

CARDBOARD
CHAIRCHALLENGE
15

THE BRIEF

CONSTRUCT A CHAIR THAT YOU CAN SIT ON USING ONLY CARDBOARD. NO GLUE, TAPE OR OTHER FIXING MATERIAL ALLOWED.

MATERIALS

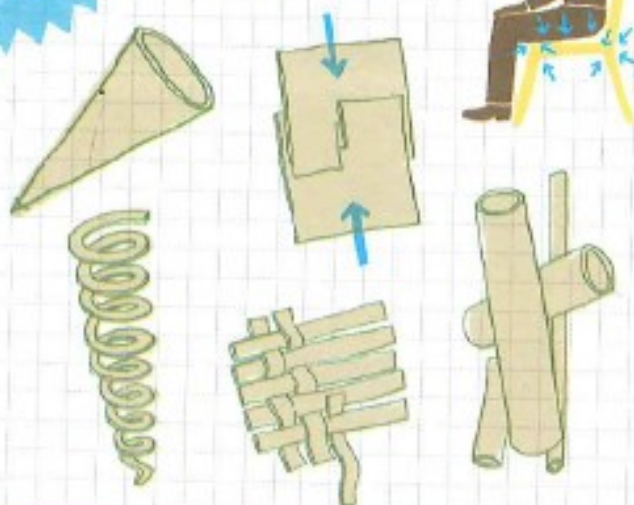
Cardboard, cutting equipment (with adult supervision), rulers, pencils.



TOP TIP
THINK
ABOUT
STRUCTURE

The best designs use the weight of the person sitting on it to force the joints together making the structure stronger.

Think about using cones, interlocking sheets, spirals, tubes or even strips of card like a sewing thread.



Challenge designed by:
Andy, design engineer at Dyson

www.jamesdysonfoundation.com

DECODE A
MESSAGECHALLENGE
16

THE BRIEF

DECODE THE FOLLOWING:

WKHUH DUH ORWV RI GLIHHUHQW FRGHV.

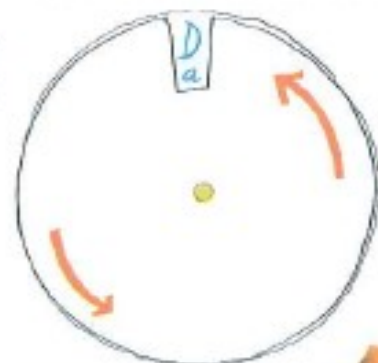
MATERIALS

Two paper disks, a pen, scrap paper, a split pin, scissors (with adult supervision).



THE METHOD

- 1 Around the edge of one disk, write the alphabet in capitals, clockwise.
- 2 Under "D", start again at "a" and write the alphabet again, clockwise, in lowercase, under the capital letters.
- 3 Place the other disk over the first and cut a slit in the edge, so you can see one capital letter and the other letter underneath it.
- 4 Fix the two disks together with the split pin.
- 5 For each code letter, find it in capitals by turning the top disk and write the lower case letter you see on your scrap paper.



HOW DOES IT WORK?

This code disk has the code letters in capitals and the real letters in lower case. You can use it to decode messages or write your own codes. This code is called the Caesar Shift, because you shift your alphabet along, and is one of the oldest used.



**DID YOU
KNOW?**

Mary Queen of Scots used codes to tell people to kill Queen Elizabeth I – these were decoded and used to sentence her to execution.

Challenge designed by:
Robyn, analyst at Dyson

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