

The Leaping Ping-Pong Ball

<u>The Action</u>	From the force of air a ping-pong ball will jump from one cup into another.
<u>Grade Level</u>	Grade 2 – Air and Water Grade 7 – Force and Motion Grade 9 – Fluids and Pressures
<u>Materials</u>	Ping-Pong Ball Two small cups
<u>Instructions</u>	Place the two cups about 2-3 cm apart on the table. Put the ping-pong ball in one of the cups and ask the audience the question: “How can I move the ball from one glass into the other without touching the egg and leaving the glasses where they are?” Most people will respond with: “It’s impossible!” Now blow a short and hard puff at an angle into the far side of the cup that holds the ball and watch the ball leap. (It may take a few practice blows to make the ball leap successfully.)
<u>Safety</u>	If using glasses, be careful to not knock them off the table, you may wish to tape them down.
<u>Hints</u>	It is good to practice this before demonstrating just to figure out where and how hard to blow. This trick could also be done with wine glasses and a hard boiled egg.
<u>Science Principle</u>	Blowing at an angle into the far side of the cup builds the pressure on that side. It pushes the ball out of the cup and the flowing air above both cups guides the egg towards the second glass, because the flowing air actually creates a lower pressure. The harder we blow, the farther the second cup can be placed to catch the leaping ball. This would be an application of <i>Bernoulli’s Principle</i> , which states: <i>the faster the flow of a fluid, the lower the pressure.</i> $P + KE/V = \text{Constant}$, where P=pressure, KE=kinetic energy of fluid, and V=volume of fluid.