

Engineering

We are very lucky at Ormiston Denes Academy to have two engineering workshops and a linked computer suite. In your engineering lessons in Year 7 you will work with wood to develop your practical skills in measuring, marking out, cutting and finishing. However the workshops are also areas where you need to take care, be sensible, be aware of hazards, and know how to use the tools safely. Some safety tips are;

- Never enter a workshop without permission
- Always make sure you fully understand instructions
- If in doubt about something you should ask your teacher
- Always make sure that you are wearing the correct protective equipment
- Always follow instructions from your teacher; including where to leave your bags
- Never complete practical work sitting down, store your seat safely away
- Only use equipment for the purpose for which it was designed for
- Never remove any part of the machine, including guards (where fitted)
- All equipment will be returned to its correct location at the end of the lesson
- Never leave the workshop with tools
- Always walk, never run in the workshop

Engineering challenge

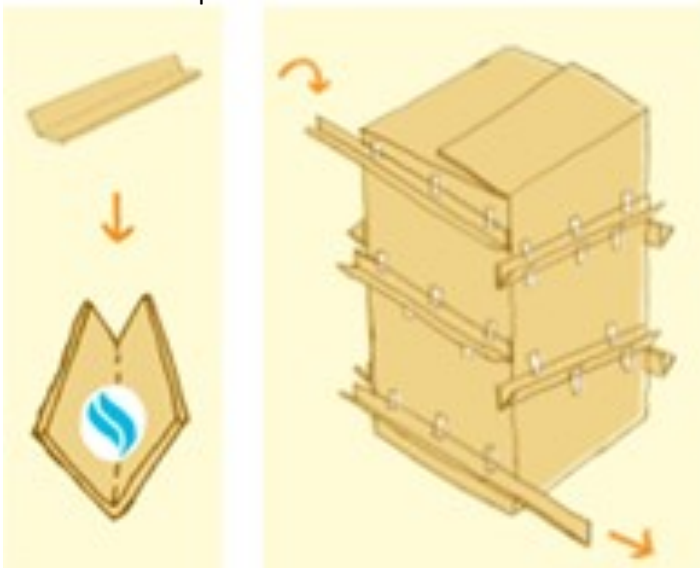
The Brief: Use a cardboard box and cardboard struts to create a marble run. The marble must run for 60 seconds.

Materials: Large cardboard box Cardboard struts Sticky tape
Marbles Scissors (with adult supervision)

The Method:

1. Use sticky 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 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 4 inch wide strips of cardboard in half to create a V shape.



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.