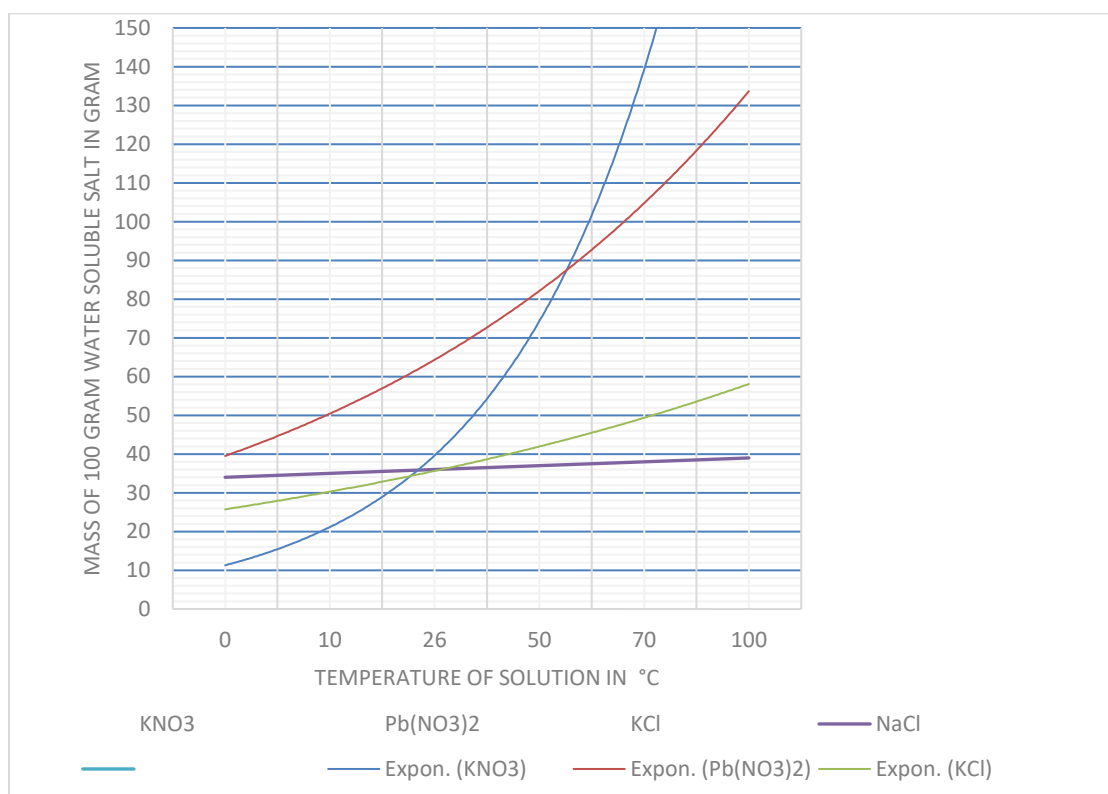


Chemistry

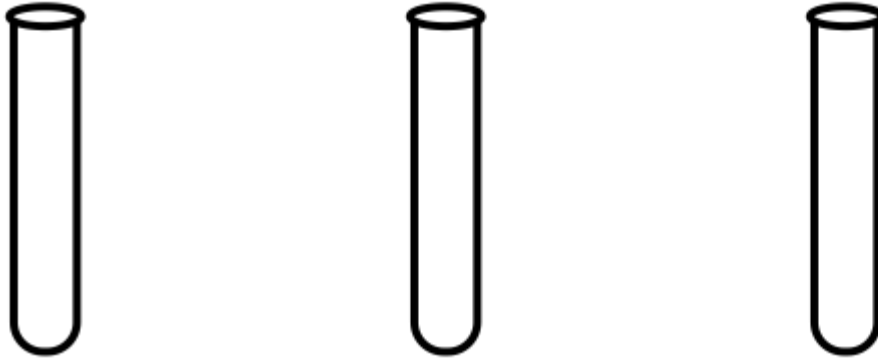
- This diagram shows the solubility of different substances in a (g/100g water) unit. Answer the questions with the help of the chart.
 - Which substance's solubility changes the most with the elevation of the temperature?
 - What is the temperature when the solubility of prunella-salt equals to lead nitrate?
 - How much is the % by weight of Potassium chloride (KCL) at 70 °C?
 - How many grams of NaCl can be dissolved in 200 grams of 40 °C water?
 - Which substance dissolves the best
 - at 10 °C?
 - at 60 °C?



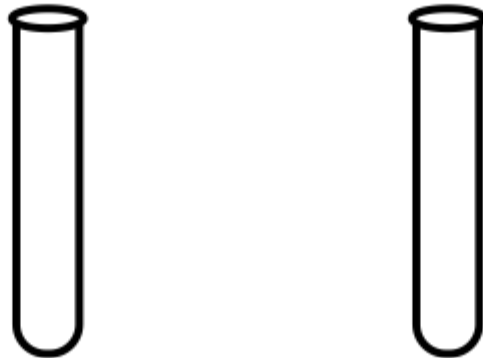
- Make an indicator solution out of pickled cabbage leaves: fritter the pickled cabbage leaves then pour hot water on them (you can boil them too because the colour gets loose much better then). Strain them off and use this solution for experimenting: pour same amount of pickled cabbage leaf solution into glasses then put the below mentioned substances into them. Note down your observations and consequences.

Tested substance	Observed change	The chemical reaction of the tested substance's aqueous solution
lemon juice		
vinegar		
tapwater		
baking powder		

3. There is water, ethanol and petrol in these three test tubes in an unknown order. With the help of iodine identify the content of each test tube. Note down your experiences.



We pour half of the content of the water test tube into the ethanol solution and the other half into the petrol. What do you experience? Draw it.



alcohol and water

petrol and water

Explain your experiences of the experiment.

Pour the contents of the two test tubes together. What do you experience? Draw and give a reason.



Check the necessary figures on the Internet needed for exact explanations.

4. Put some solid burnt brass into a test tube and start to heat it carefully.
- a) What do you experience?
- How does the colour of the substance change?
 - What can you see on the wall of the test tube?

Explain your experiences.

- b) How much is the % by weight of the solution if we solve 5,0 gramm solid burnt brass in 100 g water? ($\text{CuSO}_4 \times 5 \text{H}_2\text{O}$)
- c) It happened at the time of the Bocskai Uprising in 1605 that the civilians of Besztercebánya hid their tools and values in the water of the local ore mine. However, after the fight they only found pieces of copper and copper rubbles instead of their iron tools.

Model this phenomenon: put an iron nail into thin copper-sulfate solution.

- What change do you experience after 1-2 minutes?
- What can you see after 1-2 days?

How can you explain this phenomenon?

5. The following photo was taken in January, 2017 in Szeged. Due to durable cold weather the river got frozen so the methane bubbles, generated at the bottom of the river, got stuck in the water and formed bubbles.



szabobalint.blogspot.hu

(With the author's permission.)

- a) Why does methane generate in rivers?
- b) Which river is it?
- c) What physical characteristics of methane do you know, which
 - is shown in the photo?
 - were mentioned in class?
- d) How much mass of methane is there in 1 dm^3 volume bubble at 0°C of atmospheric pressure?
- e) If we cut a leak on ice, the outflowing methane could be lit. Search for a video about it on Youtube. Where do we use the above mentioned process in everyday life? Write down its reaction equation too.