

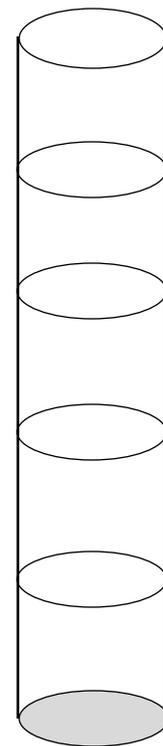
50 Water Questions

This is where your water celebration will arise. Old regents questions, HW questions, handout questions, and directly from the notes. Study, practice the problems.

1. Define Immiscible and Miscible
2. Show the dissociation of sodium hydroxide in water.
3. Show the ionization of lithium dichromate in water.
4. Draw the dissociation of 2 LiCl FU's + surround them with 3 water molecules each, with proper orientation.
5. How many grams of NaCl dissolve into 145 mL water at 90°C? Show work.
6. The density of some liquids is in the chart.

Using the numbers 1-5, put them into the graduated cylinder, in the right order.

1	CS ₂	1.26 g/mL
2	milk	1.05 g/mL
3	octane	0.74 g/mL
4	mercury	13.5 g/mL
5	oil	0.92 g/mL



7. Write out the dissociation of water molecules into ions.
8. Define surfactant and describe how it works.
9. How many joules will be released when 61.2 grams of steam condenses into water?
10. How many joules will be absorbed when 15.7 grams of water vaporizes into steam?
11. How many joules will be released when 500. grams of water at 273 K freezes solid?
12. How many joules will be absorbed when 49.0 grams of ice at 273 K melts?
13. Skip this one
14. How many grams of KI will saturate a 805 mL aqueous solution at 20°C?
15. How many grams of NaNO₃ can be added to 100. mL NaNO_{3(AQ)} at 30°C containing 70. g NaNO₃ already?
16. When a saturated 100. mL NH₄Cl_(AQ) solution at 90°C is cooled down to 25°C, how many grams of solid NH₄Cl precipitates out of the solution?
17. Once this ammonium chloride is precipitated, does it just sit on the bottom, or is something else going on?
18. How many grams of KCl fits into a 450. mL solution at 10°C?
19. If your SO_{2(AQ)} solution is saturated, and it's at 50°C, how many grams of SO₂ are dissolved in the solvent?
20. Explain how bugs can walk on water, and how sulfur with density of 2.00 g/mL can sit on the water without sinking.
21. Define supersaturated and name one compound that can supersaturate in water.

22. When you “click” the metal tab in a hot pad, why does the pad get hot? What’s going on in there?
23. Name the bonds inside of one water molecule.
24. Name the bonds that hold solid water together.
25. Calculate the number of moles of water that are in 40.5 grams of water.
26. Which of the compounds on table G dissolves the least well at 20°C? Best at 20°C?
27. Can any compound on table G supersaturate?
28. How would you mix together a supersaturated sucrose sugar solution (step by step).
29. How much energy does it take to warm up a small pot of water (560. mL) from 20.0°C to 99.0°C?
30. Think about $\text{NaClO}_{(\text{AQ})}$ which is what people call “chlorine” for their pools. What is the solute, what is the solvent in this solution?
31. What are the nonbonding electrons in the oxygen atom of water called?
32. Define vapor pressure.
33. Define specific heat capacity constant.
34. Which of these compounds would dissolve into water?
A. NaCl B. $(\text{NH}_4)_2\text{CO}_3$ C. MgCO_3 D. NaOH E. $\text{Ba}(\text{OH})_2$ F. $\text{Al}(\text{OH})_3$ G. $\text{Ca}_3(\text{PO}_4)_2$
35. What is the vapor pressure of propanone and of ethanol at 40°C?
36. Draw seven water molecules, and indicate the hydrogen bonding with dotted lines.
37. Define solvation.
38. Define dynamic equilibrium. Make an example with an $\text{NaCl}_{(\text{AQ})}$ solution.
39. Show the dissociation of barium hydroxide in water.
40. When sugar goes into water it dissolves pretty quickly. Why won’t sugar water conduct electricity?
41. Name the three colligative properties of water that we discuss in our class.
42. Why does the county road crew use CaCl_2 instead of NaCl to melt road ice?
43. When 1 mole of aluminum chloride dissolves into water, how many moles of ions are in the solution?
44. When 4 moles of lead (IV) acetate dissolve into water, how many moles of ions are present?
45. When 2.5 moles of NaCl are dissolved into water, how many moles of ions are in solution?
46. When 2.0 moles of silver chloride (AgCl) are put into water, how many moles of ions are present?
47. Define electrolyte, give four examples and also give an example of a NON-ELECTROLYTE solution.
48. How would you describe making a concentrated cup of hot tea as compared to a dilute cup of hot tea?
49. Water in rivers and lakes has some dissolved oxygen, even though oxygen is a nonpolar molecule (that’s what keeps the fish alive). Compare and contrast some lake water that’s cooler vs. hotter, in regards to dissolved oxygen concentration.
50. Describe how much CO_2 fits into a cold, sealed can of seltzer and why once you drink it quickly, you burp (and it’s almost unavoidable).