



Honors Chemistry

Monday August 24th 2015

Agenda

- * Warm Up: NONE
- * Continue Topic 1.1.2 Chemical Change
- * Practice Balancing Equations worksheet

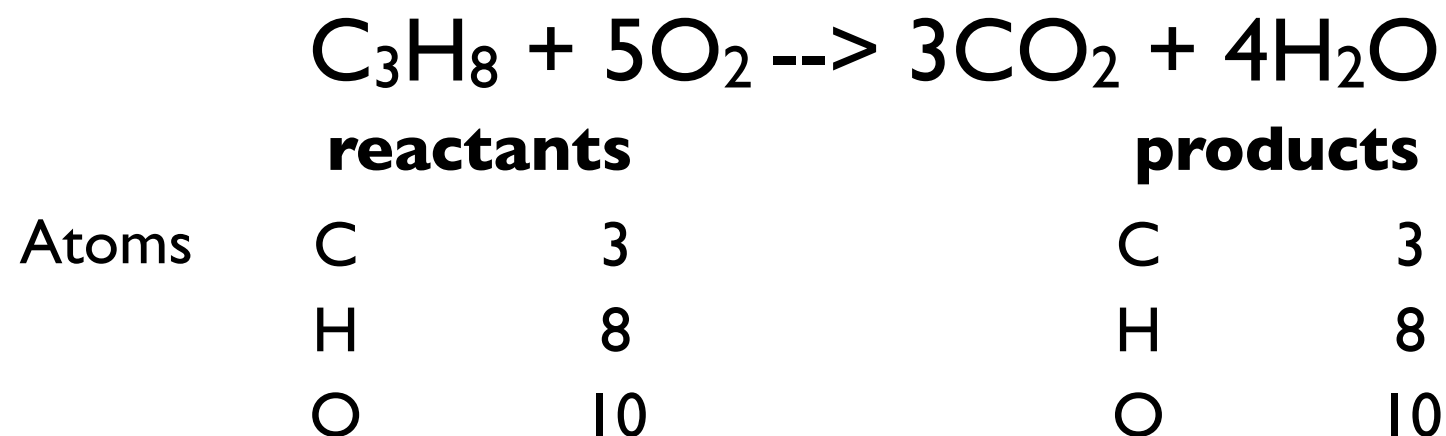
HOMEWORK

- * **Topic 1.1 Introduction to Particulate Nature of Matter & Chemical Change vocabulary**
- * DUE September 4th 2015
- * **Balancing Chemical Equations Worksheet**
- * DUE TODAY or August 26th 2015 (*only if we didn't get to it on Thurs/Fri*)

Introduction to the Particulate Nature of Matter and Chemical Change

Balancing chemical equations

- A chemical reaction involves atoms joining together in different ways and electrons redistributing themselves between the atoms
 - **Atoms or electrons will never be created or destroyed!!!**
 - In chemical equations, there must be the same number of atoms on either side of the equation - representing the same number of atoms before and after the reaction took place:



Introduction to the Particulate Nature of Matter and Chemical Change

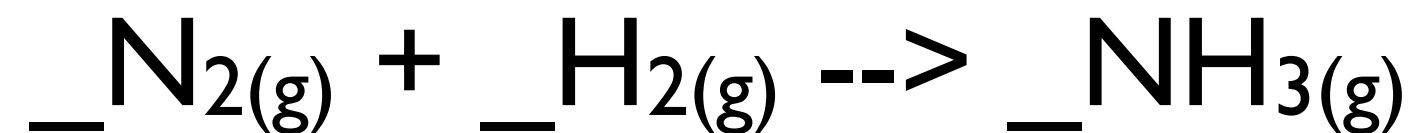
State symbols

- **(s) = solid**
- **(l) = liquid**
- **(g) = gas**
- **(aq) = aqueous (dissolved in water)**

Practice Problem

... I Do ...

