Important Concepts . . .

Preview Review

Science *Grade 9*

W2 - Lesson 5: Writing Chemical Equations

V5-07

Important Concepts of Grade 9 Science

W1 - Lesson 1 ..... Electrical Principles
W1 - Lesson 2 .....Electrical Circuits
W1 - Lesson 3A ..... Energy Consumption
W1 - Lesson 3B ..... The Distribution of Matter in Space
W1 - Lesson 4 .....Objects in Space
W1 - Lesson 5 ..... Optical and Radio Telescopes
W1- Quiz
W2 - Lesson 1 ..... Physical and Chemical Properties of Materials
W2 - Lesson 2 ..... Chemical Reactions
W2 - Lesson 3 ..... Using the Periodic Table
W2 - Lesson 4 ..... Naming Chemical Compunds
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W3 - Lesson 3B .....Organisms and Matter in their Environment
W3 - Lesson 4 ..... Biological and Chemical Monitoring/Acids and Bases
W3 - Lesson 5 ..... Transfer of Materials through the Air, Ground, and Water/Biological Impacts of Hazardous Chemicals
W3 - Quiz

Materials Required

Textbook:
Science in Action 9

Science Grade 9
Version 5
Preview/Review W2 - Lesson 5

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The Alberta Distance Learning Centre has an Internet site that you may find useful. The address is as follows: **http://www.adlc.ca**

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Preview/Review Concepts for Grade Nine Science

W2 - Lesson 5:
Writing Chemical Equations

OUTLINE

By the end of this lesson, you should

- identify reactants and products of chemical reactions
- make a word equation of a chemical reaction
- write the chemical formulas of some chemical reactions

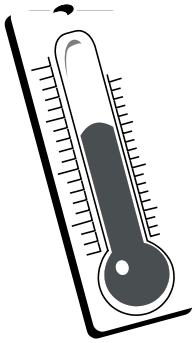
GLOSSARY

reactant - substance that reacts with another substance or substances in a chemical reaction to create new substances with different properties

product - new substance produced in a chemical reaction between reactants

W2 - Lesson 5: Writing Chemical Equations

Now that you are familiar with naming chemical compounds, you can look at writing word equations and the chemical formulas for different chemical reactions. You will also have some time to study for your quiz.



At the end of the last lesson, you were introduced to writing word equations for chemical reactions. Remember that a chemical reaction occurs when two or more substances react to form new substances. A chemical change has taken place. This can be a change in colour, change in odour, the formation of a solid or gas, or the absorption or release of heat energy.

A sample chemical reaction is shown below.

$$Cu_{(s)} + O_{2(g)} \Longrightarrow CuO_{(s)}$$

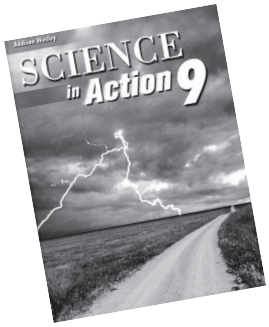
We would write **the word equation** for this reaction as

copper metal + oxygen ⟹ copper (II) oxide

The reactants of the reaction are copper metal and oxygen. The product of the reaction is copper (II) oxide.

A second chemical reaction is shown below.

hydrogen + iron (III) oxide ⟹ iron metal + water



We would write **the chemical equation** for this reaction as

$$H_{2(g)} + Fe_2O_{3(s)} \Longrightarrow Fe_{(s)} + H_2O_{(g)}$$

Read pages 506-507 of *Science in Action 9*.

1. Make word equations for the following chemical reactions.

a. $H_{2(g} + Cl_{2(g)} \Longrightarrow HCl_{(g)}$

_____ + _____ ⟹ _____

b. $Cs_{2(l)} + Cl_{2(g)} \Longrightarrow CCl_{4(l)} + S_2Cl_{2(g)}$

_____ + _____ ⟹ _____ + _____

c. $N_{2(g)} + H_{2(g)} \Longrightarrow NH_{3(g)}$

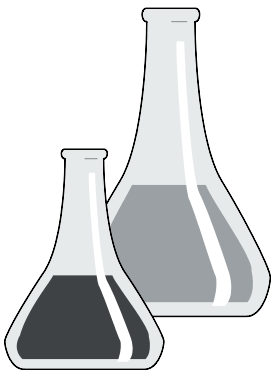
_____ + _____ ⟹ _____

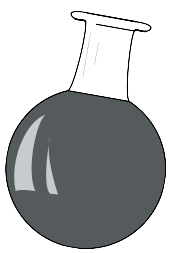
d. $K_{(s)} + AlCl_{3(s)} \Longrightarrow Al_{(s)} + KCl_{(s)}$

_____ + _____ ⟹ _____ + _____

e. $NaCl_{(l)} \Longrightarrow Na_{(l)} + Cl_{2(g)}$

_____ ⟹ _____ + _____





2. Write the chemical formulas for the following chemical reactions.

a. **mercury (II) oxide ⟹ mercury + oxygen**

_____ ⟹ _____ + _____

b. **hydrogen peroxide ⟹ water + oxygen**

_____ ⟹ _____ + _____

c. **carbon disulfide + chlorine gas → carbon tetrachloride + disulfur dichloride**

