Homework:
Please read "Compounds and Mixtures"
(on the website from last week)

Separating and Identifying Mixtures:
(Lab Tables should be neat from 7th grade classes)

Continue to ***separate***, ***identify*** and ***answer*** questions

Warm-up

Write down 3 compounds and 3 mixtures.

Compounds & Mixtures

Mixtures

- Can be separated into the individual parts using a physical property because the parts are not chemically bonded to each other
- H_2O and sand – can be separated by filtration to get sand and H_2O in different containers

Compounds

- Chemically bonded so they can't be separated by physical properties
- H_2O – can't filter and get H and O
- Can separate using a chemical reaction in order to break the bonds

Material ID	Chemical Formula	Color	Phase at room temp. (solid, liquid, or gas)	Particle size (less than 1 mm, 1-5 mm, 6-10 mm, 11-20 mm, 21 mm or over)	Attracted to magnet (yes or no)	Soluble in water?/ Does it dissolve? (Yes or no)	More or less dense than water? *Density of water is 1 g/ml Less will float More will sink*	Your sample ID - fill in this column once you think you know which one is your sample
A	$C_{12}H_{22}O_{11}$	white	solid	less than 1 mm	no	yes	More (what doesn't dissolve will sink)	
B	SiO_2	Whitish tan	solid	less than 1 mm	no	no	more	
C	Fe and Cu	orange/ red	solid	1-5 mm	yes	no	more	
D	$C_{12}H_{19}NO_2$	black	solid	less than 1 mm	no	no	less	
E	$C_{12}H_{19}NO_2$	black	solid	1-5 mm	no	no	less	
F	varies	white	solid	6-10 mm	no	no	more	
G	varies	black	solid	6-10 mm	no	no	more	
H	$Al_2Si_2O_5(O)_4$	grey	solid	1-5 mm	no	no	less	
I	$C_6H_{12}O_6$	white	solid	1-5 mm	no	no	less	
J	C_3H_8	white	solid	6-10 mm	no	no	less	
K	wood	tan	solid	6-10 mm	no	no	less	
L	Cu	orange/ red	solid	6-10 mm	no	no	more	
M	Fe	black	solid	1-5 mm	yes	no	more	
N	Al	silver	solid	6-10 mm	no	no	less	

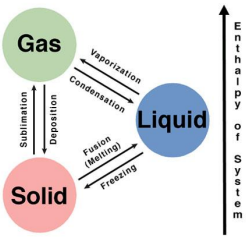
Chemical and physical changes

Physical Change

- A **Physical change** is a change in a substance that does not change what the substance is.

Physical Change - examples

- **Examples** of physical change include:
  - Change in shape
  - Change in size
  - Change in phase
    - Melting (solid to liquid)
    - Boiling (liquid to gas)
    - Evaporation (liquid to gas)
    - Condensation (gas to liquid)
    - Freezing (liquid to solid)
    - Sublimation (solid to gas)
    - Deposition (gas to solid)



Physical Change

- Physical changes might be caused by:
  - Grinding
  - Cutting
  - Crushing
  - Bending
  - Breaking
  - Heating/cooling
    - (change in phase)
  - squishing

Physical Change

- **Evidence that a physical change has occurred might include**:
  - Change in shape
  - Change in form
  - Change in size
  - Change in **phase** (This is always a physical change!)
  - Physical changes are usually reversible

Physical change

- What could you do to these items to cause a physical change to occur?

Chemical change

- A **chemical change** is a change in which a substance is changed into a different substance. (You've changed what it **is**.)

Chemical change

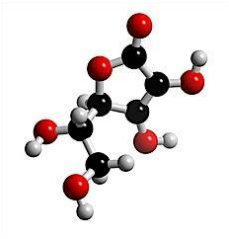
- **Examples** of chemical changes include:
  - Burning
  - Rusting
  - Tarnishing
  - Decomposing
  - Polymerization





Chemical change

- Chemical changes occur when a **chemical reaction** causes bonds between atoms to break or to form.



Chemical Change: Evidence

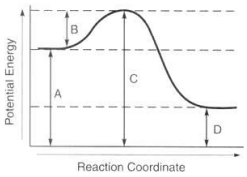
- **Evidence that a chemical change has occurred might include:**
  - A color change
  - An odor change
  - Formation of a precipitate (you mix two liquids and make a solid)
  - Gas is formed (bubbles)
  - Changes in physical properties.

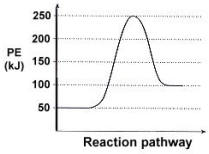
Chemical change

- During a chemical change **energy can be:**
- **Absorbed**
- **Released** in the form of:
  - Heat
  - Light


Chemical change – Chemical reactions

- When a chemical change occurs, energy is either released or absorbed.





What happens with m&m's? Why?

What supplies would you need?