








# How Strong is an Egg?

Everyone knows that eggshells are fragile. Drop an egg on the floor and that is it – eggshell, white and yolk everywhere. But how can an eggshell possibly protect a growing chick? Try out the experiments below to see how strong an egg really is!

**Materials:** 5-9 eggs, 4 bottle caps, wooden board or large hardcover book, books, scale, plastic tablecloth or newspaper, vinegar, container for vinegar and egg to sit in overnight



## Directions:

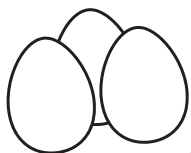
### Experiment 1: How much weight can eggshells support?

-  Put four bottle caps with the flat side down, on the table with a plastic tablecloth or newspaper underneath.
-  Balance whole eggs (hard-boiled for less mess and waste, you can eat them after!) small end down in the bottle caps.
-  Carefully place a wooden board or large book on top of the eggs, positioning an egg under each corner.
-  Slowly stack books on top until the eggshells break. Then weigh the books to see how much weight it held.
-  Try it again with the eggs balanced on their side. Do they hold more or less weight like this? Why do you think this is?



### Experiment 2: How strong is the inner membrane?

-  Put a whole egg in a bowl and cover it with vinegar. After five or ten minutes, bubbles of gas should start to form on the eggshell.
-  Leave it overnight and the vinegar should dissolve the whole of the eggshell, leaving just the egg membrane, which is strong enough to hold the yolk.



### Thinking Question:



Some eggs can have a very thin shell or the opposite, where there is [extra calcium](#) built up on the outside. What are some reasons an egg might have a thinner or thicker shell?



### Parent Tip:

This is a great time to discuss [how different housing systems](#) (caged, free run, free range) can affect the welfare of a chicken.