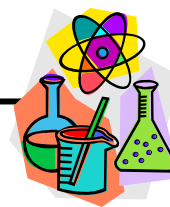


Grade 9 Unit B: Matter and Chemical Change



Chemical Reactions

Chemical reaction: The combination of two or more substances to form a new substance.

Chemical compound: A substance formed when two or more elements combine through a chemical reaction.

Salt is a chemical compound made by a chemical reaction between sodium and chlorine.

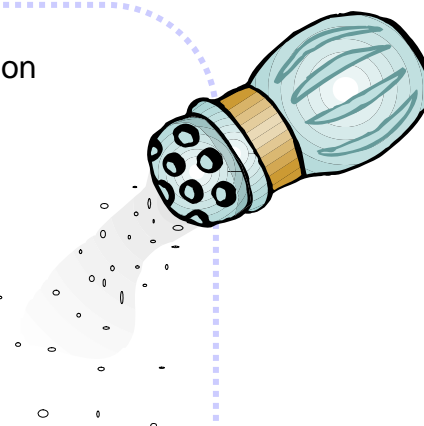
The **word equation** for this chemical reaction is:

Sodium + Chlorine = Sodium Chloride
(Element) (Element) (Compound)

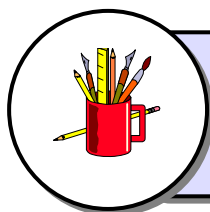
The **chemical formula** for this chemical reaction is:



NaCl represents a **molecule** of salt.



1. Discuss chemical compounds as a class and name some that are used in your everyday life, e.g., water, carbon dioxide.



Use Tool [Discussion Notes](#).

2. With a group, investigate and discuss dangerous chemical reactions that could happen at home, in the classroom or in the community. List examples that you came up with in the space below.



Dangerous chemical reactions at home	
Dangerous chemical reactions in the classroom	
Dangerous chemical reactions in the community	

3. Investigate the terms “combustion” and “corrosion” and write a description of each of these types of reactions in your own words.

Combustion

Corrosion

4. Review [Science Inquiry](#) and [Safety in Science](#) before you begin.

Observe a variety of chemical reactions in the classroom. Take notes of your observations. Discuss your observations with others in your group.



Use Tools [Planning an Experiment](#), [Experiment/Investigation Template I](#) and [Analyzing and Interpreting Experiment Results](#).

5. Discuss the main differences between physical and chemical changes with a group and fill in the chart below.

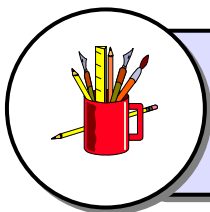
PHYSICAL CHANGES	CHEMICAL CHANGES
<i>change of state</i>	<i>new product is made</i>

Physical changes: When the form or state of a substance changes but not the particles that it is made of, e.g., melting ice, cutting hair.



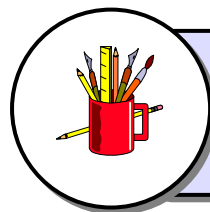
Chemical changes: When a substance changes into a different substance, e.g., burning paper changes into smoke and black ashes (carbon).

6. In small groups, answer the following question using a variety of research sources and strategies. This may include planning and conducting an experiment.
- What factors affect physical changes in matter?
 - What factors affect chemical changes in matter?



Use Tool [Finding Sources](#).

7. With a partner, plan and conduct an experiment to examine how temperature and surface area affect reaction rates, e.g., how will reaction rates differ when placing loose sugar and cubed sugar into water at various temperatures. Before you begin, make sure you understand the process of [Scientific Inquiry](#) and the rules for [Safety in Science](#).



Use Tools [Planning an Experiment](#), [Experiment/Investigation Template I](#) and [Analyzing and Interpreting Experiment Results](#).