

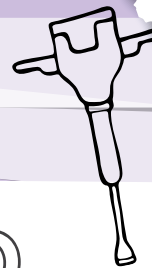
ACTIVITY 1

Hydraulics and **pneumatics** are very similar. Hydraulics use liquids and pneumatics use air; both use cylinders to capture those things and use pressure to create mechanical advantage. You are going to use syringes and tubing to create and compare hydraulic and pneumatic systems.

Hydraulics is the science of the transfer of energy through the effects of liquid in motion.

Pneumatics is the mechanics dealing with the mechanical properties of gases.

LET'S MAKE



WHAT YOU'LL NEED

INCLUDED

SYRINGES



TUBING



NOT INCLUDED

WATER



STEP 1

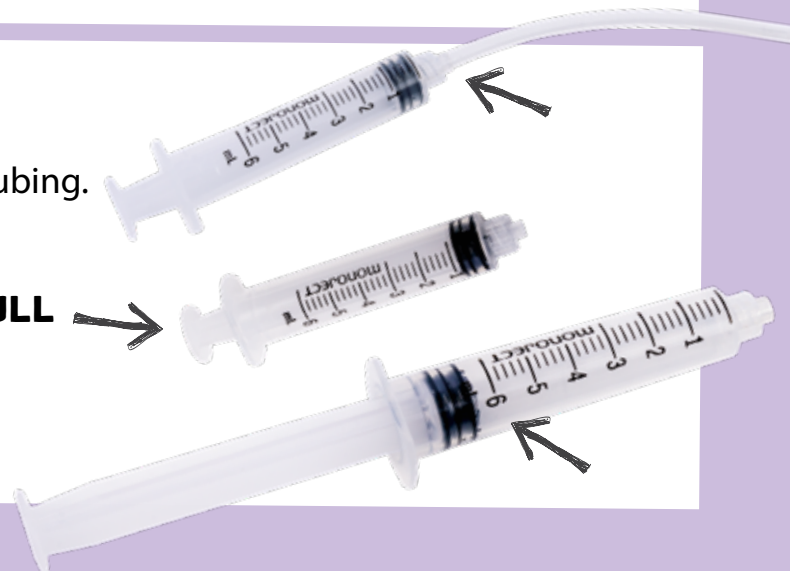
Connect one of the syringes to the tubing.



STEP 2

Pull the other syringe's plunger until it is filled with air to the 6 cc mark on the side of the syringe.

PULL





STEP 3

Connect that syringe to the other end of the tubing.



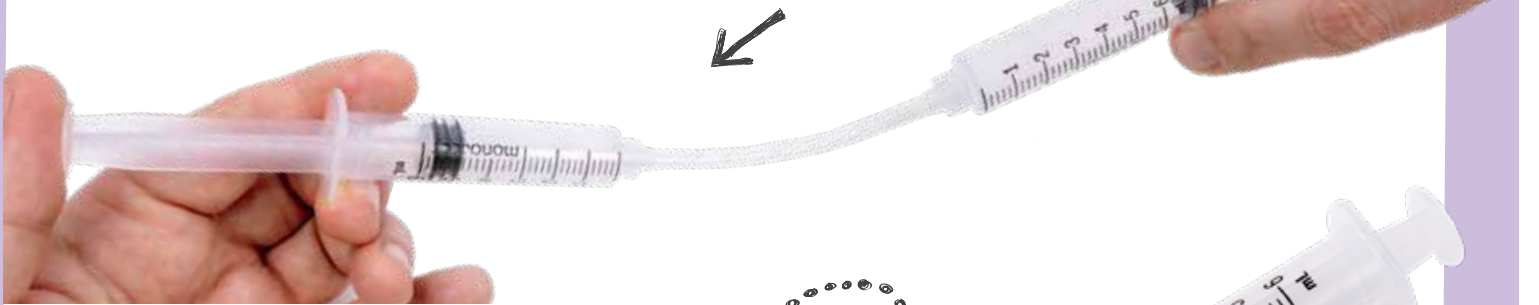
STEP 4

Press the plunger on the syringe filled with air, and note what happens.



