

Chemistry Part 2 - Study Guide

GOAL 1:

1. Give an example that proves a single element is different than a compound that contains that element. Explain why they are different.

Water contains hydrogen and oxygen. Both of these are gasses that are highly flammable. When they combine and form bonds to become a water molecule, water is stable and a liquid at room temperature.

2. What elements make up the compound Na_2Cl_3 ? How many atoms of each element are in a molecule of that compound?

2 – Sodium

3 - Chlorine

3. What elements make up the compound K_2O_3 ? How many atoms of each element are in a molecule of that compound?

2 - Potassium

3 – Oxygen

Directions: For the following statements, decide if the statement is true or false. If it is false, explain why it is false on the line.

4. There are less than 100 known elements that exist. **False - There are currently 118 known elements on the Periodic Table**

5. There are only naturally occurring elements and compounds. **False – there are also synthetic (man-made) elements.**

6. Two or more elements chemically joined together are considered compounds. **Yes – True**

7. Elements and compounds make up only living things. **False – They make up living AND non-living things.**

GOAL 2:

8. Define mixture: two or more substances combined that can be physically separated
9. Define pure substance: a substance (either an element or a compound) that cannot be physically separated
10. Define solution: a mixture in which all of the parts look the same after mixed
11. Define element: simplest substance found in nature; composed of a single kind of atom
12. Define compound: two or more elements that are chemically joined together in a specific ratio.
13. Define visible mixture:

14. Given these items in the table below, identify each as either a mixture or pure substance and then identify the substance as an element, compound, solution, or visible mixture.

Item	Mixture OR Pure Substance?	Element, compound, visible mixture, OR solution?
Chicken Noodle Soup	Mixture	It is a visible mixture.
Salt (NaCl)	Pure Substance	It is a compound with a chemical formula
Hydrogen	Pure Substance	It is an element
Kool-aid	Mixture	It is a solution of Kool-aid mix, sugar, and water
Ocean water	Mixture	It is a salt water solution
Chalk (CaCO ₃)	Pure Substance	It is a compound with a chemical formula
Syrup	Mixture	It is a solution of sugar, water, etc.

15. Todd made lemonade by mixing water and lemonade powder. (2 pts.)

What was the solute? _____ **lemonade powder** _____

What was the solvent? _____ **water** _____

16. Define soluble: **a solid that dissolves in a liquid**

Give 2 examples: **sugar (into water) & lemonade mix (into water)**

17. Define insoluble: **a solid that DOES NOT dissolve in a liquid**

Give 2 examples: **sand, pebbles, rocks, & chalk**

GOAL 3:

1. How do you separate a mixture of lemonade? Explain how you would separate each part specifically.
Evaporate the water to leave the lemonade mix. Condense the water vapor to get the water.
2. You have iron paper clips and plastic paper clips. What is the best way to separate this mixture? Be specific.

Use a magnet to separate the iron paperclips (OR hand sort)

3. What method of separation would you use to see what colors make up a black marker?

Chromatography

4. You want to eat chips and salsa, but you don't like the chopped up onions and peppers inside it. What method would you use to separate it out the fastest? Explain how you separate each part specifically.

Use a filter or strainer

5. You want to separate M&Ms by color because you don't like the yellow ones. What method would you use?

Hand sort

6. You have a mixture of sand, salt, and iron filings. How will you separate this mixture? Explain how you separate each part specifically.

a. Magnet to pull out the iron filings

- b. Stir in water to dissolve the salt
- c. Filter the sand from the salt water
- d. Evaporate the water to leave the salt