

Mixtures and Solutions
Review Sheet

Name: _____

Investigation 1 : Separating Mixtures

- Mixture two or more materials stirred together
- Property – a characteristic of an object, something you can observe such as size, color, shape, or texture
- Solution – a special mixture formed when a material dissolves in water
- Dissolving – a process in which one material disperses uniformly into another material, so that the first material seems to disappear
- Ways to separate mixtures – screen, filters, evaporation
- Evaporation – causes liquids to dry up – the liquid turns to gas and disperses into the air, leaving any dissolved solid material behind
- Crystal – the solid form of a material that can be identified by its properties, such as shape, color, and pattern

Questions

1. Describe a mixture from your everyday life. _____
2. Describe a solution from your everyday life. _____
3. Describe how you would separate these mixtures:
 - a. gravel and water mixture
 - b. powder and water mixture
 - c. salt and water solution
4. How could you identify salt crystals after a solution of salt water evaporated?

5. Will a solution with 50 ml of water and spoon of salt have the same mass as 50 ml of plain water? More mass? Less mass? How can you find out? _____

Investigation 2 – Reaching Saturation

- A *solution* is made of two parts, the solvent and the solute.
- Solvent – is the liquid in a solution
- Solute – is the solid that dissolves in the solvent
- Saturated solution – when no more solute will dissolve in the solvent
- Citric Acid is more soluble than salt in water – 55g of citric acid compared to 15g of salt to reach saturation in water
- Solubility – the property that substances have of dissolving in solvents
- Universal solvent – because so many things dissolve in water it is considered the universal solvent
- Something can be saturated and no more material can be dissolved unless the solution is heated

Questions

1. How do you know you have a saturated salt solution?
2. What happened to the salt when you put it in the water?
3. What happened to the level of the liquid when the salt was added?

4. *How can you determine how much salt it took to saturate 50 ml of water?*

Investigation 3: Concentration

- Concentration – the amount of material dissolved in a measure of liquid
- Dilute – to make something less concentrated, usually by adding more liquid
- Volume – the three-dimensional space occupied by something.
- When a soft-drink solution tastes sweet (and looks dark), it is a concentrated solution. When it tastes weak (and looks light), it is a dilute solution.
- If you compare equal volumes of two solutions on a balance, and one is heavier than the other, the heavier one is more concentrated.

Questions

1. *Is Kool-Aid drink a mixture or a solution?*
2. *How could you prove it?*
3. *What happens to the soft-drink solution when you increase the amount of powder in a given amount of water?*
4. *How could you tell which of two different soft-drinks solutions are more concentrated?*
5. *What does it mean when your solution is dilute?*
6. *How would you fix a solution that is too concentrated? (Use solute and solvent in answer)*
7. *How would you fix a solution that is too weak? (Use solute and solvent in answer)*

Investigation 4: Fizz Quiz

1. Chemical Reaction – when two or more materials (chemicals) are mixed together and a change occurs
2. Precipitate – a solid material that forms as a product of a reaction
3. Change – the process of becoming something different
4. Reactants – this is what the chemicals are called when two chemicals react when they are mixed
5. Fizzing in a liquid is caused by *gas* escaping and coming to the surface. When calcium chloride and baking soda are mixed with water, the gas carbon dioxide is formed. Carbon dioxide is the same gas that makes bubbles in soda. The white material is a new material called calcium carbonate, or chalk, is not soluble in water, so it settles to the bottom of the cup. This new chemical is called a *precipitate*.
6. Signs of a chemical reaction – temperature change, gas formation, precipitate

Questions:

1. *How can you tell if a chemical reaction has occurred?*
2. *When you look at a solution that has material at the bottom of a cup, how do you determine if the material is either “saturated” or a “precipitate”?*