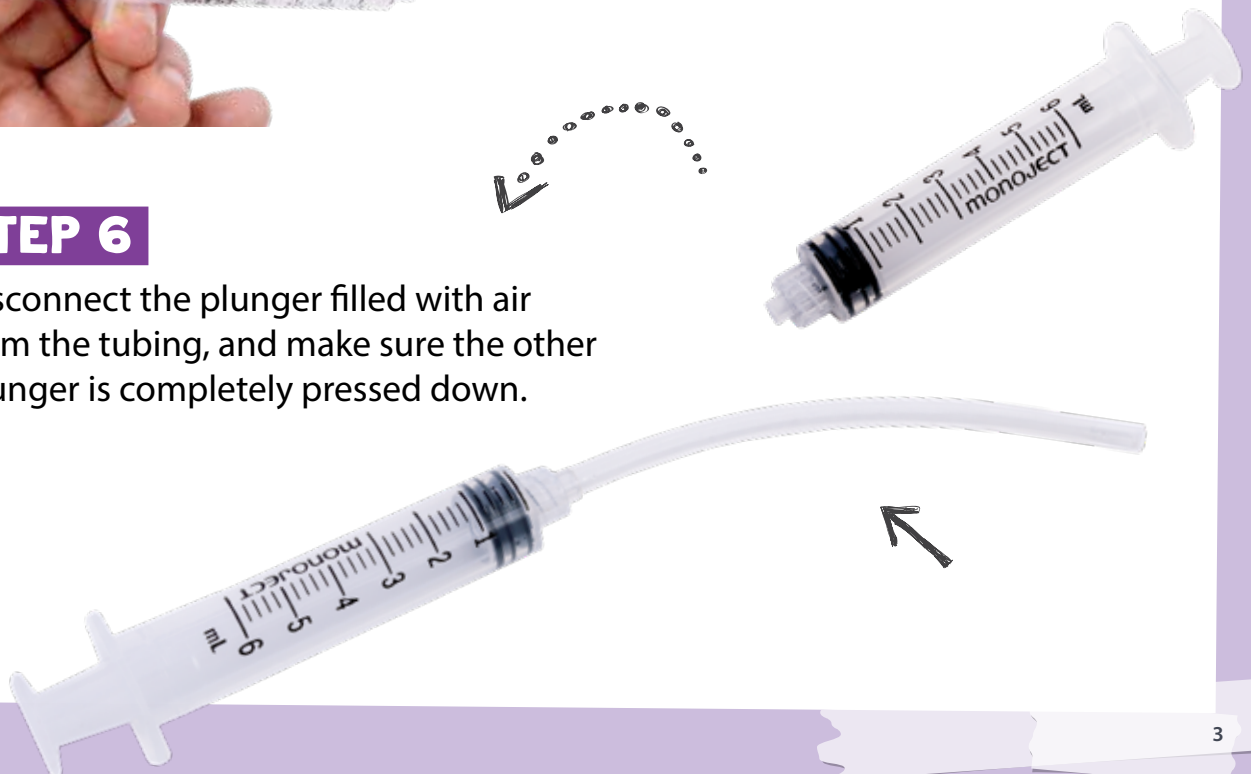
STEP 5

Hold down the plunger on the syringe without air and press the plunger on the syringe with air at the same time. Note what happens.



STEP 6

Disconnect the plunger filled with air from the tubing, and make sure the other plunger is completely pressed down.





STEP 7

Fill the syringe that is disconnected with water to the 6 cc mark on the side of the syringe.



STEP 8

Reconnect that syringe to the tubing.



STEP 9

Press the plunger on the syringe filled with water, and note what happens.



STEP 10

Hold down the plunger on the syringe without water and press the plunger on the syringe with water at the same time. Note what happens.



THINK ABOUT IT

What happened to the system when you pressed on the syringe with air in it?

What happened when you pressed on the syringe with air in it while holding the other syringe's plunger down?

What happened to the system when you pressed on the syringe with water in it?

What happened when you pressed on the syringe with the water in it while holding the other syringe's plunger down?