DAY 4

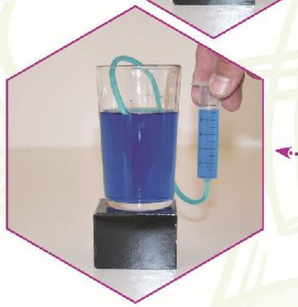
CONNECTED CONTAINERS

DURATION:
approx. 10 minutes

ADDITIONALLY REQUIRED:
- a glass
- a bottle
- water

Experiment 1

Communicating vessels
For this experiment, you need a glass full of water and the syringe. Attach the hose to the tip of the syringe. Push the plunger in completely before you dip the hose into the water. Slowly draw the plunger back and remove it completely from the syringe. You can now see that the water flows into the barrel. Depending on how high or low you hold the syringe, the water level changes: it will always remain on the same height as the water level in the glass.



When two vessels are connected by a hose, the fluid levels inside them are always equal.

Experiment 2

Water transfer
In order to transfer water, you again need the syringe with the hose, an empty glass and a bottle of water. Put the loose end of the hose into the full bottle. Draw back the plunger of the syringe so that water flows to the barrel.

First, suck in some water by drawing back the plunger.

Remove now the plunger from the syringe and watch the water run all by itself from the bottle through the hose and into the glass. It even flows better when you remove the syringe from the hose.

NOTE:
Keep the syringe and the hose safe as you will need them later on for several other experiments.

Experiment 3

Transporting water under pressure
Draw back the plunger to suck a little water from the cup into the barrel of the syringe. The vacuum within the syringe holds the water in the barrel. Even if the nozzle is open at the bottom, the water will not leak out. It only splashes out of the syringe when you press down the plunger.

Because of the vacuum, the water stays inside the syringe although it is open at the bottom.

COMMUNICATING VESSELS

When two or more open containers are connected, they are called "communicating vessels." If you pour in liquid, its level will be equal in all the vessels independent of their respective shape. Even if the containers are placed on different heights, the levels of the liquid will still adjust between them. Water pipelines work on this principle. This is because gravity and air pressure are constant.
The concept of communicating vessels is used for water level indicators. For example, if you connect a thin vertical glass tube to a big tank, the fluid level in the two vessels will be the same.