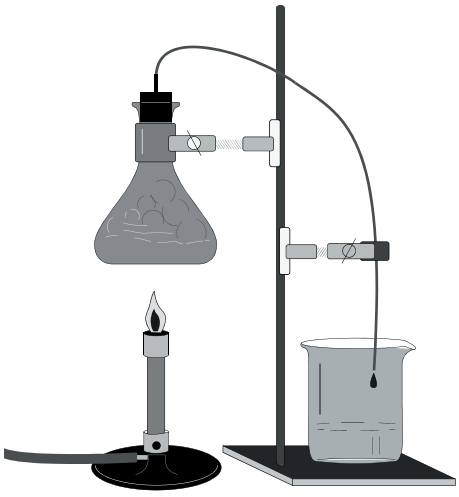
_____ + _____ ⟹ _____ + _____

d. **potassium sulfide + copper (II) bromide → copper (II) sulfide + potassium bromide**

_____ + _____ ⟹ _____ + _____

e. **dihydrogen monosulfide + silver metal → silver + hydrogen sulfide**

_____ + _____ ⟹ _____ + _____



Study Time

Use the remaining time of this lesson to review the main concepts of the week for the quiz you will be writing. Here are some concepts to review.

3. **W2 - Lesson 1: The classification of matter**

a. Name six types of pure substances and mixtures.

_____ _____

_____ _____

_____ _____

b. The conversion of a solid into a gas is called

_____

c. Give two examples each of physical and chemical properties.

_____

_____

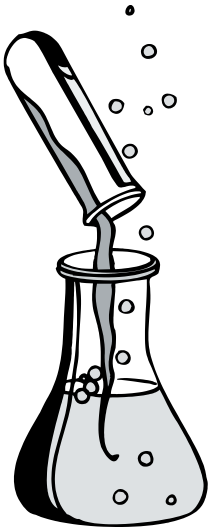
_____

_____

d. Draw the WHMIS symbol for a corrosive material.

4. **W2 - Lesson 2: Chemical Reactions**

   a. Write word equations for combustion and corrosion.



   b. Identify two factors that affect the rate of a chemical reaction.

5. **W2 - Lesson 3: Using the Periodic Table**

   a. The symbol for chlorine is _____. Its atoms contain _____ protons and _____ electrons. It is found in Period _____, Group _____, which can also be called the _____.

   b. Explain two differences between ionic and molecular compounds.

6. **W2 - Lesson 4: Naming Chemical Compounds**

   a. Name the following compounds:

   $ZnCl_2$ _____

   SnS _____

   OF_2 _____

   b. Write the chemical formulas for the following names:

   manganese (II) iodide _____

   boron tribromide _____

7. **W2 - Lesson 5: Chemical Reactions**

Write the word equation for the following chemical reaction and identify the products.

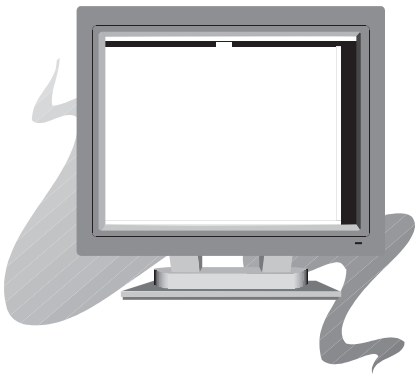
KCl + NaBr ⟹ NaCl + KBr

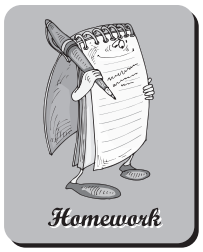
_____ + _____ ⟹ _____ + _____

Internet Websites

The address for the website below was valid at the time of printing.

http://www.geocities.com/kanashii_panda_S/Topic5.htm





Homework

8. Here is one last chemical reaction to try. Make Oobleck!

   Measure 1 cup of cornstarch and place into a bowl. Add small amounts of water until the mixture begins to thicken. Stir carefully. Do not fight the viscosity of the mixture.

   Pour some of the mixture into an aluminum pie pan. Try to cut it with scissors as you pour it.

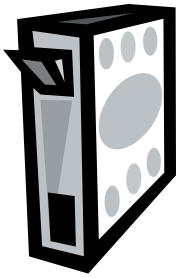
   Tap the mixture in the pie pan with your hands.

   Pour some of the mixture into your hands and roll it into a ball. Does the ball retain its shape?

   _____

   _____

   _____



   Form a long rope (snake) with the mixture and pull it apart quickly. What happens?

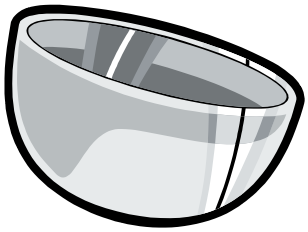
   _____

   _____

   _____

   With a spoon, attempt to draw in the mixture. Can you write your name? Describe what happened.

   _____



   _____

   _____

   _____