

STRENGTH OF DOMES

What does an egg, the Taj Mahal, the U.S. Capitol, and St. Peter's Basilica all have in common?

This experiment looks at how something we think of as being brittle and weak can actually hold a heavy load under certain conditions. How strong do think an eggshell is and why?

WHAT YOU NEED

- At least 4 eggs (you might break a few making the domes)
- A pen
- Tape
- Scissors or a sharp knife (use with adult supervision)
- Heavy books

WHAT TO DO

- Take two eggs and poke a tiny hole at the narrow end of each egg.
- Pour out the contents.
- Stick tape around the middle of each egg.
- Carefully cut through the tape with a small pair of sharp scissors (ask an adult for help).
- You should have four half egg shells of the same height.
- Place the four shells in a rectangle shape and slowly place a book on top of the shells.
- See how many books you can add before the egg shells crack.

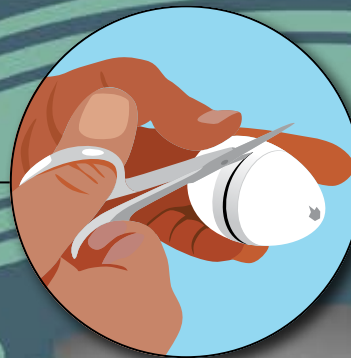
THE ENGINEERING BIT

- Some shapes are stronger than others.
- Eggs which seem fragile are actually very strong in certain ways. (Try crushing an egg by squeezing the ends between your hands.)
- Egg shells form a dome. A dome is very good at spreading weight evenly in all directions so that no part of the dome has to support more weight than another part. The downward force of the weight of the books is transferred evenly by the dome shape down to the work surface.

THINK MORE

- What other shapes are strong?
- Where can you see these shapes in buildings or nature?

Courtesy of Science Sparks



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