

Pre-Lab Questions:

1. What is an Exothermic Reaction?
2. What is an Endothermic Reaction?
3. What does a change in temperature tell you about the energy in a reaction?
4. If a reaction occurs and no temp. change can be measured, what might that indicate about the reaction?
5. If a reaction occurs and no temp. change can be measured, what might that indicate about the reaction?

For each reaction below write the Balanced Chemical Equation and indicate if Energy is a Reactant or a Product.

Reaction #1 Dissolution of ammonium nitrate (NH_4NO_3):

Beginning temperature (Celsius) _____

End temperature (Celsius) _____

- Is this an exothermic or an endothermic reaction? How do you know?
- Observations:

Reaction #2 Decomposition of hydrogen peroxide (H_2O_2):

Beginning temperature (Celsius) _____

End temperature (Celsius) _____

- Is this an exothermic or an endothermic reaction? How do you know?
- Observations:

Reaction #3 Dissolution of calcium chloride (CaCl_2)

Beginning temperature (Celsius) _____

End temperature (Celsius) _____

- Is this an exothermic or an endothermic reaction? How do you know?
- Observations:

What Are the Various Types of Reactions?

There are millions of possible chemical reactions. However, all these reactions can be classified into several general types. Classifying reactions makes it easier to identify any similarities or differences. Knowing the type of reaction can also help you predict the products that will form.

Type of Reaction	Definition	Equation
Synthesis (addition)		$\overline{\bigcirc} + \overline{\bigcirc} \rightarrow \overline{\bigcirc\bigcirc}$
Decomposition (dissolution)		$\overline{\bigcirc\bigcirc} \rightarrow \overline{\bigcirc} + \overline{\bigcirc}$
Single-Replacement (displacement)		$\overline{\bigcirc\bigcirc} + \overline{\bigcirc} \rightarrow \overline{\bigcirc\bigcirc} + \overline{\bigcirc}$
Double-Replacement (displacement)		$\overline{\bigcirc\bigcirc} + \overline{\bigcirc\bigcirc} \rightarrow \overline{\bigcirc\bigcirc} + \overline{\bigcirc\bigcirc}$
Combustion		$C_xH_y + O_2 \rightarrow CO_2 + H_2O$
Acid-Base (neutralization)		Acid + Base \rightarrow Salt + Water $HX + MOH \rightarrow MX + H_2O$ (X represents a negative ion. M represents a positive ion.)

- **Classify** each of the following reactions as synthesis (S), decomposition (D), single-replacement (SR), double-replacement (DR), Acid-Base (AB), or combustion (C). Then **balance** the chemical equation.

