

DT Marble Run

Spring 2 2022

Class Lynher

Everyday Structures



Definition: Freestanding is defined as standing alone or on its own foundation, free of support or attachment.

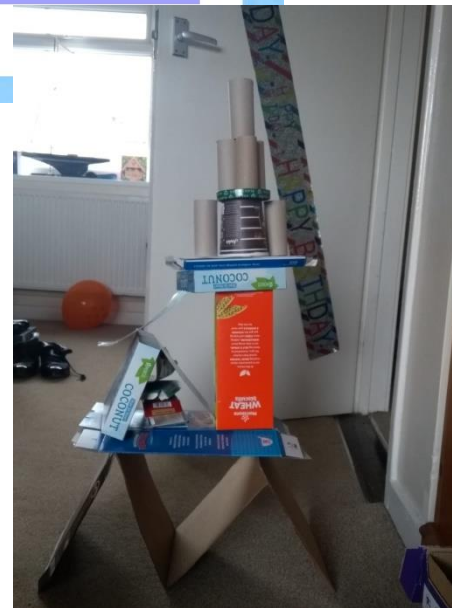


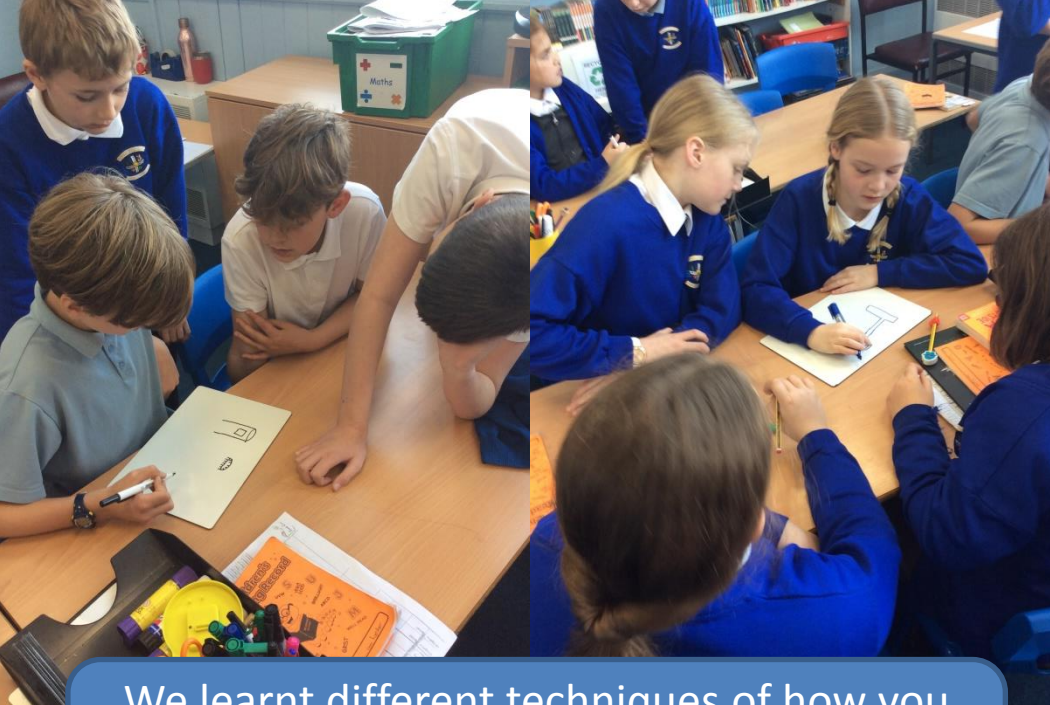
Why is it important that freestanding items are strong and stable?
How are different freestanding products designed to be strong and stable?

Photo courtesy of J. Hall, reimagined by J. Hall, under CC BY-SA license - attribution

In this lesson we learnt what freestanding meant and then tried to make our own freestanding structures using different materials.

