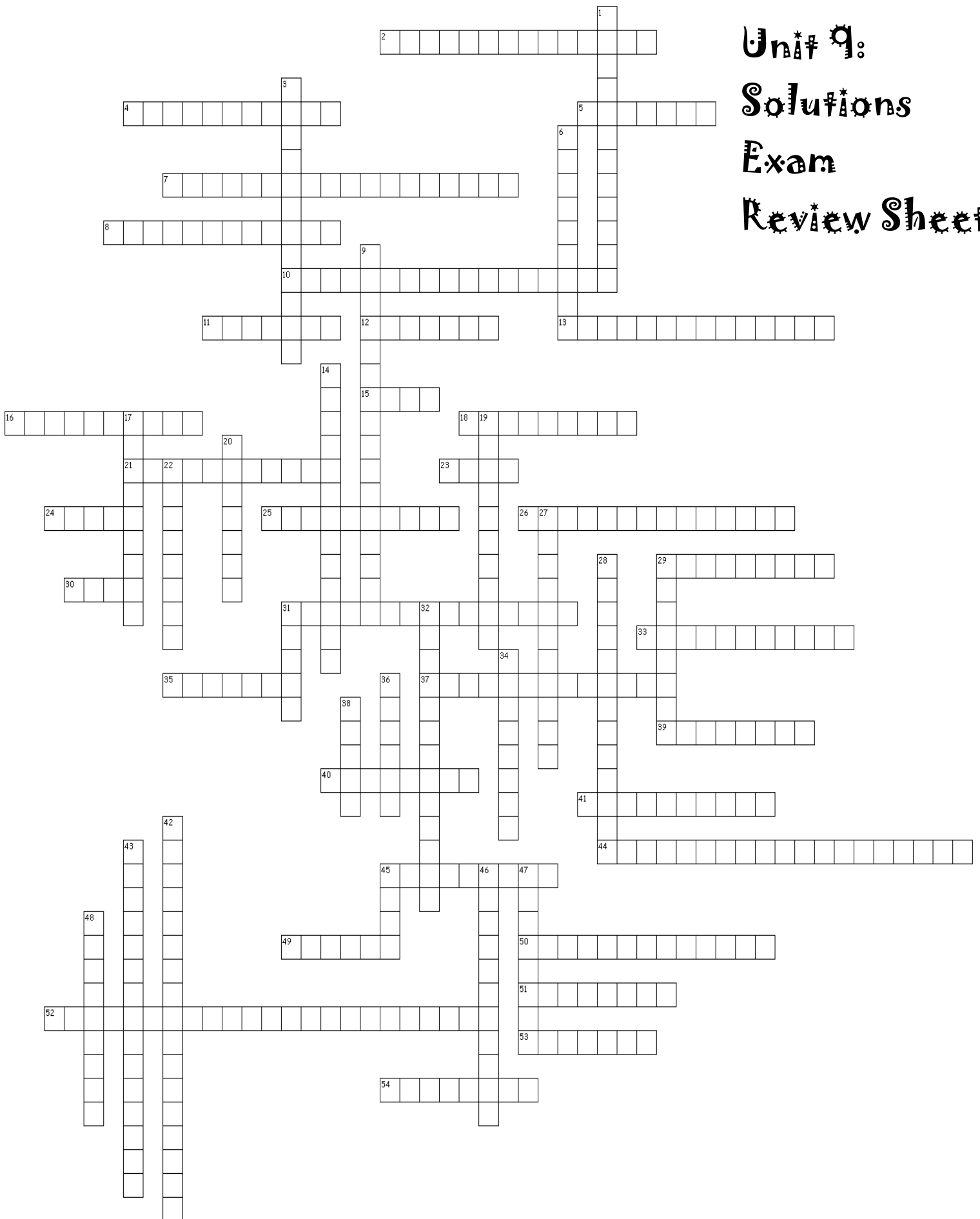


Unit 9: Solutions Exam Review Sheet



Name _____ Date _____ Mod _____ Exam Date _____

Across

2. a force that tends to pull adjacent pairs of a liquid's surface together, thereby decreasing surface area to the smallest possible size
4. a substance that dissolves in water to give a solution that conducts an electric current
5. a heterogeneous mixture of very tiny particles of pure substances that are dispersed in another substance but do not settle out; have the ability to scatter light
7. substances that retain certain liquid properties even at a temperature at which they appear to be solids
8. the temperature at which a solid becomes a liquid
10. the amount of heat energy required to melt one mole of solid at its melting point
11. dissolved in water
12. that which does the dissolving
13. a substance that dissolves in water to give a solution that does not conduct an electric current
15. "like dissolves ____"
16. a heterogeneous mixture that looks uniform when stirred or shaken, but separates into different layers when it is no longer agitated
18. the resistance to flow of a fluid due to particle attraction
21. the temperature above which a substance cannot exist in the liquid state is called the critical ____
23. VSEPR structure of water
24. water molecules are ____ covalent meaning their electrons are not equally shared
25. two or more liquids that do not mix into each other; they are not soluble in each other
26. a solution that contains more dissolved solute than a saturated solution under the same conditions
29. crystal structure of ice
30. semipermeable membranes allow the movement of ____ particles while blocking the movement of other particles
31. a compound of which a relatively small amount of the dissolved compound exists as ions in aqueous solution
33. indicates the temperature and pressure conditions at which the solid, liquid, and vapor of a substance can coexist at equilibrium
35. capable of being dissolved
37. indicates the critical temperature and critical pressure
39. two or more substances uniformly spread throughout a single phase
40. a combination of more than one pure substance
41. the amount of a substance required to form a saturated solution with a specific amount of solvent at a specified temperature
44. the physical state in which the opposing processes of dissolution and crystallization of a solute occur at equal rates
45. Greek "without shape"
49. have definite shape and definite volume
50. the scattering of light by colloidal particles dispersed in a transparent medium
51. a heterogeneous mixture of immiscible liquids in which the liquids are spread throughout one another
52. the amount of heat energy needed to vaporize one mole of liquid at its boiling point
53. have definite volume but take the shape of their container
54. the lowest pressure at which the substance can exist as a liquid at the critical temperature is called the critical ____

Down

1. the separation of ions that occurs when an ionic compound dissolves
3. H_3O^+
6. the attraction between water molecules that is strong enough to draw the ions away from the crystal surface into solution
