

Dynamics and Statics

Projectiles: 3. Air projectile

(Ireland)

Background

Compressed air can be used to propel a paper projectile.

You will need

- ✓ sheets of card
- ✓ scissors
- ✓ sticky tape
- ✓ bicycle pump
- ✓ measuring tape
- ✓ homemade launcher
(<https://www.instructables.com/id/Launcher-for-Air-Rockets-and-Corks-Using-a-Garden-/>)

Follow these steps

1. Roll a rectangular sheet of A4 card around a PVC pipe of equal diameter to the pipe on the end of the launcher. Make this into a cylinder.
2. Cut a circle into two semi-circles and use one of these semi-circles to make the nose cone of the projectile.
3. Make triangular fins for the projectile.
4. Decide on the angle of launch.
5. Use a bicycle pump and closed valve to build up pressure in the launcher.
6. Open the valve.

So what happened?

The projectile is launched.

What next?

Try repeating this exercise several times varying fins and the tip of the projectile. How will each of these changes affect the height/distance travelled? Try adding measured quantities of modelling clay inside the nose of the projectile and make a graph of weight and height/distance travelled. Measure different angles of launch and make a graph of different angles of launch with height/distance travelled. For other ideas on air projectile launchers, check out workshops from @IoPITeachers.

