Year 7 Transition Project Science – Force & Motion
Roller coaster design and construction

What is a theme park without an awesome roller coaster ride?

Instructions: All students must design their very own roller coaster for their theme park. If you would like to challenge yourself, you can go on to construct the ride that you have designed. **THIS IS NOT COMPULSORY**. Section C has a list of materials that you could use to construct your roller coaster. Section A and B must be included in your design.

Section A: Follow these guidelines:

1. The roller coaster must be reasonable and successful.
2. Passenger safety. It cannot come off of the track!
3. Be constructed using some, if not all of the **approved materials**.
4. Make up a unique name for your roller coaster
5. Name 2 important or interesting features like curves, hills, loops

Section B: Identify and label on the roller coaster the following physics concepts:

a. As many forces as you can that will be acting on your roller coaster (**you must include Friction and Gravity)**.
b. At least one pushing force.
c. At least one pulling force.
d. A combined force (pushing or pulling) in the same direction
e. A combined force in opposite directions
f. A change in speed
g. A change in velocity (speed and velocity)

Challenge: How could you reduce the friction acting on your roller coaster ride?

Section C: Construction materials:
Here are a few pieces of materials that can be used as a starting point for your construction:

- Paper towel tubes
- Cardboard
- Masking tape
- Duct tape
- Glue (not hot glue)
- Modelling clay
- Popsicle sticks for additional support