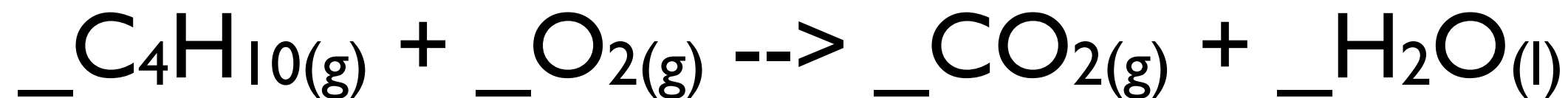
Balance the following equation:



Practice Problem

... We Do ...

Balance the following equation:

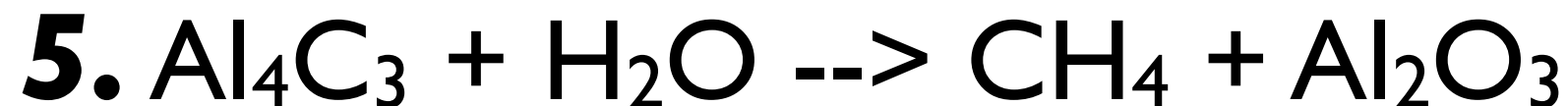
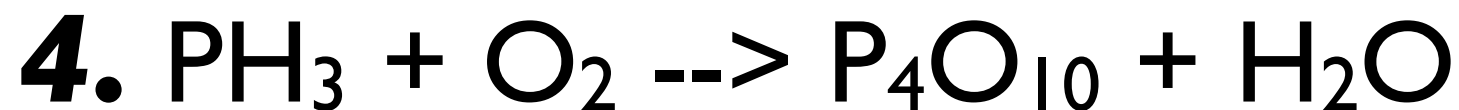
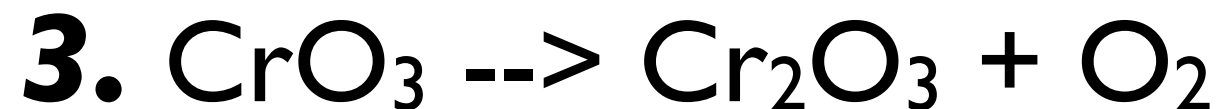
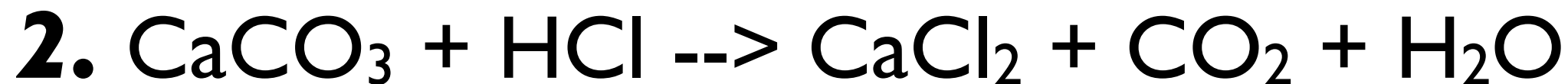


Practice Problem

15 mins

... You Do ...

Working with a partner, balance the equations for the following chemical reactions and include the state symbols.

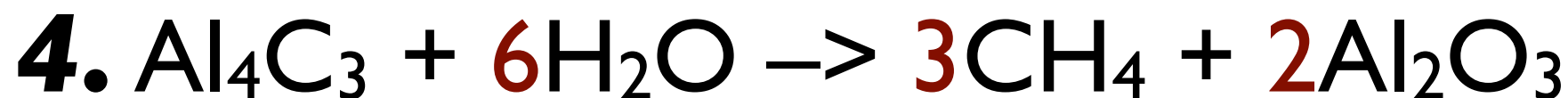
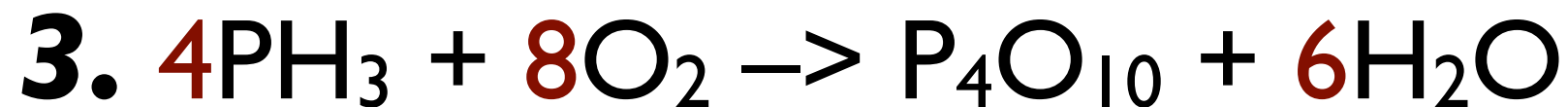
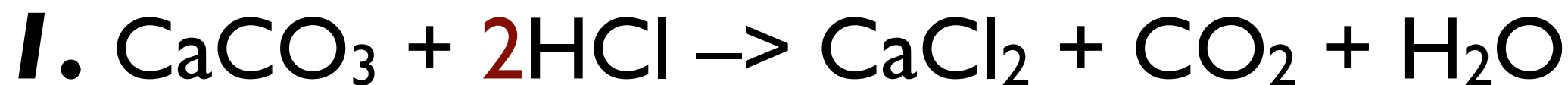


Practice Problem

15 mins

... You Do ...

