

3. Draw the following structures on separate sheet of paper. The type of structure is in parentheses.
- a.) Methane (structural formula)      b.) pentane (carbon backbone)      c.) heptane (stick structure)
- d.) 4-methyl decane (structural formula)      e.) 2,2 dimethyl 4-ethyl hexane (carbon backbone)
- f.) 3-diethylpentane (stick structure)

### Change – Physical and Chemical

- I can distinguish physical and chemical processes.
- I can identify physical changes by labeling a heating curve diagram
- I can identify 4 indications of a chemical change.
- I can determine the number of atoms in a unit formula and in a reaction.
- I can predict the products of a combustion reaction.
- I can balance a combustion reaction.

1. List the indicators of a chemical change:

color change  
energy change  
gas formation  
precipitate formation

2. Identify the following as chemical or physical processes. (P or C)

C fireworks explode

P KCl dissolves in water

C cookies bake in the oven

C sodium reacts with water

C paper burns (fire!)

P water is absorbed by a paper towel

P solid iodine sublimates into a gas phase change

C a flower develops on the stem growth - life

P water condenses on the outside of a glass phase change

P piece of copper is cut in half

3. Identify the phase change

a. Gas to solid vapor deposition

b. Solid to gas sublimation

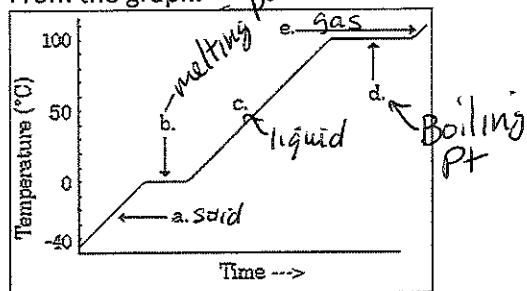
c. Gas to liquid condensation

d. Liquid to gas boil, evaporate vaporize

e. liquid to solid solidify, freeze

f. solid to liquid melt

4. From the graph:



- a.) What phase is e? gas
- b.) What occurs in d when going from e to c? condensation
- c.) What temperature is the melting point? 0°C
- d.) What phase is the substance at 70°C? liquid
- e.) Label all the phases and phase changes on the heat curve.

5. Determine the number of carbon atoms in each formula:

$$7 \text{ C}_4\text{H}_9\text{OH} \quad \underline{28}$$

$$7 \times 4 = 28$$

$$4 \text{ HC}_2\text{H}_3\text{O}_2 \quad \underline{8}$$

$$4 \times 2 = 8$$

$$3 \text{ Al}_2(\text{CO}_3)_3 \quad \underline{9}$$

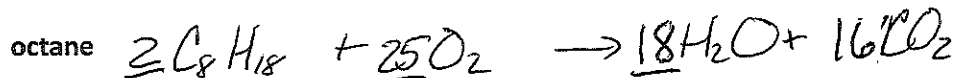
$$3 \times (1 \times 3) = 9$$

6. Identify the 3 requirements of combustion:

fuel      oxygen      ignition source

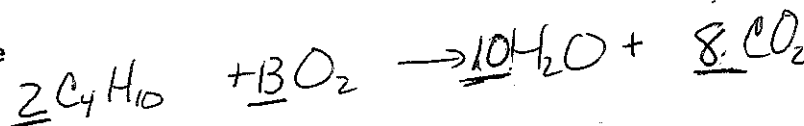
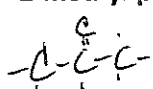
7. Identify the products of complete combustion: CO<sub>2</sub> and H<sub>2</sub>O

8. Write out the combustion reaction and balance the following combustion reactions:

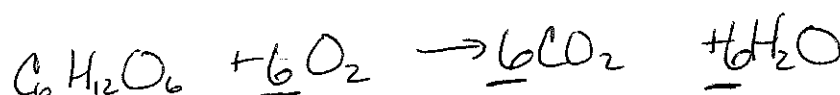


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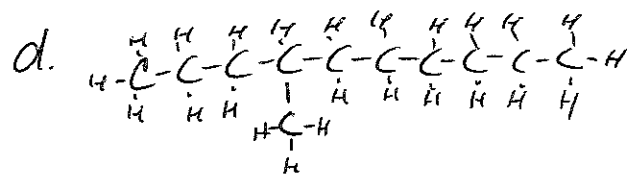
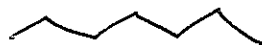
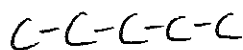
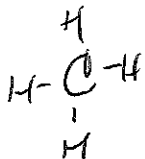
2-methyl propane



