ENGINEERING
CHALLENGE

02

MARBLE RUN

THE
JAMES
DYSON
FOUNDATION

MARBLE RUN

ENGINEERING CHALLENGE 02

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The brief

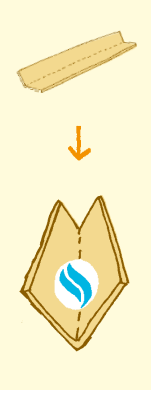
Use a cardboard box and cardboard struts to create a marble run. The marble must run for 60 seconds.

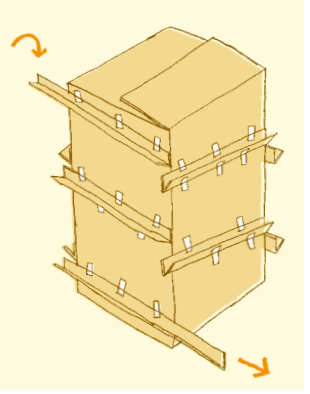
The method

1. Use tape to attach the cardboard struts to the cardboard box, creating a run for the marble.
2. Place the marble at the top of the run and time how long it takes for it to reach the bottom.
3. Keep improving your design until the marble takes exactly 60 seconds to reach the bottom.

Top tip

If you can't find cardboard struts, make your own by folding four inch wide strips of cardboard in half to create a V shape.





Materials

- Large cardboard box
- Cardboard struts
- Tape
- Marbles
- Scissors (with adult supervision)

How does it work?

To help you to control the time your marble takes to run its course you'll need to consider a few factors:

Potential energy = mass x gravity x height

The heavier your marble and higher your slope, the more energy your marble will have.

Friction

The rougher or stickier the surface, the slower your marble will travel.

Angle of the slope

The less steep the angle of the slope, the longer the marble will take to reach the bottom.