

Section 1C Review

Name: _____

- 1) What is the pph of a solution in which 43.5 grams of salt is dissolved in 196.5 g of water?

18.1 pph

- 2) What concentration, in ppm, is a urea solution composed of 4.5 grams of urea in 3000 grams of water?

1498 ppm

Using the graph on to the right, answer the following questions:

- 3) If 25 grams of salt were placed in 100 g water at 80 °C, what type of solution is it?

unsaturated

- 4) Suppose 110 g of KNO_3 were added to 100 g of water at 45 °C. What type of solution would that be?

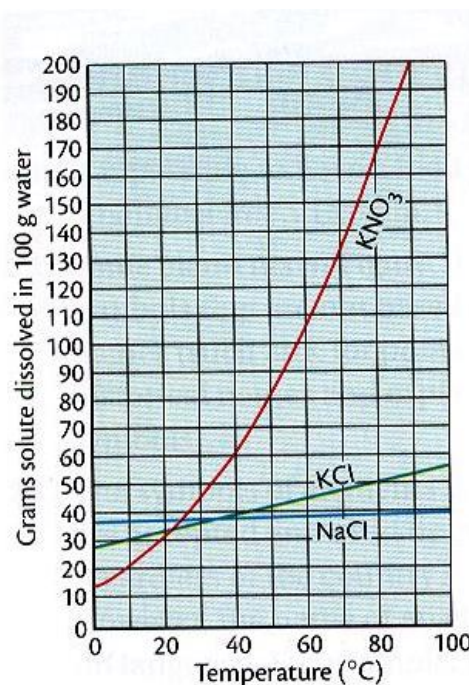
Supersaturated

- 5) Estimate how much KCl could be dissolved in 300 g of water at 60 °C to make a saturated solution?

135 g

- 6) If 150 g KNO_3 needed to be dissolved in order to make a saturated solution, approximately how much water would be needed at 25 °C.

about 395 g of water

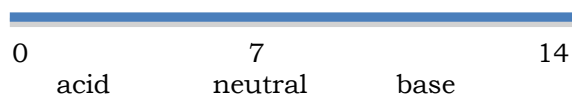


- 7) Describe and give an example of a solute and a solvent.

The solute is the substance that dissolves. An example would be the Kool-aid powder used to make Kool-aid. The solvent is the substance that does the dissolving. An example would be the water in Kool-aid.

- 8) Describe the difference between an acid and a base. Draw a pH scale and determine the ranges of an acid and a base.

An acid is a solution that is sour, stings and reacts with metal. Bases are bitter, dissolve organic matter and do not react with metal.



9) What does the term “like dissolves like” mean?

It means solvents that are the same in polarity as a solute will be able to dissolve in one another.

Polar solutes can dissolve in polar solvents. However, if the materials are unlike, they will not dissolve. Nonpolar solutes will not dissolve in polar solvents.

10) How is the dissolving of solids affected by the temperature of the solvent? How is the dissolving of gases affected by the temperature of the solvent?

The higher the temperature, the more solids will dissolve and the less gases will dissolve, in general.

11) For each one of the following, describe how the condition could have led to the death of a group of fish. a) pH c) lead e) organic carbon
b) dissolved oxygen d) mercury f) molecular substances like pesticides

pH – a low pH can cause chemical burns on the fish, while a high pH can dissolve their skin.

Dissolved oxygen – too little oxygen dissolved in the water can suffocate the fish, too much can cause gas bubbles to burst blood vessels in fish.

Lead – too much lead is toxic

Mercury – too much mercury is toxic

Organic carbon – too much food, or organic carbon, can make the fish’s stomach’s burst, too little will starve the fish

Pesticides – too much is toxic

12) Describe how a polar molecule can dissolve a polar substance.

Water is polar, which means it has a positive end to the molecule and a negative end. The negative ends attack the positive parts of a polar substance and rip them off into the water. Other waters attack with the positive ends of the water and rip off the negative ions of the polar substance. This happens over and over until the solid material is broken apart into pieces so small, you cannot see them. This results in a dissolved substance.

13) Describe what hard water is, and explain how it is softened.

Hard water is water with calcium, iron or magnesium ions dissolved in it. Water softeners use a resin that has soft water ions (sodium) on them that when flushed with hard water, absorb the hard water ions and replace them with soft water ions.

14) Distillation and reverse osmosis can be used to purify water. How are these techniques able to clean ocean water better than municipal water works?

Distillation and reverse osmosis use materials that can remove dissolved ions in solution. Standard municipal water purification cannot remove dissolved solids, like salt, and the salt would still be present in the water after purification.

15) When sodium hypochlorite, the whitening material in bleach, is placed in water, it dissolves.

However, when sodium hypochlorite is put in glycerin, it does not dissolve. Determine the polarity of sodium hypochlorite and glycerin and explain your conclusion.

Because like dissolves like, since sodium hypochlorite dissolves into water, and water is polar, then sodium hypochlorite must be polar as well. Since sodium hypochlorite does not dissolve in glycerin, and we just said sodium hypochlorite is polar, then glycerin must be nonpolar.