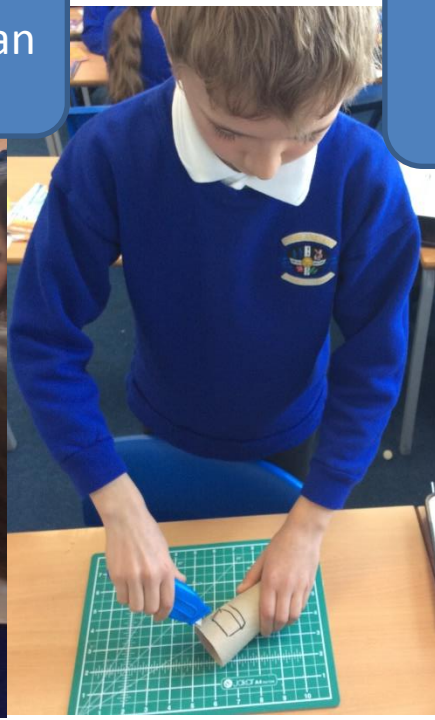
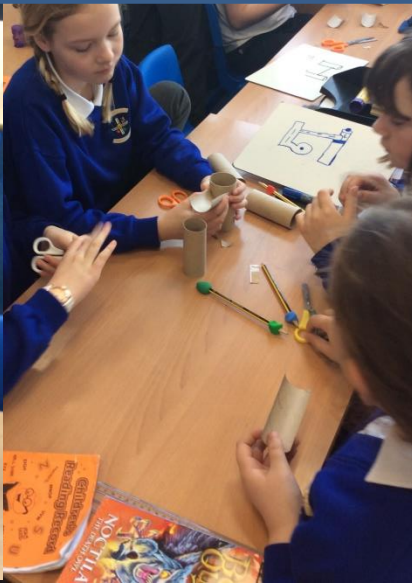
A freestanding structure is a structure that stands up on its own with nothing holding it.





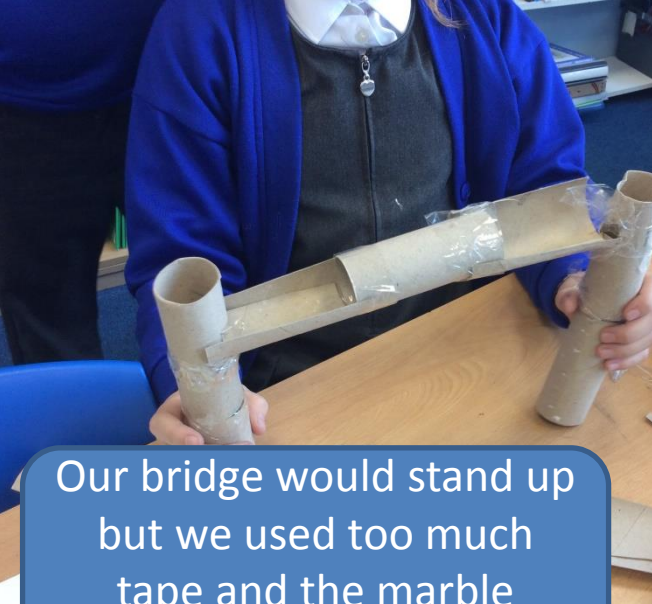
Following on from last lesson we were tasked with making a freestanding bridge for a marble to cross. We looked at some joining techniques and how to use a craft knife safely before planning and then making them.

We learnt different techniques of how you can join the bridge part to the stand. You can cut it to make a fan.



You can't have too much tape or it stops the marble from moving through.



