

Bernoulli Levitator



Location

First floor, Curiosity zone exhibition

In a nutshell

In this exhibit, using the Bernoulli principle, air blowing down keeps a flat disk hovering.

What to do

If the disk is hovering below the air outlet, pull it down. Put your hand under the air outlet and notice air is blowing out rather than being sucked in. Push the flat part of the disk up under the air outlet until it stays there by itself. Notice that there is a small gap between the disk and the air outlet.

Time Required

KS1 & KS2 2-3 minutes per student.

What's happening?

Daniel Bernoulli, an eighteenth-century Swiss mathematician and physicist, discovered that when a fluid (a liquid or a gas) is forced through a narrower space, the fluid speeds up and its pressure drops.

When you lift the plastic disc up towards the air outlet, you constrict the space through which the air can flow. When the air flows through this increasingly narrow space, it goes faster. As the air moves faster, its pressure drops. The air underneath the disc, which is at a relatively higher pressure, pushes the disc up. This lifting force is counteracted by the air blowing down from the outlet and by gravity pulling down on the disc. When all these forces are in balance, the disc hovers.

Curriculum links	
KS1/2	<p>Science Forces (Yr 5)</p> <ul style="list-style-type: none"> - explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object - identify the effects of air resistance, water resistance and friction, that act between moving surfaces <p>English - Spoken language</p> <ul style="list-style-type: none"> - listen and respond appropriately to adults and their peers - ask relevant questions to extend their understanding and knowledge

Relates to:

Workshops & Theme Days	Shows	Trails	Other exhibits
<ul style="list-style-type: none"> • Fantastic forces (KS2 upper) • Pushes and pulls (KS1) • High Flyers day (KS2) 	<ul style="list-style-type: none"> • Field Day Forces (KS2) • Launch it! (KS2) • Dream to fly (Planetarium, KS2 upper) 		<ul style="list-style-type: none"> • Happy landings • Launch it! • Will it fly • Bernoulli blower

