In class activities

February 9, 2010

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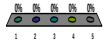
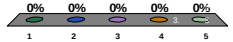
Hydrogen chloride, HCl, is a gas at room temperature. Would you expect this material to be very soluble or not very soluble in water?

1. HCl is very soluble in water, because it is such a small molecule, there is little electrical attraction to other HCl molecules.
2. HCl is very soluble in water by virtue of the dipole/dipole attractions occurring between the HCl and H_2O molecules.
3. It is not very soluble because it is a gas, and all gases have very low solubility in water at room temperature.
4. It is not very soluble, because as a gas with low density, it floats to the surface of the water and then into the surrounding atmosphere.
5. None of these choices



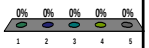
Which of the following substances should be most soluble in non-polar hexane? ($CH_3CH_2CH_2CH_2CH_2CH_3$)

1. I_2
2. CH_3CH_2OH
3. H_2O
4. HF
5. NaCl



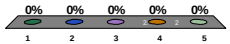
Many dry cereals are fortified with iron, which is added in the form of small iron particles. How might these particles be separated from the cereal?

1. Add water, and the iron particles will float to the top.
2. Blend the cereal to a fine consistency and pass through a filter.
3. Blend cereal to a fine consistency, add water, then collect the iron filings with a magnet.
4. Heat the cereal so that the iron particles melt and thereby coalesce.
5. None of these would work



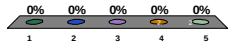
Milk is composed of dispersed proteins and fats in a sugar solution. It is an example of a:

1. Heterogeneous solution
2. Heterogeneous suspension
3. Homogeneous solution
4. Homogeneous suspension
5. Pure substance



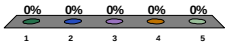
Which of the following would be considered a pure substance?

1. Apple juice
2. Baking soda
3. Cheese
4. None of these
5. Tap water



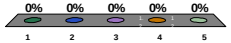
Salt water is an example of a:

1. Heterogeneous solution.
2. Heterogeneous suspension.
3. Homogeneous solution.
4. Homogeneous suspension.
5. Pure Substance



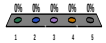
What is the solvent in air?

1. Argon
2. Carbon dioxide
3. Hydrogen
4. Nitrogen
5. Oxygen



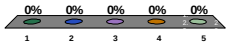
How would you respond in defense of water's purity if it contained thousands of molecules of some impurity per glass?

1. All of these choices are reasons to consider it pure.
2. Compared to the billions and billions of water molecules, a thousand molecules of something else is practically nothing.
3. Impurities aren't necessarily bad; in fact, they may be good for you.
4. There's no defense. If the water contains impurities, it should not be consumed.
5. The water contains water molecules, and each water molecule is pure.



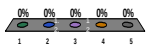
What is the molarity of 0.5 liters of a solution with five moles of sucrose in it?

1. 0.5 molar
2. 2.5 molar
3. 10 molar
4. 1 molar
5. 5 molar



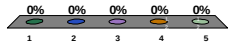
Fish don't live very long in water that has just been boiled and brought back to room temperature. Suggest why.

1. There is now a higher concentration of dissolved CO_2 in the water.
2. The nutrients in the water have been destroyed.
3. Because some of the water was evaporated while boiling, the salts in the water are now more concentrated. This has a negative effect on the fish.
4. The boiling process removes the oxygen that was dissolved in the water. Upon cooling, the water is void of its usual O_2 content; hence, the fish suffocate.
5. All of these are good reasons



What is the molarity of a solution containing 4.3 moles sodium chloride in 500 mL of water?

1. 0.5 M
2. 4.3 M
3. 5.0 M
4. 8.6 M
5. 116 M



The amount of oxygen, O_2, dissolved in the waters of the arctic ocean is greater, about equal to, or less than the amount of oxygen dissolved in warm tropical waters?

1. Arctic O_2 is greater than tropical O_2
2. Arctic O_2 is about equal **to** tropical O_2
3. Arctic O_2 is less than tropical O_2
4. It depends if it El Nino year or not
5. It depends on the season

There would be more dissolved oxygen in the polar oceans, because the solubility of oxygen in water decreases with increasing temperature.

What volume of solution would be needed to make a 0.5 M NaOH solution using 0.5 moles of the compound?

1. 250 mL
2. 500 mL
3. 750 mL
4. 1000 mL
5. 2500 mL