

Design a Rollercoaster Teacher Guidance

This is a great STEM and teamwork activity for KS2 children.

Preparation

- The design sheets for drawing would be useful on A3 paper. These can be stapled together into a booklet at the end.
- Prepare the children by watching some videos of rollercoasters and looking at photographs.
- All materials need to be big enough for a marble (around 10mm+ diameter) to run down easily (22mm diameter is perfect).
- Forward planning needs to be done for collection of materials as well as length of time allocated to the activity and the storing of materials during the making.

You will need:

- Design sheets for the children
- Sticky tape and metre rulers (for propping up parts and securing)
- One marble for each group to test the rollercoaster
- A range of materials, including cardboard tubes, plain cardboard, boxes and plastic tubes (a 2m long piece of plumbing pipe can be purchased quite cheaply from DIY stores)
- Plumbing pipe to be cut in half by an adult if needed
- Flexible tubing for the 360° loop
- Small pieces of these materials for use during the testing stages

Organisation

- Mixed ability groups of between two and five
- You may want to spend a whole day doing this activity or split it over a week.

Tip and tricks

- Send a letter home for materials beforehand as there may be families with plenty of tubing going spare.
- If budget allows, each team could be given a 2m length of plumbing pipe which can be sawn easily with junior hacksaws for design and corners. (Check your school's policy and risk assessment before considering the use of junior hacksaws.)
- Use sticky tape and metre rulers to support parts of the rollercoaster.
- A covered tube will stop the marble from falling out of the loop or other parts.
- The 45° drop should be used to get enough speed to finish the run and complete the 360° loop. Note how this is done with a big drop at the start of most rollercoasters.
- Make it real by giving the rollercoasters a name and even making an advertisement for them on video or paper.
- Use this as a cross-curricular and writing/presenting activity.