Name: _____
Test Date: _____

Mixtures and Solutions
Study Guide

solute mixture solution solvent

_____**:** a substance containing two or more materials with different properties
_____**:** a special mixture formed when one or more materials dissolves in another
_____: the solid material that dissolves in a liquid.
_____: the liquid in a solution that dissolves the solid material.

dissolving concentration saturated solubility

_____**:** the maximum amount of solute that can be dissolved in a solvent
_____**:** the process of a material becoming incorporated uniformly into another, or of two materials mixing together evenly.
_____**:** a solution in which as much solute as possible has been dissolved
_____**:** the relative amount of a substance in a mixture

crystals dilute concentrated evaporation

_____**:** a solution that contains a relatively small amount of solute compared to the amount of solvent (opposite of concentrated solution)
_____: a solution that contains a relatively large amount of solute compared to the amount of solvent (opposite of dilute solution)
_____**:** the process by which a material (usually a liquid) changes into a gas
_____**:** the solid form of a material that can be identified by its natural shape or pattern

property procedure precipitate chemical reaction

_____**:** a step-by-step process to perform a specific task
_____**:** the process by which two or more substances combine to make one or more new substances that have different properties than the original ones.
_____**:** a solid material that forms during a chemical reaction
_____: the look, feel, smell, taste, and sound of an object.

Mixtures:
*In a mixture each material retains its own _____. (ie in trail mix – the raisins remain raisins)

*Mixtures (not solutions) can be separated by these two process

1._____
2. _____

*Why did the powder not go through the filter paper even after water was added?

_____

*If 10g of M&Ms, 15g of Chex cereal, and 6g of raisins are mixed in a bowl to make trail mix, what is the mass of the mixture?

_____

*Which of the following statements is true?

a. All solutions are mixtures, but not all mixtures are solutions.
b. All mixtures are solutions, but not all solutions are mixtures.
c. All mixtures are solutions, and all solutions are mixtures.

Solutions:
*Solutions can be separated by using the _____ method. The remaining solid material left in the container will be in _____ form.

*Which type of solute would make the following crystal structure? How do you know?

_____

*What is the mass of the following solution if each scoop of sugar has a mass of 3 grams?

60 mL water
3 scoops sugar

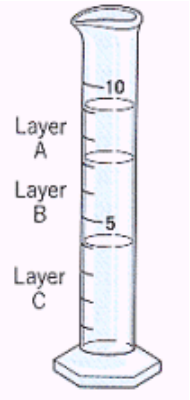
_____

*How can you tell if you have created a saturated solution? _____
_____

- True or False - In a solution the dissolved substance is mixed evenly throughout the liquid.

_____

Concentration:
*To make a solution more concentrated add more _____.
*To make a solution less concentrated add more _____.
*As the concentration increases, the density of the solution _____ until saturation is reached.
*As the concentration increases, the mass of the solution _____ until saturation is reached.
*A solution that is more dense will be below a solution that is less dense.



*Which layer in the picture to the right is the least dense?

_____

*Which layer in the picture to the right is the most dense?

_____

*Once saturation is reached the _____ remains the same regardless of how much more solid is added.
*Concentrations be compared using ratios:

8 sc:200 mL _____ 2 sc:200 mL

8 sc:100 mL _____ 8 sc:800 mL

5 sc:400 mL _____ 10 sc:800 mL

2 sc:300 mL _____ 1 sc:900 mL

3 sc:200 mL _____ 2 sc:300 mL

Solubility:
*Solubility is different for different materials. One example of a solute with a high solubility is _____. One example of a solute with a low solubility is _____.

Chemical Reactions:
*All chemical reactions create _____.
*Other evidence of a chemical reaction could include:
1. _____
2. _____
3. _____

Place an C by the examples of chemical changes and a P by the examples of physical changes listed below.

_____ rust forming on a nail
_____ opening a can of soda
_____ evaporating water
_____ a candle burning
_____ freezing vinegar
_____ salt dissolving in water
_____ concrete forming
_____ breaking a cookie

Designing an Experiment:
*When designing an experiment one must write a step-by-step _____.
*Use specifics rather than pronouns.
*Be detailed in the amount of material used (ie 100 ml, 5 g, etc.).
*Tests should be repeated at least 3 times to increase reliability and validity of the results.
*Diagrams are helpful in showing the design set-up.