



# SUPER POWER: Terminal Velocity!

## PARACHUTE

### LAB NOTES...



Parachutes help to slow down something which is falling by creating a large surface area that traps air underneath. This is similar to how our kite worked! The plastic sheet creates air resistance, or drag, which slows down the thing that's falling.

**The fastest speed that something can fall at depends on its mass, shape, and how long it is falling for. The fastest falling speed that an object can fall at is called its "terminal velocity".**

Opening a parachute changes the speed that it falls by changing its shape and air resistance. Spacecraft use huge parachutes to return to earth.

### TO MAKE YOUR PARACHUTE...

1. Watch the video of Nanogirl making her parachute
2. Cut a large square sheet from your plastic sheet - larger sizes tend to work better.
3. Cut four pieces of string the same length. They should be at least as long as the length from one corner of your plastic sheet to the middle of the sheet.
4. Cut one egg cup out of the egg box, and tape it together to form a basket shape.
5. If you don't have an egg box, take a piece of paper and draw a square with each side about 5 cm long. Draw another square the same size, attached onto each side of the first square, to make a cross shape. Cut out the shape. Bend up the side squares and tape them together to make a small open-top box.
6. Use the skewer or pencil to poke 4 holes evenly spaced around the sides of your basket, near the top.
7. Using the skewer to help you, push one end of each string through each hole and tie a knot in each to stop them slipping back out.
8. Hold the 4 pieces of string up with the basket at the bottom and trim so they are all the same length.
9. Tape the ends of the string to the corners of your plastic sheet, one string per corner.
10. Hold your parachute up high, spread out the plastic so it's not tangled, and let go!
11. The challenge: can your parachute deliver something in the basket safely?

### YOU WILL NEED

- Trash bin liner or thin plastic shopping bag.....
  - String.....
  - Scissors.....
  - Tape.....
  - Ruler.....
  - Pencil.....
  - Wooden skewer or sharp pencil.....
  - Empty egg box (optional).....
- OR A piece of paper

**Can you add weight into your basket using a rock or marble - does it fall at the same speed? Try timing it with different conditions to compare.**

If your weight falls out of the basket when it lands, can you think of a way to engineer a solution so it stays inside?

**What happens if you make the plastic sheet smaller or round instead of square?**

What do you think will happen if you replace the plastic with fabric like a paper towel or paper?