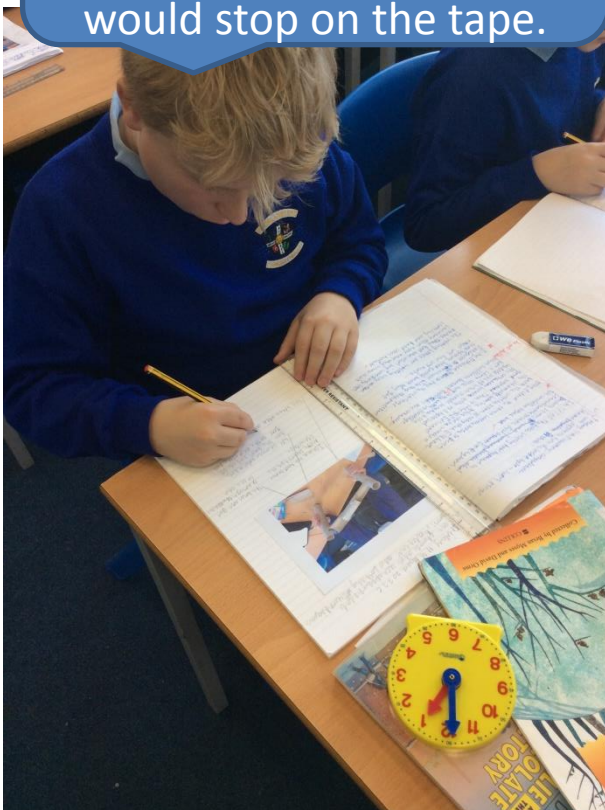


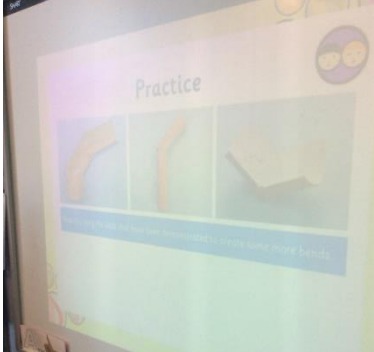
Our bridge would stand up but we used too much tape and the marble would stop on the tape.

Once we had finished our bridge we evaluated it, looking at the success of our joins, whether it was stable and if the marble crossed successfully.



Ours was free standing and the marble went through and stopped where we wanted it.





We made a spiral out of a paper plate. It was hard as you had to crease it so the marble didn't just fall off the sides. We would also need supports.



In this lesson we explored different ways of making turns building on to the joining techniques we had already learnt and used.



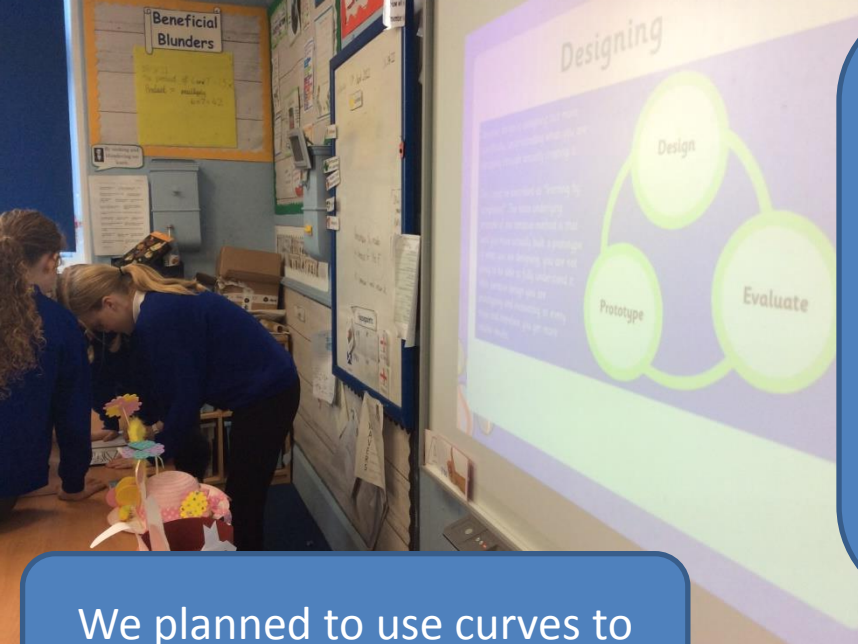
I had to make sure the tube I added went under so the marble didn't get stuck.

We tested commercially produced marble runs to see what worked well at slowing the marble down.

In our group we found the more gradual the tilt was the slower it would go.



I found out that the higher you built it, it could become unstable.



We learnt about the iterative process and began to think about how we would make our marble runs using what we had learnt from setting up marble runs and the practical lessons we had done.

