<u>Key Q's and Vocab:</u> Lab Safety – GHS Pictograms and NFPA diagram

These should be copied by hand into your CHILL ☹

<u>Vocab:</u>

1. **Heterogeneous mixture** – contains more than 1 substance mixed together and differences are evident (be aware of scale here! Most of the time we are discussing whether differences can be seen with the naked eye)
2. **Homogeneous** – differences are not evident
3. **Homogeneous mixture** – contains more than 1 substance but no differences are evident
4. **Pure substance** – contains only one substance (element or compound)
5. **Compound** – more than 1 element chemically bonded together; you must break bond to separate the elements
6. **Element** – basic unit of matter in chemistry (yes I know, but just go with it…)
7. **Physical separation techniques** – separation techniques that use physical changes to separate a mixture into components
8. **Distillation** – physical separation techniques that is based upon boiling point differences between two liquid mixed together
9. **Filtration** – physical separation technique that uses particle size and a screen to separate components of a mixture
10. **Chromatography** – physical separation technique that uses differences in molecular structure to separate a mixture into components
11. **Chemical separation techniques** – separation techniques that rely on different chemical properties of mixture components to separate them
12. **Thermal decomposition** – chemical separation technique that relies on the thermal stability of mixture components to purify one from the other (one is normally stable at high temps and one is not)
13. **Electrolysis** – chemical separation technique that relies on the likelihood that elements will gain or lose electrons when a current is applied to a solution. Usually one component of interest will precipitate out of solution
14. **Single replacement reactions** – chemical separation technique that relies of the chemical reactivity of a mixture component to isolate it from a mixture

Key Questions (answer these in a different color ink):

1. You have a container with a known set of components present:
    - Sodium chloride (table salt, soluble in water)
    - Zinc (non-magnetic metal chunks, not soluble in alcohol or water)
    - Iron filings (tiny magnetic metal pieces, not soluble in alcohol or water)
    - Silicon dioxide (insoluble in water and alcohol, non-magnetic)
    - Rubbing alcohol (soluble in water, boiling point of $80^{o}C$)
    - Water (boiling point of $100^{o}C$)

    Design a separation procedure to purify each component.