Working with a partner, balance the equations for the following chemical reactions and include the state symbols.



Introduction to the Particulate Nature of Matter and Chemical Change

Mixtures

- A **pure substance** is matter that has constant composition throughout.
 - i.e. NaCl, graphite, H₂O
- A **mixture** is made up from combined pure substances.
 - i.e. sea water is a mixture of NaCl and H₂O (contains other minerals and salts too)
- A **homogeneous mixture** has uniform composition and properties throughout the mixture.
 - i.e. metal alloys (stainless steel), coffee, urine
- A **heterogeneous mixture** has a non-uniform composition and hence their properties vary throughout the mixture.
 - i.e. stew, water/sand

Think Pair Share

**Turn to your shoulder partner
and list an example of a:**

Homogeneous Mixture

Heterogeneous Mixture

Introduction to the Particulate Nature of Matter and Chemical Change

Mixtures

matter: any substance that occupies space and has mass

mixture: a combination of two or more pure substances that retain their individual properties

pure substance: has a definite and constant composition

homogenous:
has both uniform composition and properties throughout

heterogenous:
has non-uniform composition and varying properties throughout

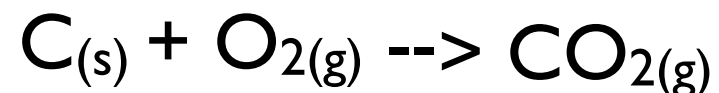
element: made up of elements that have the same atomic number

compound: made up of a combination of atoms or ions in a fixed ratio and having different properties from the constituent elements

Introduction to the Particulate Nature of Matter and Chemical Change

Some reaction types

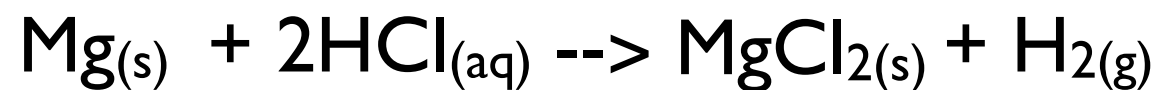
- **Combination** or **Synthesis** reactions involve the combination of two or more substances to produce a single product:



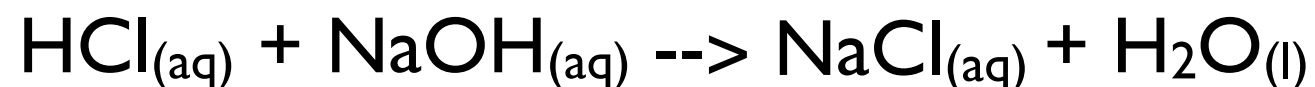
- **Decomposition** reactions involve a single reactant being broken down into two or more products:



- **Single Replacement** reactions occur when one element replaces another in a compound. An example of this type of reaction is a redox reaction:



- **Double Replacement** reactions occur between ions in solution to form insoluble substances and weak non-electrolytes, also termed **metathesis** reactions:



Topic 1.1

Introduction to the Particulate Nature of Matter and Chemical Change

- ✓ Understand that compounds have different properties to the elements they are made from
- ✓ Understand how to balance chemical equations
- ✓ Understand how to use state symbols and chemical equations
- ✓ Describe the differences between elements, compounds and mixtures
- ✓ Understand the differences between homogeneous and heterogeneous mixtures

Topic 1.1 Check:

- * **Answer the following questions on your handout:**
 - * Describe one example of a compound that reacts differently than its parts (other than what we talked about in class)
 - * Balance the following chemical equation and explain the importance of balancing equations
 - * $\text{Al}_{(s)} + \text{O}_{2(g)} \rightarrow \text{Al}_2\text{O}_{3(s)}$
 - * Describe the difference between an element, compound, and a mixture.
 - * Explain the difference between a homogeneous and heterogeneous mixture... Give an example of both.

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