

**HOOK THEM IN...**

Use images or video clips that amaze or surprise them.

**(Please view all clips and images before screening to ensure that the content is appropriate for your students)**

Creative product packaging:

<http://www.boredpanda.com/creative-packaging-designs-2/>

Packing pencils into a container:

<https://recordsetter.com/world-record/number-pens-pencils-crammed-into-an-empty-35-ounce-lindt-70-cocoa-smooth-dark-chocolate-container-without/5599?autoplay=true>

Packing balloons into a car:

<https://www.youtube.com/watch?v=LyXSuMbOkPs>

Estimation 180 in packaging (a challenge a day):

<http://www.estimation180.com/days-21-40.html>

**ENGAGE THEM...**

Arrange 24 sugar cubes so that the shape has minimum surface exposed. Design a net for to completely wrap the shape which uses the minimum tabs to secure the wrapping.

What if you had 36 cubes? Can you generalise for any number of cubes?

What if you wished to pack pyramids rather than cubes?

**CHALLENGE THEM ....****Group Challenge:**

Using a single piece of A4 card (or A3 paper) design a container that will hold 50 ml of water for the longest period of time before leaking.

You might consider allowing groups to use other materials, such as sticky or glue but impose agreed time penalties (eg. subtract 5 seconds from the holding duration of the final product for each 30 cm of tape.)

**RESOURCES****Nrich Website. Short activities**

Efficient Cutting <http://nrich.maths.org/2664>

Auditorium Steps <http://nrich.maths.org/7235>

All Wrapped Up <http://nrich.maths.org/4919>

Packing a range of 3D shapes in the most economical way. <https://nrich.maths.org/6162>

**Dan Meyer**

Trasketball <http://www.101qs.com/2008-trashketball-cylinder>

Paper Cuts <http://www.101qs.com/1223-paper-cuts>

Dandy Candies <http://www.101qs.com/3038>