

Questacon at HOME

Activity Sheet

Flying Feathers

Background

Air fills up the space all around us, and it can move around, bunch together and spread apart. We can't see air, but we can see the effects it has on objects around us – like the way a tree moves in the wind, or the way a balloon expands when we blow into it. In this experiment, we're going to use the movement of air to help make a feather fly upwards through a tube!

Materials

- Hollow tube. This could be:
 - Plastic cups with the bottom cut off
 - PVC pipe
 - A piece of paper rolled into a tube
- Light objects. This could be:
 - A small feather
 - A small piece of tissue/toilet paper

Safety

This activity uses some small objects, which may become choking hazards. If using plastic cups, the cut edges may be sharp. Adult supervision is recommended for young experimenters.

Procedure

Make the feather fly: Stand the tube upright over the light object. Hold the tube right at the bottom, and tilt it back and forth, so the bottom of the tube is relatively still, and the top of the tube is moving a lot. Keep going until your light object flies! This can take a bit of practice.

Experiment with different methods: You could try blowing the feather, moving the tube in a different way, or using your imagination to come up with a new solution!

Tips & tricks

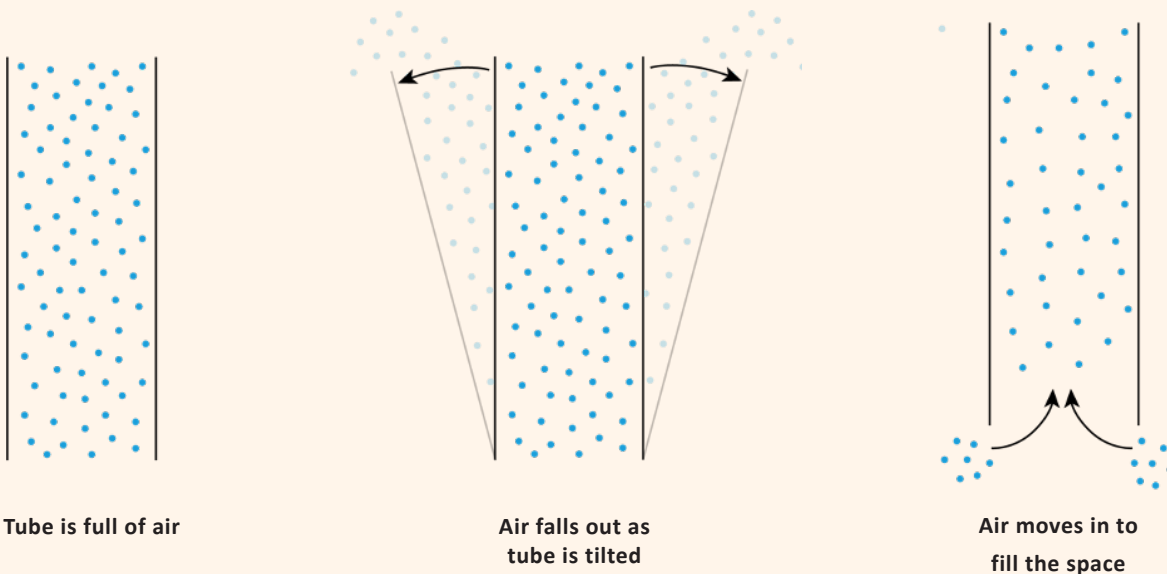
- If you're having trouble making the feather fly, try adjusting the speed and distance you move the tube.
- Make sure your hand is holding the tube right down the bottom, otherwise it will be a lot trickier to make the feather fly.



What's the Science?

When we're explaining this experiment, it can be helpful to imagine air particles as little Styrofoam balls, like the ones inside beanbags. Imagine you have a cup full to the brim of Styrofoam balls. If you tilt the cup over to one side, some balls will fall out; if you tilt it the other way, more balls will fall out. Now that these balls have fallen out, there is some space inside the cup.

Now let's apply this idea to our experiment. When we tilt the tube back and forth, some air particles from inside the tube spill out, leaving more space inside the tube. The air particles at the bottom of the tube rush up to fill this space, creating wind that blows from below the tube up into the tube. If there are any light objects – like our feather or tissue paper – they will get caught on this wind and blown up through the tube.



What questions could I ask?

- What happens if you move the tube slower or faster?
- What happens if you use a different object?
- Would you like some help here, or would you like to try and figure it out yourself?

What's next?

- **Time challenge:** How quickly can you make your light object fly through the tube? How slowly can you make it fly?
- **Suspension challenge:** Can you move your tube so that the light object hovers in the middle?
- **Weight challenge:** What's the heaviest object you can make fly through your tube? What about the largest?