C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>

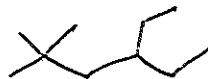


3. a.) methane    b) pentane  
(C backbone)    c. heptane



4-methyl decane

e. 2,2 dimethyl 4 ethyl  
hexane



3,3-diethyl pentane

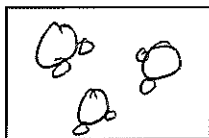


Introduction

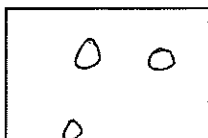
- I can define chemistry and matter.
- I can distinguish between different types of matter: substances and mixtures.
- I can distinguish between chemical symbols, formulas, and equations
- I can explain the parts of a chemical reaction.
- I can distinguish between different types of matter: elements and compounds.

1. Define chemistry. The study of the composition, structure + properties of matter + the changes it undergoes
2. Define matter. anything that has mass + takes up space, made of atoms  
 Give examples: solid, liquid, gas, table, water, air, elements, compounds  
 Give examples of that which is not matter: energy such as electrical energy, nuclear energy, lightning, sound, light
3. Draw:

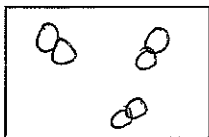
a compound



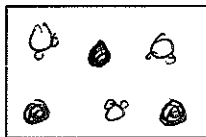
element with 1 atom



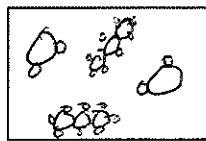
a mixture of 2 types of elements



a mixture of an element and compound

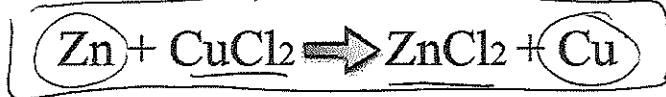


a mixture of 2 types of compounds



answers will vary

4. a. Give examples of pure substances. elements, compounds  
 (Fe, H, O<sub>2</sub>, Na) (water, NaCl, C<sub>5</sub>H<sub>8</sub>)  
 b. Give examples of mixtures. fruit salad, salt dissolved in water
5. What is the difference between a heterogenous and homogenous mixture?  
↳ can see the different parts      ↳ (solutions) cannot see the different parts
6. a. Give examples of elements. K, Cl<sub>2</sub>, S, He  
 B. Give examples of compounds. H<sub>2</sub>O, NaCl, C<sub>5</sub>H<sub>12</sub>, CaCO<sub>3</sub>
7. Circle the symbols, underline the formulas, and put a box around the equation.

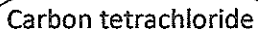
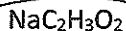


8. From the question #6, write the reactants: Zn + CuCl<sub>2</sub> (left side)  
 Write the products: ZnCl<sub>2</sub> + Cu (Right side)

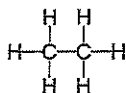
Composition

- I can distinguish organic and inorganic chemicals.
- I can name hydrocarbon structures (alkanes & branched hydrocarbons) from models of structural formulas, carbon backbone structure, and stick structures.
- I can model/draw hydrocarbon structure from the name and determine the molecular formula.

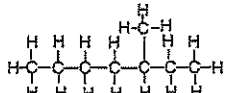
1. Circle the organic compounds:



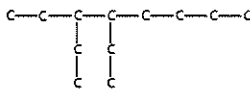
2. Name the following structures:



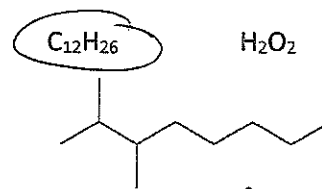
ethane



3-methyl heptane



3,4 diethyl octane



2,3 dimethyl octane