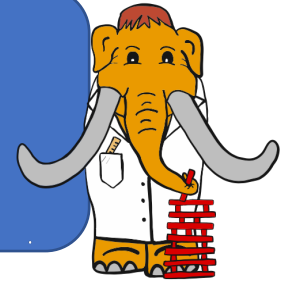


# Science Saturday @ Home

## How Does A Parachute Work?



### Gathering Supplies:

- Variety of different paper types (e.g. coffee filter, tissue paper, Kleenex, printer paper)
- String or Yarn
- Scissors
- Small paper cup or egg carton
- Tape

### How To Steps:

#### Try this first!

Let's take a look at a force called **DRAG**. Try dropping an unfolded piece of paper. How fast does it fall? Now crumple up a piece of the same paper and drop that. Does it fall at the same speed as the other piece of paper? They weigh the same so why does one fall faster than the other? What you are seeing is drag, the effect of air pressure on the paper that is falling.

Let's build a parachute while exploring how air pressure helps a parachute work.

1. Decide on the material you will use. Tissue paper or coffee filter for the parachute...paper cup or egg carton for the base...string or yarn... How heavy is the material? Will the weight make a difference on how it works?
2. Start with cutting the parachute to the size and shape you would like.
3. Cut 4 pieces of string about 10 to 12 inches long and attach to the corners or different sections of the parachute with a little bit of tape.
4. Then attach the other end of the string with tape to the base you are using.
5. Time to test! You can test your parachute just by holding the parachute in your hand, hold it above your head, and let go, or find a place that you can safely drop it from a greater height.
6. Try improving your design. What happens if you add more weight to the basket? Is there a material/shape that works better?

# Making and Testing Parachutes with Max



# Did You Know?

Air pressure is happening all around us. Pushing in every direction on an object. This is one reason bubbles are round. But what happens to an object that is falling and how can the shape of a parachute help slow the fall?

Objects falling through air experience a force called drag. Drag is the force of the air pushing against an object as it falls. The faster they fall, the stronger the drag. Eventually, the force of drag holding them up will be equal to the force of gravity pulling them down, and the object will stop going faster – it has reached what is called terminal velocity.

Objects with very small surface areas, like a rock, experience less drag and can fall faster. Objects with large surface areas, like parachutes, experience lots of drag and have very low terminal velocities helping them land softly on the ground.



Skydiver, parachutes closed:  
120 mph



Skydiver, parachute  
open: 12 mph

One of the sketches that Leonardo da Vinci made was of what is now called the first parachute. His notes recommend building the device out of silk and light-weight wood. It did not have any kind of harness for the parachutist which would make it rather dangerous. People had thought that the design would not have worked very well, due to the weight and the shape of the frame. Leonardo never wrote about building or testing his invention but in 2000, daredevil Adrian Nichols, built a prototype based on Leonardo's drawing. His test was a jump of about 300 feet and reported a smoother descent than with modern parachutes.

