Chemistry: ***Classifying Matter*** ***Name_____***

Classify each of the materials below. In the center column, state whether the material is a **pure substance** or a **mixture**. If the material is a pure substance, further classify it as either an **element** or **compound** in the right column. Similarly, if the material is a mixture, further classify it as **homogeneous** or **heterogeneous** in the right column. Write the entire word in each space to earn full credit.

Material	***Pure Substance or Mixture***	***Element, Compound, Homogeneous, Heterogeneous***
concrete	Mixture	***Heterogeneous***
sugar + pure water ($C_{12}H_{22}O_{11}$ + H_2O)	Mixture	***Homogeneous***
iron filings (Fe)	Pure Substance	***Element***
limestone ($CaCO_3$)	Pure Substance	***Compound***
orange juice (w/pulp)	Mixture	***Heterogeneous***
Pacific Ocean	Mixture	***Heterogeneous***
air inside a balloon	Mixture	***Homogeneous***
aluminum (Al)	Pure Substance	***Element***
magnesium (Mg)	Pure Substance	***Element***
acetylene (C_2H_2)	Pure Substance	***Compound***
tap water in a glass	Mixture	***Homogeneous***
soil	Mixture	***Heterogeneous***
pure water (H_2O)	Pure Substance	***Compound***
chromium (Cr)	Pure Substance	***Element***
Chex mix	Mixture	***Heterogeneous***
salt + pure water (NaCl + H_2O)	Mixture	***Homogeneous***
benzene (C_6H_6)	Pure Substance	***Compound***
muddy water	Mixture	***Heterogeneous***
brass (Cu mixed with Zn)	Mixture	***Homogeneous***
baking soda ($NaHCO_3$)	Pure Substance	***Compound***

Chapter 17.1 Questions

1. How did you differentiate between an element and a compound? Give an example of each.

Elements will only have one capital letter, while compounds will have at least two. Element – C, Mg Compound – NaCl, $C_6H_{12}O_6$

2. How did you distinguish between a homogeneous mixture and a heterogeneous mixture? Give an example of each.

Heterogeneous – different materials can be distinguished easily, EX: - pizza
Homogeneous – substances that are evenly blended throughout, EX - soda

3. Compare and contrast solution and colloid. Give an example of each.

Solution – homogeneous mixture of particles so small they cannot be seen with a microscope and will never settle, EX: vinegar, soda
Colloid – mixture that doesn't settle though it has larger particles, EX: milk, gelatin, paint, fog

4. You look at a bottle of juice in the refrigerator. It says "Shake well before using". How would you classify the juice? Why?

Suspension – it's a heterogeneous mixture containing a liquid where visible particles settle to the bottom

Chapter 17.2 Questions

1. In terms of substances, explain why evaporation of water is a physical change and not a chemical change.

Evaporation of a liquid (L→G) does not change the substance.

2. Why is flammability a chemical property rather than a physical property?

When something burns, a new material is formed.

3. What kind of change occurs when melting a substance? Boiling a substance? Why?

Physical - Melting and boiling are phase changes, which means they have the same chemical make up.

4. How does the law of conservation of mass apply to chemical changes?
   The same number of atoms present before the chemical change must be present after the chemical change.

5. When discerning a chemical vs. physical change, what do you look for? Give an example of each.

When discerning between a chemical and physical change, you may look for heating, cooling, bubbles (indicates gas is being released), light, sound, etc. If the material clearly stays the same, then it is a physical change.