9. the total 3D arrangement of particles of a crystal
14. a graph of pressure versus temperature that shows the conditions under which the phases of a substance exist
17. a solution that contains the maximum amount of dissolved solute
19. the formation of ions from solute molecules by the action of the solvent; process that occurs with polar covalent compounds
20. a substance in which the particles are arranged in an orderly, geometric, repeating pattern
22. the number of moles of solute in one liter of solution
27. a solution that contains less solute than a saturated solution under the existing conditions
28. a mixture in which the mixing is not the same throughout
29. ionic substances that form crystals by incorporating water molecules, called ____.
31. makes up 75% of the Earth's surface, is 70-90% of the mass of living things, expands when frozen, and is most dense at 3.98°C
32. a measure of the amount of solute in a given amount of solvent or solution
34. two or more liquids that are able to dissolve freely into one another
36. that which dissolves
38. a substance that can flow and therefore take the shape of its container; a property shared by liquids and gases
42. any compound of which all or almost all of the dissolved compound exists as ions in aqueous solutions
43. the attraction of the surface of a liquid to the surface of a solid which allows the liquid to rise against the pull of gravity
45. the six crystal structures are distinguished by their ____
46. a mixture in which the mixing is the same throughout
47. the smallest portion of a crystal lattice that shows the 3D pattern of the entire lattice
48. the rate at which a solid dissolves is ____ to its solubility

B. List the properties of liquids.

C. List the properties of solids.

D. What are the two types of solids?

E. List the basic crystal structures

F. Identify the state changes and whether energy is being absorbed or released.

Solid to liquid _____

Liquid to solid _____

Liquid to gas (at B.P.) _____

Liquid to gas (below B.P.) _____

Gas to liquid _____

Solid to gas _____

Gas to solid _____

G. List 5 physical properties of water.

H. List the factors affecting the rate of dissolution.*

I. Describe osmosis through a semipermeable membrane. *

J. On loose-leaf, write the equation for the dissolution of the following compounds in water. How many moles of ions are produced?

1. NH_4Cl
2. Na_2S
3. $\text{Ba}(\text{NO}_3)_2$
4. Sodium carbonate
5. Hydrochloric acid

K. On loose-leaf, solve the following molarity calculations. Be sure to show all of your work!

1. What is the molarity of a salt solution made by dissolving 3.25 grams of sodium chloride in 4.00 mL of water?
2. What is the molarity of a solution that contains 907.0 grams of acetic acid, CH_3COOH , dissolved in enough acetone to make 2.0 L of solution?
3. What mass of magnesium bromide would be required to prepare 0.1500 L of a 0.0215 M aqueous solution?
4. How many moles are in 5.50 L of a 4.25 M aqueous solution?
5. What is the volume of 0.550 M aqueous solution of silver nitrate containing 15.25 grams of silver nitrate?