

IYNT 2014

Additional problems for Science Fight 3 (24.08.2014)

21. Density

One vessel is filled with fresh water. Another vessel is filled with salt water. Determine the density of the salt water assuming that the density of the fresh water is 1 g/cm^3 .

22. Chemistry

Five test tubes contain aqueous solution of copper sulfate, ammonium sulfate, sodium carbonate, iron sulfate and calcium chloride. Determine what substance is in each test tube.

23. File

You have a file called Dickens.doc. Produce another file containing the entire text and preserving the font size and style, structure of paragraphs and other attributes, but having the smallest possible file size in bytes.

24. Square

Cut a rectangular figure out of a paper sheet sized 9x20. Now cut it into constituting parts such that one could put these parts together into a square.

25. Sugar tower

A sugar tower is two or more stacked sugar cubes. Drip a few water droplets onto the top sugar tube and observe how the tower is destroyed. Explain the observed phenomena. We suggest to carry out simultaneous experiments with several towers and consider the number of cubes in a tower N and the number of droplets K as the variables.

26. Ping pong

Demonstrate a neutral buoyancy using a ping pong ball, plasticine, salt and water such that the ball does not lift and does not sink.