We planned to use curves to slow it down.

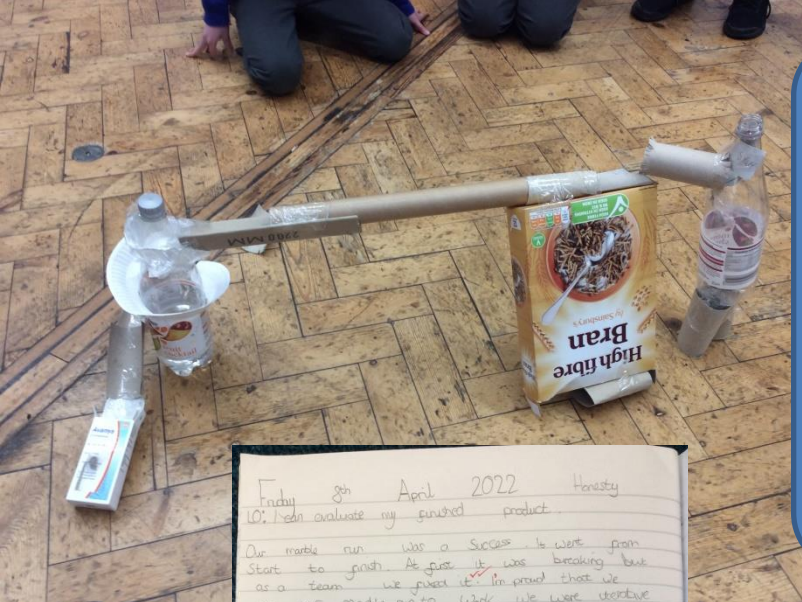


We put our skills to work making our marble runs.

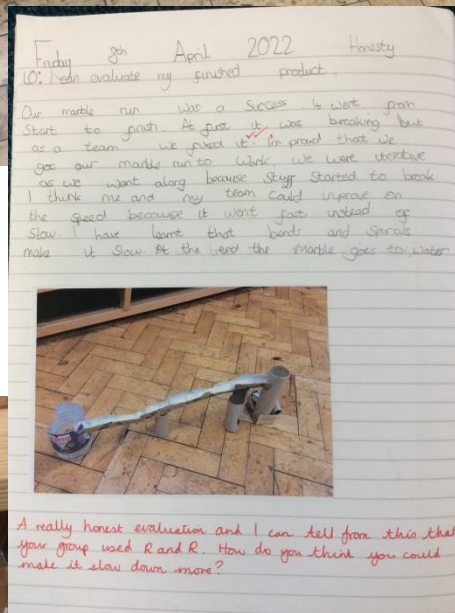
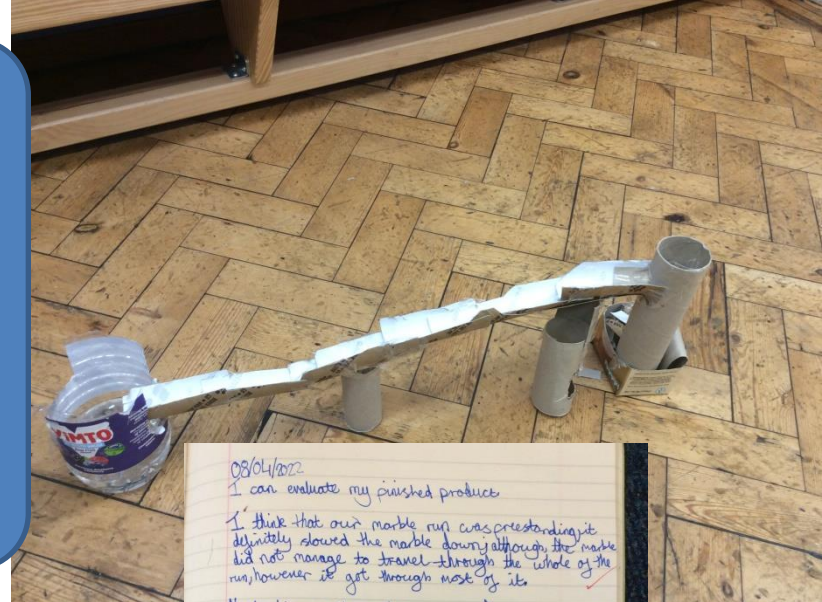


We made our base wider to make sure it was freestanding.



