

Unit 3 Lessons 8 – 13 Study Guide

Unit 3 Lesson 8-13 Vocabulary:

Lesson:	Term	Definition
10	Chromatography	Separation of substances in a mixture by differences in their attraction to a substance over which they are passed
10	Distillation	Physically separating a solution of a solid and a liquid by boiling off the liquid
11	Saturated	Dissolving the greatest possible amount of a substance in a solution
11	Solubility	How much solute can be dissolved in a solvent at a given temperature.
11	Solution	A mixture in which the substances are completely and evenly mixed, down to their individual molecules (sugar-water is a solution)
11	Substance	Matter that has particular properties.

Lesson 8: Lab Dissolving Metals

Factors that affect the rate of a chemical reaction

1. T _____
2. Concentration
3. Surface Area

Lesson 9: Mixtures

Element, Compound or Mixture?

Element: is a _____ that cannot be broken down or _____ into simpler substances

Compound: is a substance made up of _____ or more _____ that can only be separated by chemical means

- When a compound is formed, it has a completely _____ set of properties

Mixture: a _____ of two or more substances that do not change _____ when mixed; made of elements; the elements are parts of compounds; can be solid, liquid or gas

- Example: Salt (compound) + Water (compound) = Salt water

Properties of Mixtures:

A mixture has three (3) main properties that make it different from a compound

1. The components of a mixture keep their unique properties and identities
2. The components are not in fixed ratios
3. The components of a mixture can be separated physically

Types of Mixtures:

- **Heterogeneous Mixture:** a mixture that has components spread _____ throughout the mixture
 - Not uniform in appearance, each part of a the mixture contains a combination of different ingredients in different ratios
 - Examples: tossed salad, trail mix, fruit salad
- **Homogeneous Mixture:** a mixture that looks like a _____ substance, the components are spread evenly throughout
 - Substance is mixed uniformly throughout, each part of the substance contains the same ratio of materials with the same properties
 - Examples: sugar water, juice, air, carbonated drinks
- **Solution:** a mixture with one or more of the substances _____ in another
 - A type of homogeneous mixture
 - Example: sugar water

Lesson 10: Separating Mixtures

Remember! A mixture CAN be separated into its component parts without a chemical reaction occurring!

Ways a Mixture CAN be Separated:

1. **Separating with a _____**
 - Example: separate iron filings from aluminum by using a magnet
2. **Separating with a filter**
 - Example: Use a filter to separate sand from water
3. **Separating by _____**
 - Example: if you have a cup of salt water, let the water evaporate and only the salt will be left
4. **Separating by distillation**
 - **Distillation: physically separating a solution of a solid and a liquid by boiling off the liquid**
 - Example: heat saltwater to distil it into pure water; crude oil (gasoline, kerosene, and diesel)
5. **Separating by _____**
 - Example: Sand and Sawdust - Put sand and sawdust in water to separate them (sawdust will float because it has less density than water)
6. **Separating by chromatography:**
 - Chromatography: see vocabulary definition
 - Example: Pigments from plants

Lesson 11: Solutions

Pure Substance: made of one kind of atom or one kind of molecule

- Example: water, table sugar, carbon dioxide, diamond

Substances in Solution:

- Most homogeneous mixtures are _____
- Can be a solid, liquid, or gas

Solutions: Solvents and Solutes (Example: Saltwater)

- **Solution:** has at least two components:
 - _____: what is doing the dissolving
 - Main part of the solution; the one that provides a substance's main physical property
 - Example: water
 - _____: what is being dissolved; the minor constituent of a solution
 - Example: salt

How Much Solute Can Dissolve in a Solvent?

- All solutions have limits on how much solute will be dissolved in the solvent
- **Saturated:** dissolving the _____ possible amount of a substance in a solution
 - Example: If you tried to add more sugar to lemonade, it would sit, un-dissolved at the bottom of the pitcher
- **Solubility:** how much solute can be dissolved in a solvent
 - Example: the _____ of the sugar increased when we raised the temperature

Lesson 12: Substances and Lesson 13: Lab Separating Mixtures

Refer to Lessons 9, 10, and 11 notes for both lessons