



How Strong is an Egg?

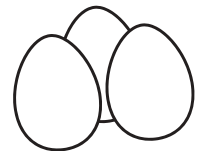
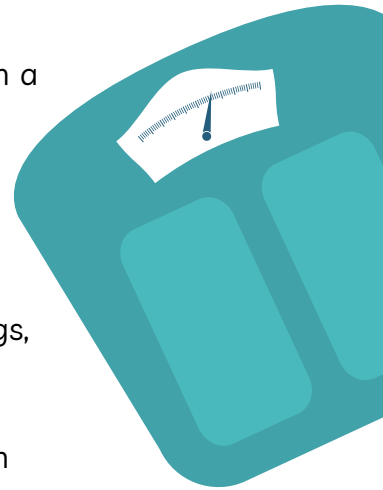
Everyone knows that eggshells are fragile. Drop an egg on the floor and that is it – eggshell, white and yolk everywhere. But how can an eggshell possibly protect a growing chick? Try out the experiments below to see how strong an egg really is!

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?

- 1 Put four bottle caps with the flat side down, on the table with a plastic tablecloth or newspaper underneath.
- 2 Balance whole eggs (hard-boiled for less mess and waste, you can eat them after!) small end down in the bottle caps.
- 3 Carefully place a wooden board or large book on top of the eggs, positioning an egg under each corner.
- 4 Slowly stack books on top until the eggshells break. Then weigh the books to see how much weight it held.
- 5 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?

- 1 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.
- 2 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.

How might the [different housing systems](#) (caged, free run, free range) affect the health and happiness of a chicken?

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?