

# Siphons

*Shannon and Ian Jacobs*

I was watering the garden with a hose that was split half way along, which was helpful. I could spray one part of the garden and put water in pots from the end of the hose at the same time.



Just before I finished watering I left the end of the hose in a pot to fill it up before I turned the tap off.



When it was full I turned off the tap. The spray stopped.



Seconds later it started up again with streams of water at a lower pressure.

I knew the tap wasn't leaking, because the pump that takes water from the tank had stopped as soon as the tap was turned off. Where was the water coming from? Dad laughed and took the end of the hose out of the pot. The flow slowly dribbled to a stop. Water was coming back down the hose from the full pot.

## Siphons

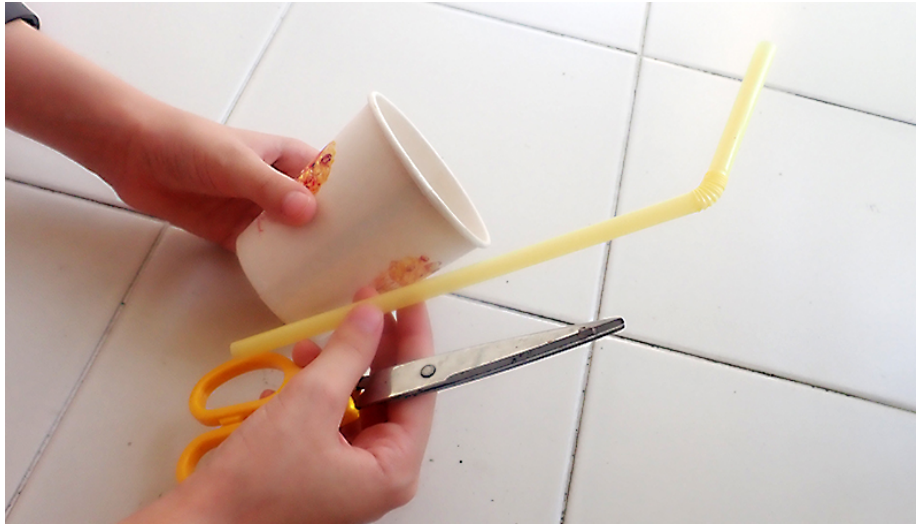
I realized that I'd seen this happening the week before at a friend's house. We emptied a fish tank with just a hose and no pump. We filled the hose with water and it kept flowing until the tank was empty. It only worked if the hose was full and the outside end was lower than the inside end.

Pythagoras is said to have made cups that emptied if they were filled to the top but not if they were half filled.



This is a modern version of a Pythagoras cup. The central pillar conceals a siphon that empties the cup through a hole in the bottom after it has been filled to the top. If you half fill the cup you can drink from it and your pants stay dry.

All you need to make a self-emptying cup is a bendy straw and a paper (or plastic) cup.



Poke a neat round hole in the bottom. Cut the straw and bend it into a U shape with one end longer than the other. Poke the long end through the bottom from the inside and glue it in place so it doesn't leak.



A finished cup has been cut to show the siphon inside.

The cup is filled with water.



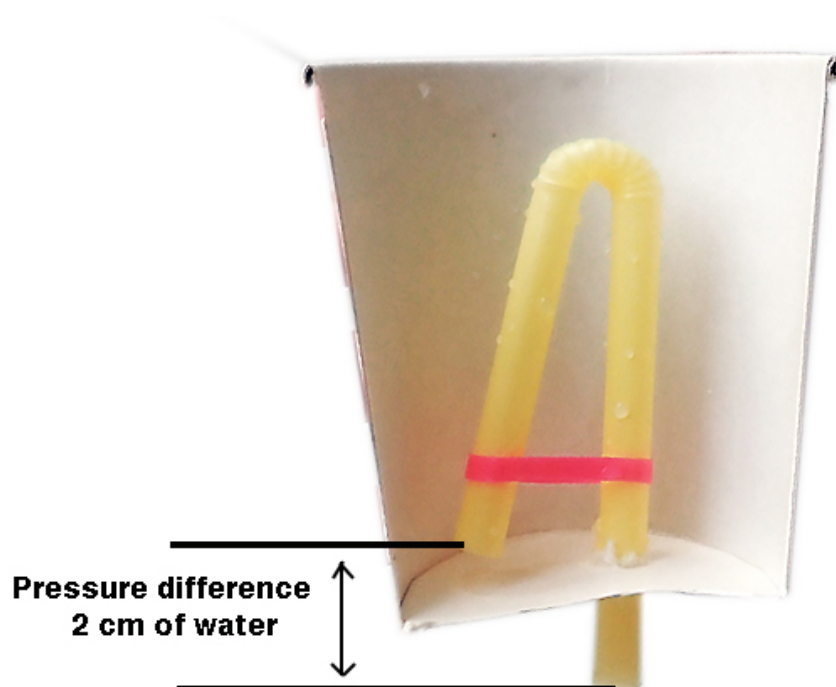
Nothing happens until the top bend of the siphon (just visible in the image) is under water.

When this happens water flows over the top and fills the straw.

The cup then empties, all over your pants, all by itself.



The water flow is driven by the small difference in pressure between the lower end of the siphon in the cup and the lower end outside.



*How could you make a cup that empties faster? (Three ways)*