the jar.



Touch the egg. Is it hard or soft? Is it smooth or rough? Write to describe how it looks and feels.

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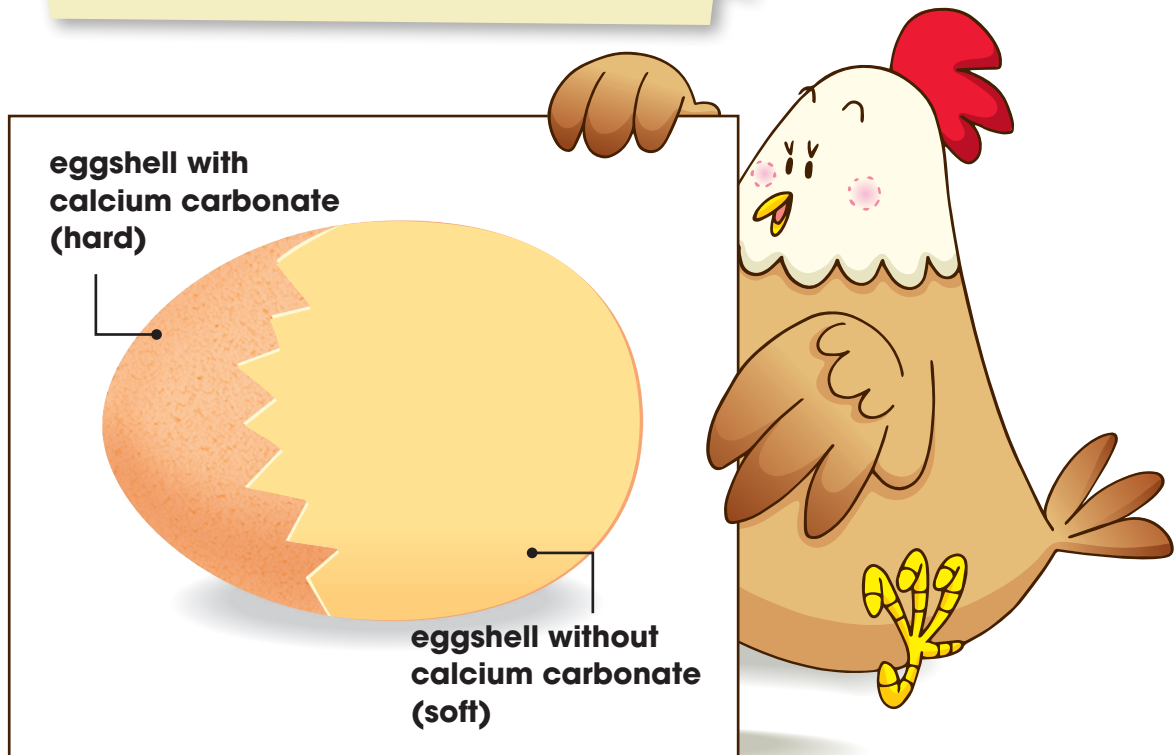
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What makes an egg strong?

Although an eggshell is fragile, a substance called calcium carbonate in it, along with the egg's dome shape, makes the egg hard and strong enough to support considerable weight. After vinegar was added to the egg, did you notice some bubbles forming on the egg's surface and rising to the surface of the vinegar? The bubbles were carbon dioxide, which formed due to the chemical reaction between the calcium carbonate in the eggshell and the vinegar. The vinegar dissolved the calcium carbonate in the eggshell, which was the solid structure of the egg, leaving behind the film that kept the egg's dome shape, but its strength was lost.

An eggshell plays an important role in giving an egg a strong structure.



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What makes an egg strong?

Read about animal eggs. Then circle the animals that lay eggs.

Many animals, such as birds, snakes, and turtles lay eggs. Some animals build nests to lay their eggs in but some lay their eggs in water. Eggs come in a variety of colours and sizes.

An ostrich egg is very large and can weigh more than 1 kg. A hummingbird egg is very small and can be smaller than a jelly bean.

