

ENGINEERING
CHALLENGE

17

A TOUGH NUT TO CRACK



THE
JAMES
DYSON
FOUNDATION

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The brief

Using brazil nuts and a nut cracker, crack open the shell without damaging the nut.

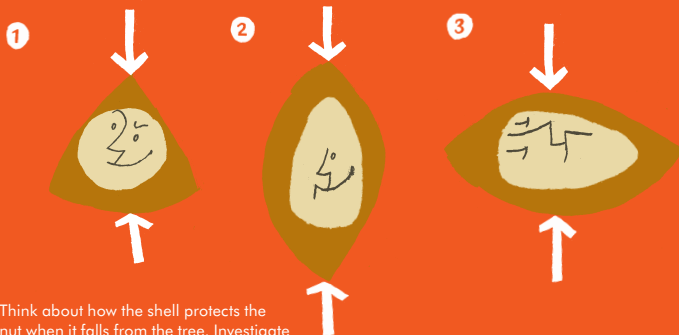
Materials

Brazil nuts in their shell

A nut cracker

The method

1. Cracking the nut across the centre with one flat side aligned with the nut cracker face will transfer all the force directly through into the nut. Most of the time, this will cause the nut to shatter. The cross section of a brazil nut is roughly an equilateral triangle.
2. Cracking the nut end to end is nearly impossible.
3. Instead, apply the force across one of the sides. The side should buckle breaking the shell but not the nut.



Think about how the shell protects the nut when it falls from the tree. Investigate this with other nuts and discuss which nuts have the most protective shell.