



Playing with Parachutes

*Adapted from TryEngineering – www.tryengineering.org developed by IEEE

Did you know...?

- Chinese acrobats used parachutes in their acts in the 1300's.
- The parachute was first attempted by a human in the 16th century by Faust Vrancic, a Croatian Inventor, who tested out his 'Flying Man' by jumping off a tower in Venice!

What's it all about...

Explore how parachutes are used to slow moving objects. Work in teams of 'engineers' to design and build your own parachutes out of everyday items. Test your parachutes, evaluate the results, and present to the class.

Learn more about:

- Design and construction of a parachute
- Laws of motion and gravity
- Testing and refining of designs
- Design process and its results

Check out these sites:

- TryEngineering (www.tryengineering.org)
- Find out more at NOVA – Design a Parachute (www.pbs.org/wgbh/nova/mars/parachute.html)
- History of the Parachute (<http://inventors.about.com/od/pstartinventions/ss/Parachute.htm>)

Time needed: 1.5 to 2 hours

Materials needed:

- Roll of string, Plastic trash bag, Plastic shopping bag, Several sheets of paper
- Coffee filters, newspaper, aluminium foil, scissors, masking tape, metal washer 3cm diameter, ruler

Let's Build It! (in groups of 2-3 students):

1. Develop a parachute that can carry one metal disc to the ground from a height of 2 meters.
2. The parachute must hit a target 10 cm in diameter at the slowest rate of descent. The parachute that can hit the target with the **slowest** descent rate is the winner!
3. Draw your plan and collect your materials.
4. Build and test your parachutes. Drop height should be measured from the bottom edge of the washer. The teacher will drop the parachute from a height of 2 meters.
5. Evaluate the results and reflect on the process to then share with the class.

Testing Chart: Use this chart to record your findings. You'll need to time your test to make sure your parachute can support the metal disc and achieve the slowest rate of descent.

| Parachute Testing Data | | | | |
|------------------------|--------------------|------------------|-------------------|-----------------------------------|
| | Drop Height (m) | Drop Time (s) | Velocity (m/s) | Distance landed from target |
| Test 1 | | | | |
| Test 2 | | | | |
| Test 3 | | | | |
| Test 4 | | | | |
| Average | | | | |

How did it go? Let's think about it...

1. Did you succeed in creating a parachute that could hit the target? If so, what was your slowest rate of descent? If not, why did it fail?
2. Did you decide to revise your original design or request additional materials while in the construction phase? Why?
3. If you had to do it all over again, how would your planned design change? Why?
4. What designs or methods did you see other teams try that you thought worked well?