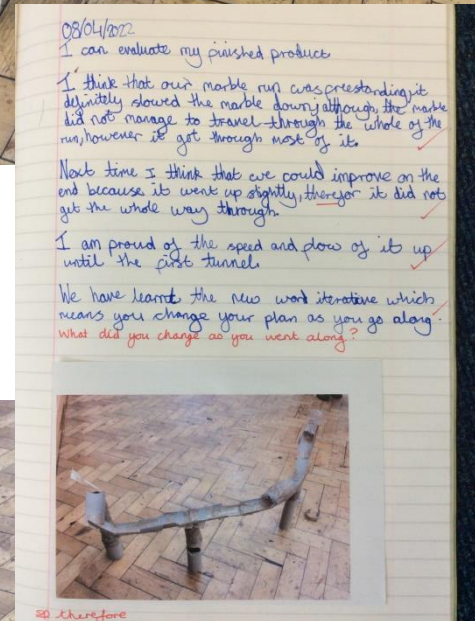


We finished our designs and then evaluated them against our specification.

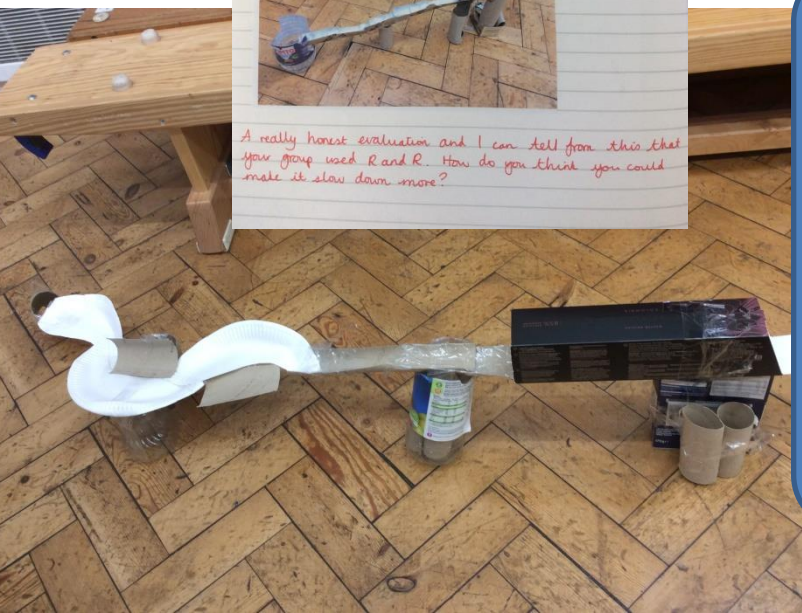


A really honest evaluation and I can tell from this that your group used R and R. How do you think you could make it slow down more?

We used curves to slow ours down. Next time we could make the tilt less so it goes slower.



so therefore



What I have learnt before:

We have made wooden structures using triangles for strength



Forever facts

I know that a wide base can help give a structure stability

The iterative process is used by real designers

To be safe with craft knives use a metal ruler and a cutting board and keep your hand away from the blade

Skills

I can make stable joins

I can test and evaluate commercial designs

I can create bends

I can identify what works and what to improve

Exciting Books



Our Endpoint

I can make a marble run to carry a marble slowly

Subject Specific Vocabulary

free standing	standing alone or on its own foundation free of support or attachment
strength	the capacity of an object to withstand force or pressure
reinforcement	the action of strengthening something
stability	the strength to stand
structure	a building or other object constructed from several parts
iterative process	understanding what you are designing by actually creating it
aesthetic	relating to art or beauty
component	a part of a project

Cultural Capital

Real life knowledge it links to: understanding materials and their properties. Jobs for the future could be: engineer