1. In an aqueous solution of sodium fluoride, the solvent is

A) F B) Na C) NaF **D) H_2O**

2. Which barium salt is *insoluble* in water?

A) $BaCO_3$ B) $BaCl_2$
C) $Ba(ClO_4)_2$ D) $Ba(NO_3)_2$

3. In an aqueous solution of potassium chloride, the solute is

A) Cl B) K **C) KCl** D) H_2O

4. Which compound is *least* soluble in water at 60. °C?

A) $KClO_3$ B) KNO_3
C) NaCl D) NH_4Cl

5. The solubility of $KClO_3(s)$ in water increases as the

A) temperature of the solution increases
B) temperature of the solution decreases
C) pressure on the solution increases
D) pressure on the solution decreases

6. According to Reference Table *G*, how many grams of KNO_3 would be needed to saturate 200 grams of water at 70ºC?

A) 43 g B) 86 g C) 134 g **D) 268 g**

7. Based on Reference Table *G*, what is the maximum number of grams of KCl(s) that will dissolve in 200 grams of water at 50°C to produce a saturated solution?

A) 38 g B) 42 g C) 58 g **D) 84 g**

8. As the pressure on a gas confined above a liquid increases, the solubility of the gas in the liquid

A) decreases **B) increases**
C) remains the same

9. Under which conditions of temperature and pressure is a gas most soluble in water?

A) high temperature and low pressure
B) high temperature and high pressure
C) low temperature and low pressure
D) low temperature and high pressure

10. The solubility of a salt in a given volume of water depends primarily on the

A) surface area of the salt crystals
B) temperature of the water
C) rate at which the salt and water are stirred
D) pressure on the surface of the water

11. When $PbI_2(s)$ is added to $Na_2CO_3(aq)$, a white precipitate is formed. According to Reference Table F, the white precipitate most likely is

A) KNO_3 **B) $PbCO_3$**
C) NaI D) Na_2CO_3

12. As additional $KNO_3(s)$ is added to a saturated solution of KNO_3 at constant temperature, the concentration of the solution

A) decreases B) increases
C) remains the same

13. One hundred grams of water is saturated with KCl at 50°C. According to Table *G*, if the temperature is lowered to 10°C, what is the total amount of KCl that will precipitate?

A) 5.0 g **B) 17 g** C) 30. g D) 50. g

14. According to Reference Table G, which solution at equilibrium contains 50 grams of solute per 100 grams of H_2O at 75°C?

A) an unsaturated solution of KCl
B) an unsaturated solution of $KClO_3$
C) a saturated solution of KCl
D) a saturated solution of $KClO_3$

15. According to Reference Table G, approximately how many grams of $KClO_3$ are needed to saturate 100 grams of H_2O at 40°C?

A) 6 **B) 16** C) 38 D) 47

16. Which ion, when combined with chloride ions, Cl^-, forms an insoluble substance in water?

A) Fe^{2+} B) Mg^{2+} **C) Pb^{2+}** D) Zn^{2+}

17. The attraction between water molecules and an Na^+ ion or a Cl^- ion occurs because water molecules are

A) linear B) symmetrical
C) polar D) nonpolar

18. Which compound becomes *less* soluble in water as the temperature of the solution is increased?

A) HCl B) KCl
C) NaCl D) NH_4Cl

19. According to your Reference Tables, which of these compounds is the *least* soluble in water?

A) K_2CO_3 B) $KC_2H_3O_2$
C) $Ca_3(PO_4)_2$ D) $Ca(NO_3)_2$

20. Based on Reference Table G, what change will cause the solubility of $KNO_3(s)$ to increase?

A) decreasing the pressure
B) increasing the pressure
C) decreasing the temperature
D) increasing the temperature

21. According to Reference Table G, which compound's solubility decreases most rapidly when the temperature increases from 50ºC to 70ºC?

A) NH_3 B) HCl
C) SO_2 D) KNO_3

22. At room temperature, the solubility of which solute in water would be most affected by a change in pressure?

A) methanol B) sugar
C) carbon dioxide D) sodium nitrate

23. At which temperature can water contain the most dissolved oxygen at a pressure of 1 atmosphere?

A) 10.ºC B) 20.ºC C) 30.ºC D) 40.ºC

24. A solute is added to water and a portion of the solute remains undissolved. When equilibrium between the dissolved and undissolved solute is reached, the solution must be

A) dilute **B) saturated**
C) unsaturated D) supersaturated

25. When 5 grams of KCl are dissolved in 50. grams of water at 25°C, the resulting mixture can be described as

A) heterogeneous and unsaturated
B) heterogeneous and supersaturated
C) homogeneous and unsaturated
D) homogeneous and supersaturated

26. A saturated solution of $NaNO_3$ is prepared at 60.ºC using 100. grams of water. As this solution is cooled to 10.ºC, $NaNO_3$ precipitates (settles) out of the solution. The resulting solution is saturated. Approximately how many grams of $NaNO_3$ settled out of the original solution?

