Classroom Chemistry

Grade 5 Science
Mr. Larson
Student Learner Expectations
Safety Rules

- Do not let chemicals come in contact with your skin.
- Rinse well, if you do get chemicals on yourself.
- Wipe up spills immediately.
- Wash your hands with soap.
- Never taste chemicals.
- Waft, when smelling.
Matter

- **Matter** is the substance of which physical objects are composed.
- It can be solid, liquid or gas.
Solids

- Molecules are attached and bunched together in a “solid” form.
- Doesn’t change shape easily.
- Another solid cannot pass through easily.
Liquid

- Molecules fill the space of the container they are in.

- They can shape easily.

- A solid can pass through it.
Gas

- Molecules freely move around. They are not closely bound together.

- Changes shape easily

- A solid can pass through it easily.
a) Solid (Ice)  
(b) Liquid (Water)  
(c) Gas (Steam)
Changes of State

- Solid to Liquid - Melting
- Liquid to Solid - Freezing
- Liquid to Gas - Evaporation
- Gas to Liquid - Condensation
Mixtures

- Matter can generally be mixed with other types of matter.

- A mixture is when particles of one substance mixes with particles of another substance. They are generally pure substances.
Where do we see mixtures?

- Brainstorm as a small group.

- Examples: recipes, construction-concrete, water, lemonade, salad dressings.

- BLM #1
Separating Mixtures

- How can you separate substances from a mixture?

- BLM #2

- Methods of Separating: sieves, magnets, air, water, evaporation, distilling, filtering
Separating Mixtures

- In groups, complete BLM #2
- See if you can separate the mixture you are given.
Methods of Separating

- Sieves: can be used to separate solids.
- Magnets: can pick magnetic objects from non-magnetic.
Methods of Separating

- **Air**: you can blow away lighter substances, to leave heavier ones.

- **Water**: some substances will float or sink based on their buoyancy.
Methods of Separating

- **Evaporation:** evaporate the liquid and leave the solid.

- **Distilling:** the processing of vaporizing into gas and then condensing back into a liquid.
Methods of Separating

- Filtration: using a filter and pouring the liquid through to separate the solid.

- [http://www.bbc.co.uk/schools/scienceclips/ages/10_11/rev_irrev_changes.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/10_11/rev_irrev_changes.shtml)
Mixing Liquids

- BLM #3 and #4

- Some liquids mix completely and are unable to be separated. eg: Milk and Tea
- Some liquids do not dissolve in others and are more buoyant. eg: oil and water
- Some liquids are heavier, less buoyant and settle on the bottom. eg: syrup
Mixing Liquids

• Some liquids react to each other. Eg: vinegar and milk.

• Some liquids are able to dissolve solids, while some are not.

• Lemonade is an example of a liquid mixture.
Activity: Layering Liquids

- Why were the liquids able to be layered and not mixed?
- Try mixing two different liquids, record your observations.
Lifesaver Experiment

- BLM #6 and 7
- Observe how long the lifesaver takes to dissolve
  - The lifesaver dissolved into the water
  - Dissolve is when a solid crumbles into a liquid.
- Can you make it dissolve faster?
Lifesaver Experiment: Inferences

- Manipulated Variable-
- Responding Variable- amount of time it will take to dissolve a lifesaver.
Solutions

- A homogeneous mixture in which the solute is uniformly distributed throughout the solvent.

- Solute - The substance that is being dissolved in a solution.

- Solvent - The substance that does the dissolving in a solution.
Suspension

- A mixture in which very small particles of a solid remain suspended without dissolving.

- Heterogeneous Mixture- when one substance is unevenly mixed with another.
Separating Solutions

- Filtering
- Pouring off the liquid
- Evaporation

- Solution to Recovery Activity
Crystals

- We can recover a dissolved substance by evaporation.
- We can create crystals when the liquid evaporates.
Surface Tension

- Water droplets are round and shaped like balloons.
- The film that forms on the surface of the water is called surface tension.
- Surface tension is due to cohesion. An attraction of the molecules in water.
Surface Tension

- Water is very cohesive. The water molecules act like glue.

- Penny Challenge
- Paper Clip

Why was the water able to bulge up?
Surface tension-cohesion of water molecules.
Carbon Dioxide

- Air is composed of 78% Nitrogen, 21% oxygen and 1% other gases like carbon dioxide, water vapour, helium, etc.
- We breathe oxygen.
- Carbon Dioxide is the gas we breath out. That is formed from burning fuel.
- Carbon dioxide is heavier than oxygen
- Gas in a Bag activity. BLM #12
Reversible and Irreversible Changes

- Reversible changes can go back to their original state.
- Irreversible changes cannot go back to their original state.
Chemical Reaction

- These are changes where two substances react chemically and they make a new substance.

- Testing Powders Activity
- BLM 13 and 15
Acids and Bases

- An acid is a substance that has a pH less than 7.
- A base is a substance that has a pH greater than 7.
- Neutral has a pH of 7.
- Both acids and bases are potentially harmful and they eat away at other substances.
Litmus Paper

- Litmus paper is used to determine if a liquid is acidic or basic.
  - Red Paper: acid stays red, base turns it blue.
  - Blue Paper: acid turns it red, base stays blue.
  - Neutral: blue paper stays blue, red paper stays red.