

We can't live without Physics!

We are greeting everybody...at this presentation of physics experiments. We would like to demonstrate some interesting experiments. Please receive them kindly...



I. The first group of experiments is called: *Let's be balanced*

1.) We place a closely joined spoon and fork with the help of a matchstick on the edge of a glass. So we are balanced.

But the best is yet to come! Light the matchstick and let's see what happens. Most of the matchstick has burnt up but the balance remains.



2.) We place two forks on the top of a toothpick with the help of another toothpick. If we are patient enough we can be balanced again.

3.) Now we try to place six nails on the top of a seventh nail. We should hold together the six nails specially and now we place them on the top of the seventh nail... and now with 12 nails.



4.) Let's see a special wine-bottle holder. If it is empty it tumbles over but when we place a bottle of wine in it, it becomes balanced. With the help of it we can explain our previous experiments too.



We are balanced until gravity axis, the line going through the centre of gravity, goes through the support. This is the case with The Leaning Tower of Pisa. Until the line going through its centre of gravity goes through the support it will be balanced.

Since we have a bottle of red wine from Szekszárd at hand, let's see what it can do.



5.) We fill up a glass with water and another one with red wine. We cover the glass filled with water with a plastic plate and we turn it upside down. We can observe that the water does not run out because the pressure of the outside air presses the plate against the glass. Place the glass filled with water on the top of the glass filled with red wine and pull out the plate a bit. Wine and water switch places slowly because the density of wine is lower than the density of water.



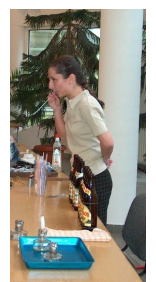
II. In the following two experiments we invite you to a *test of strength*.

6.) We folded two books in each other in a specific way. I would like to ask two strong men to pull the books apart. It's not so easy because friction is very strong. Friction occurring between the pages of the books makes our task hard.

7.) We connect a coil to a battery. Magnetic field develops in the coil and the iron core in the coil amplifies it. We need a strong man again who can overcome the magnetic field. Try to remove the iron core from the top of the coil. The iron core makes the magnetic fields stronger.

III. We would like to make a *lot of noise* with the following experiments.

8.) Let's take a special straw that has a modified end and blow in it. We can hear an interesting deep sound. Now we cut increasing pieces from the straw and let's observe the sound arising from it. The shorter is the straw the higher is the sound.



9.) We play a melody for you on an instrument made from beer bottles. Have you recognized it? We made the instrument by filling water in the bottles. Bottles with low level water have deep sound and bottles with higher level water have higher sound.



10.) We sounded the straw, the beer-bottles and now we try to sound the iron pipe. There is a metal sieve in the iron tube and it gets warm. When we stop the heating the sieve starts to cool down and there is an air flow in the pipe and it creates the sound that is amplified by the iron pipe. Let's listen to it again.



IV. As the mood is hot now we *cool* it a bit with the last series of experiments.

11.) We perform the experiments with liquid nitrogen of minus 196 degrees Celsius. Firstly let's observe how violently it boils at room temperature. We store liquid nitrogen in a special container that insulates well as it could escape at room temperature. We pour a bit on the floor. Look how the nitrogen drops roll on the floor.



12.) We prepare some ice-salad with the help of liquid nitrogen. Fruit and liquid nitrogen are well mixed and we serve it. As we can see the fruit have frozen totally.

13.) Now let's place a flexible rubber hose in the liquid. Following a thorough dipping we can see that it loses its flexibility completely.



14.) If we put our hands in the liquid nitrogen it would freeze immediately. But if we pour from it on our hand carefully we won't be harmed. Nitrogen escapes violently because of the warmth of our hands and a thin steam film appears and it protects us from freezing. We must be careful not to wear jewel or not to have injuries on our hands. Brave guys may come and try it by turns.

15.) We need four brave teachers to help us. Take a flower each of you and put them into the nitrogen. Observe how violently the nitrogen boils. Now take out the flowers and crumble them with your hands.



Now our presentation of experiments is over. We hope that everybody enjoyed them.

The experiments were demonstrated by: Inhoff Gergő, Koleszár Dávid and Schrick Dia.

The experiments were trained by Miklós Márta and Oberlander Sándorné. They are the 2 great Physics teachers at our school who have been performing these experiments for 4 years and they have great success in winning people's interests in Physics. We thank them for their kind help. And one thing we can learn: **We can't live without Physics!**

The experiments were translated by Gabriella Sándorfi. Thank her for the help.

Thank you for your attention!