

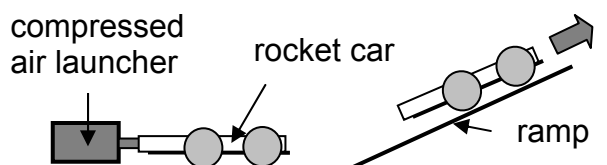


Rocket Car Derby



Using the kit provided design and make a rocket car to travel as far as possible.

KIT LIST



- plastic roller
- card
- plastic corriflute sheet
- 4 wheels
- 2 axles
- foam sheet for wings! (optional)
- large washer for weight adjustment (optional)

CONSTRUCTION

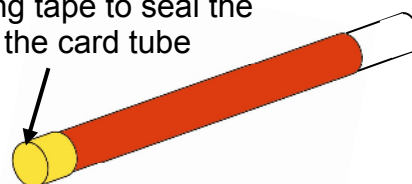
1. Make a tube by rolling the card around the plastic tube roller.
2. Seal one end of the tube with 3 pieces of masking tape (each about 10cm long). Make sure there are no holes in the end cap.

☺ **Top Tip:** The plastic roller is **not** part of the final car BUT keep it inside your tube until testing.

☺ **Top Tip:** How tight should the card tube be on the plastic roller? Try to keep the friction force between the card tube and the roller as small as possible.

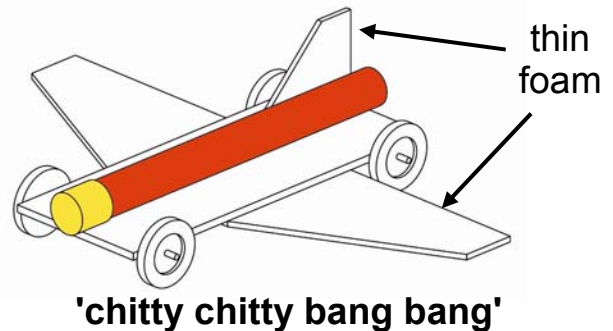
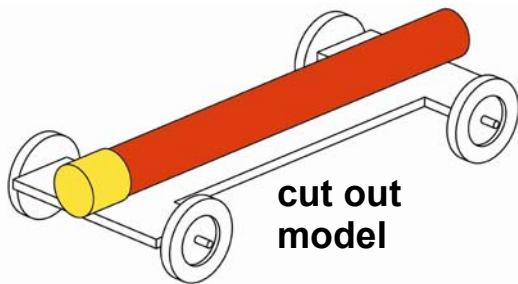
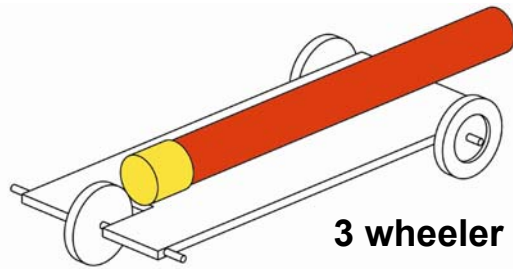
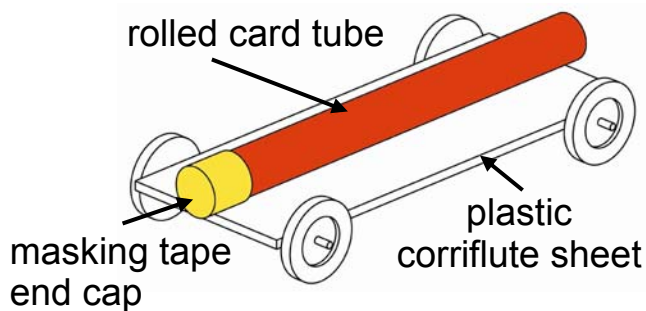


Use at least 3 pieces of masking tape to seal the end of the card tube



3. Now design and build a chassis that will hold the tube. Your car must have at least 3 wheels. Stick a small piece of tape on the end of the axles to keep your wheels on. Ideas overleaf.

☺ **Top Tip:** Take care to stick your tube **securely** onto the corriflute sheet. The forces during testing are large!

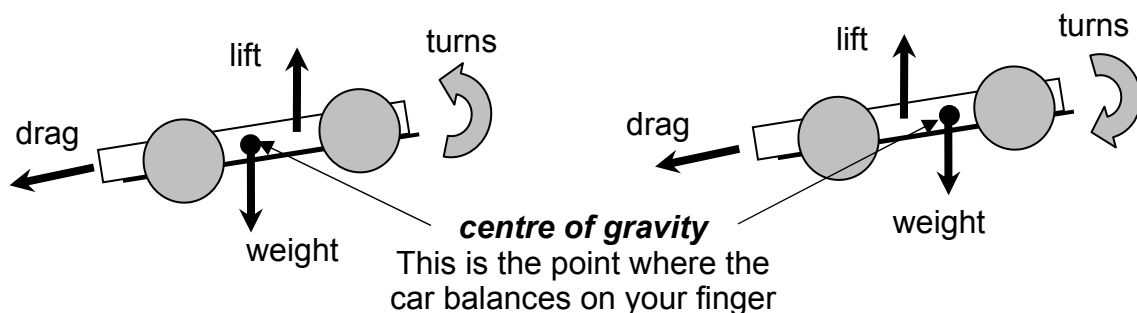


4. **Test!** – take your car to the testing ramp.

How can you improve your design?

Think carefully about the forces acting on your car during launch and through the flight.

☺ **Top Tip:** Keep *friction* small. Are your wheels turning freely? Does your car have an *aerodynamic* shape when flying? Try removing excess plastic.



☺ **Top Tip:** Landing on wheels!

Does your car flip over in the air? Try changing the *centre of gravity* of your car by either adjusting the wheel position or adding extra weight.

☺ **Top Tip:** Try adding some wings. How do these affect the flight? This will add *drag* to your car BUT it will help your car *glide*.

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