

Dynamics and Statics

Projectiles: 5. Foam projectile

(Ireland)

Background:

A stretched elastic band can launch a foam projectile.

You will need:

- ✓ foam pipe insulation
- ✓ strong elastic bands
- ✓ duct tape
- ✓ cardboard or Styrofoam food tray (for fins)
- ✓ scissors
- ✓ long tape measure
- ✓ metre stick
- ✓ copied clinometer

Follow these steps:

Front of Projectile

1. Cut a 12cm length of duct tape down the middle to make two pieces. Place one piece over the other and stick to shiny side, to make the tape stronger.

2. Place a single strand of an elastic band across the top of the foam tube. Tape the elastic band down to the tube, using the double strength duct tape at right angles to the elastic band. Press the tape down to the sides of the tube.
3. Reinforce this tape with another length of tape wrapped around the top end of the side of the tube.

Fins end of Projectile

1. Cut three or four fins from cardboard (or Styrofoam food tray). A suggested way is as follows:
2. Cut a square, draw a diagonal and cut along the diagonal (forming 2 isosceles triangles). Then cut half-way down the height of one triangle and half-way up the other. Nest the fins together, and place them in the slits.

3. Close off the slits with another piece of duct tape wrapped around the foam tube.

Launching the Projectile

1. Loop the elastic band over the end of the metre stick. Pull on the fins end of the projectile, holding it below the fins, as you point it up into the air.
2. Now let the projectile go.

So what happened?

The projectile will be launched.

What next?

- Try repeating this exercise several times with projectiles made of different lengths or with different sized elastic bands or different sized/shaped fins. Will these differences affect the height/distance travelled?
- Discuss the forces involved in the launching (potential/kinetic energy, force of gravity). Measure the distance the projectile travels.
- Use a clinometer to launch the projectiles at different angles. Make a chart showing the affect of different angles on the height/distance travelled.



http://www.sfi.ie/site-files/primary-science/media/pdfs/col/DPSM_Class_Activity_Foam_Rocket_Web.pdf