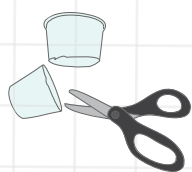


# MAKE A Plastic Cup Squirt Gun

A squirt gun is a great example of what happens when you apply pressure to a liquid. Give a try and watch the principles of hydraulics at work!

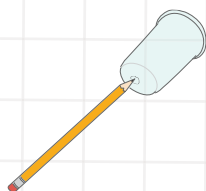


## What you'll need



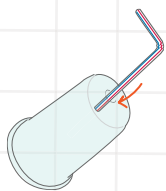
### Step 1

Cut one of the plastic cups in half. This will be your plunger.



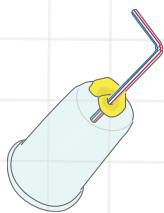
### Step 2

Use a pencil to poke a small hole in the bottom of the other cup.



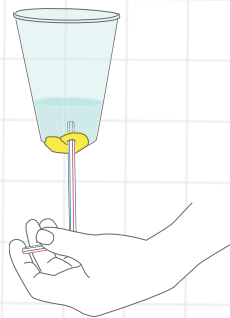
### Step 3

Push the straw through the hole. Curve the bendy part up.



### Step 4

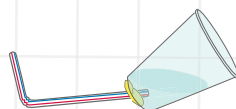
Press putty or clay around the straw to seal up the hole.



### Step 5

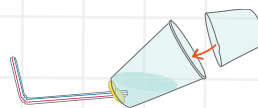
Hold your finger over the end of the straw and pour water into the cup.

**QUICK TIP**  
The cup should be less than half full.



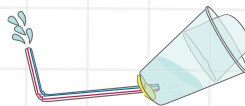
### Step 6

Angle the cup so that when you take your finger off the straw, no water comes out.



### Step 7

Hold the plunger by the bottom and quickly push it into the cup.



### Step 8

As you push the plunger in, you'll see a squirt of water come out of the straw!

WHY? go to the next page to find out!

# Look Closer!

i have nowhere to go but UP!



So why does the water squirt out? **Pressure!**

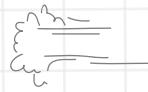
You're using the plunger to push air against the water.

The only place the water can move is up the straw, so out it goes!

why do you keep pushing?

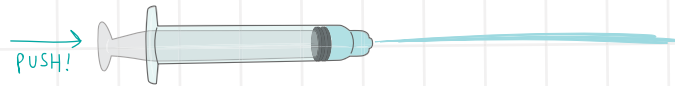


i want you to move!



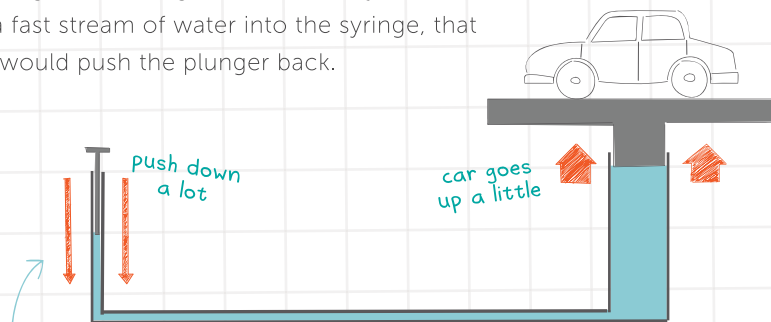
This is very similar to what happens when you push the plunger of a syringe.

The plunger pushes on the water, which has nowhere to go except out the tip.



But look closer and you'll see that something else is going on. Refill the syringe and try pressing down on the plunger again. Notice how fast the water moves? You're giving the plunger a strong push that moves a lot of water. All that water has to get through the narrow end of the syringe, so your slow push turns into a fast jet of water.

Now imagine reversing that motion. If you could push a fast stream of water into the syringe, that water would push the plunger back.



This is exactly how a hydraulic jack works. On one end of the system, you have a small piston (like the stream of water). On the other end, you have a large piston (like the syringe plunger). You push the small piston down. This push moves the water, and the water moves the large piston up.

The small piston has to move over a long distance to lift the large piston a short distance. But this makes it possible for the jack to lift something really heavy—much heavier than a person could lift alone. This “trick” to use hydraulics to lift heavy things is one reason they're so useful!

easy peasy!