A) 46 g B) 61 g C) 85 g D) 126 g

27. A solution containing 90. grams of KNO_3 per 100. grams of H_2O at 50.°C is considered to be

A) dilute and unsaturated
B) dilute and supersaturated
C) concentrated and unsaturated
D) concentrated and supersaturated

28. What is the molarity of 1.5 liters of an aqueous solution that contains 52 grams of lithium fluoride, LiF, (gram-formula mass = 26 grams/mole)?

A) 1.3 M B) 2.0 M
C) 3.0 M D) 0.75 M

29. Molarity is defined as the

A) moles of solute per kilogram of solvent
B) moles of solute per liter of solution
C) mass of a solution
D) volume of a solvent

30. What is the molarity of a solution that contains 0.50 mole of NaOH in 0.50 liter of solution?

A) 1.0 M B) 2.0 M
C) 0.25 M D) 0.50 M

31. Which solution is the most concentrated?

A) 1 mole of solute dissolved in 1 liter of solution
B) 2 moles of solute dissolved in 3 liters of solution
C) 6 moles of solute dissolved in 4 liters of solution
D) 4 moles of solute dissolved in 8 liters of solution

32. What is the concentration of $O_2(g)$, in parts per million, in a solution that contains 0.008 gram of $O_2(g)$ dissolved in 1000. grams of $H_2O(l)$?

A) 0.8 ppm **B) 8 ppm**
C) 80 ppm D) 800 ppm

33. How many grams of KNO_3 should be dissolved in water to make 500.0 grams of a 20.0 ppm solution?

A) 1.00×10^{-1} g **B) 1.00×10^{-2} g**
C) 1.00×10^{-3} g D) 1.00×10^{-4} g

34. What is the concentration expressed in parts per million of a solution containing 5.0 grams of NH_4Cl in 95.0 grams of H_2O?

A) 5.0×10^4 ppm B) 2.0×10^7 ppm
C) 5.3×10^4 ppm D) 1.9×10^7 ppm

35. How do the boiling point and freezing point of a solution of water and calcium chloride at standard pressure compare to the boiling point and freezing point of water at standard pressure?

A) Both the freezing point and boiling point of the solution are higher.
B) Both the freezing point and boiling point of the solution are lower.
C) The freezing point of the solution is higher and the boiling point of the solution is lower.
D) The freezing point of the solution is lower and the boiling point of the solution is higher.

36. Compared to a 0.1 M aqueous solution of NaCl, a 0.8 M aqueous solution of NaCl has a

A) higher boiling point and a higher freezing point
B) higher boiling point and a lower freezing point
C) lower boiling point and a higher freezing point
D) lower boiling point and a lower freezing point

37. As a solute is added to a solvent, what happens to the freezing point and the boiling point of the solution?

A) The freezing point decreases and the boiling point decreases.
B) The freezing point decreases and the boiling point increases.
C) The freezing point increases and the boiling point decreases.
D) The freezing point increases and the boiling point increases.

38. Which concentration of a solution of CH_3OH in water has the *lowest* freezing point?

A) 0.1 M B) 0.01 M
C) 0.001 M D) 0.0001 M

39. Which solution will freeze at the *lowest* temperature?

A) 1 mole of sugar in 500 g of water
B) 1 mole of sugar in 1,000 g of water
C) 2 moles of sugar in 500 g of water
D) 2 moles of sugar in 1,000 g of water

40. A 1 molal solution of $MgCl_2$ has a higher boiling point than a 1 molal solution of

A) $FeCl_3$ B) $CaCl_2$ C) $BaCl_2$ **D) NaCl**

Answer Key
Do Now Unit 7 Solutions

1. **D**
2. **A**
3. **C**
4. **A**
5. **A**
6. **D**
7. **D**
8. **B**
9. **D**
10. **B**
11. **B**
12. **C**
13. **B**
14. **C**
15. **B**
16. **C**
17. **C**
18. **A**
19. **C**
20. **D**
21. **A**
22. **C**
23. **A**
24. **B**
25. **C**
26. **A**
27. **D**
28. **A**
29. **B**
30. **A**
31. **C**
32. **B**
33. **B**
34. **A**
35. **D**
36. **B**
37. **B**
38. **A**
39. **C**
40. **D**