

Important Concepts . . .

Preview Review



Science

Grade 9 TEACHER KEY

***W2 - Lesson 5: Writing Chemical
Equations***

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
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W1- Quiz	
W2 - Lesson 1	Physical and Chemical Properties of Materials
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W2 - Lesson 4	Naming Chemical Compounds
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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 TEACHER KEY

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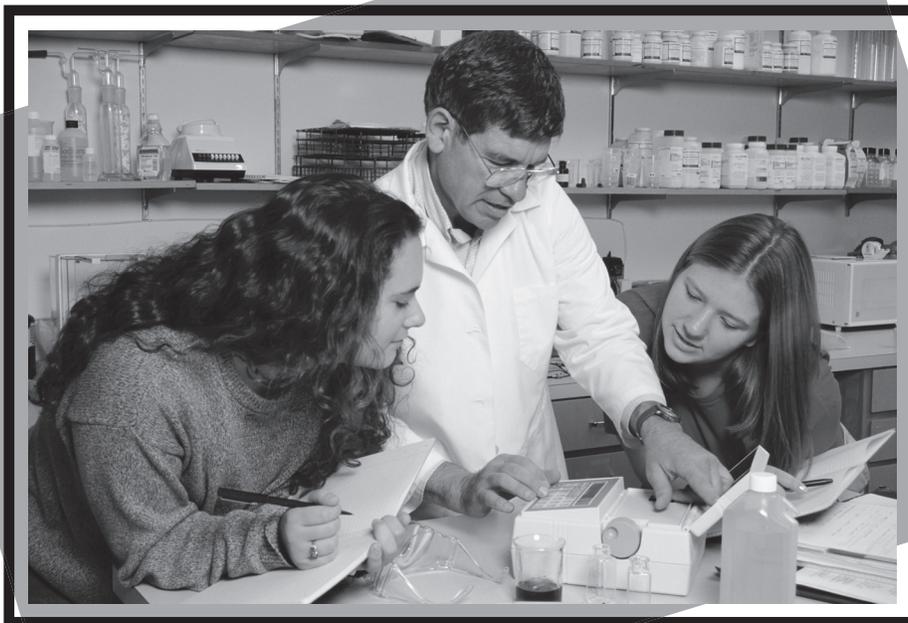
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Preview/Review Concepts for Grade Nine Science

TEACHER KEY



*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

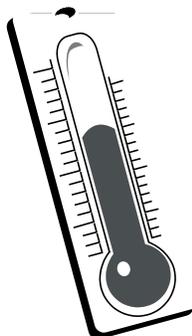
reactant - substance that reacts with another substance or substances in a chemical reaction to create new substances with different properties

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.



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



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

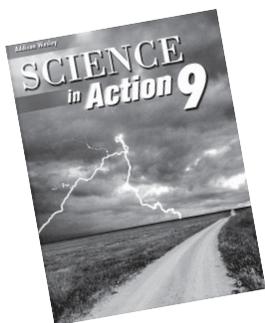
A second chemical reaction is shown below.



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



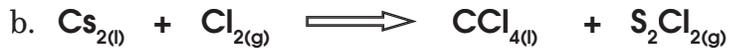
Read pages 506-507 of *Science in Action 9*.



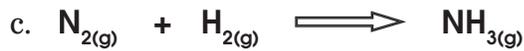
1. Make word equations for the following chemical reactions.



hydrogen gas + chlorine gas \Rightarrow hydrogen chloride



cesium + chlorine gas \Rightarrow carbon tetrachloride + disulfur dichloride



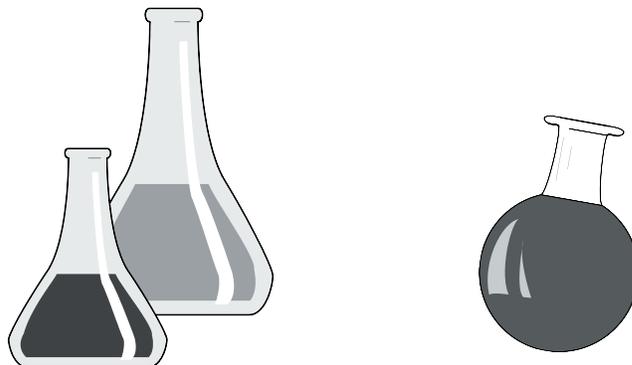
nitrogen gas + hydrogen gas \Rightarrow ammonia
(nitrogen trihydride)



potassium + aluminum chloride \Rightarrow aluminum + potassium chloride



sodium chloride \Rightarrow sodium + chlorine gas



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

a. mercury (II) oxide \Longrightarrow mercury + oxygen



b. hydrogen peroxide \Longrightarrow water + oxygen



c. carbon disulfide + chlorine gas \Longrightarrow carbon tetrachloride + disulfur dichloride



d. potassium sulfide + copper (II) bromide \Longrightarrow copper (II) sulfide + potassium bromide



e. dihydrogen monosulfide + silver metal \Longrightarrow silver + hydrogen sulfide

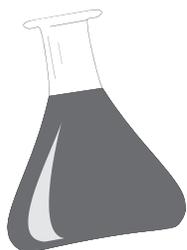


Study Time

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.



<u><i>elements</i></u>	<u><i>compounds</i></u>
<u><i>mechanical mixtures</i></u>	<u><i>solutions</i></u>
<u><i>suspensions</i></u>	<u><i>colloids</i></u>

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

sublimation

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

Physical – color, lustre, melting point, boiling point, hardness, malleability, ductility, crystal shape, solubility, density, or conductivity.

Chemical – reaction with acids, ability to burn, reaction with water, behavior in air, reaction to heat.

- d. Draw the WHMIS symbol for a corrosive material.





4. W2 - Lesson 2: Chemical Reactions

- a. Write word equations for combustion and corrosion.

Combustion: methane + oxygen \rightleftharpoons carbon

dioxide + water + energy

Corrosion: metal (iron) + oxygen \rightleftharpoons iron oxide

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

Temperature, a catalyst, the concentration of

reactants, increase the surface area of the

reactants.

5. W2 - Lesson 3: Using the Periodic Table

- a. The symbol for chlorine is ***Cl***. Its atoms contain ***17*** protons and ***17*** electrons. It is found in Period ***3***, Group ***17***, which can also be called the ***halogens***.

- b. Explain two differences between ionic and molecular compounds.

Ionic compounds are made of a metal and

a non-metal element. They conduct electricity.

Molecular compounds are made of non-metals.

They do not conduct electricity.

6. W2 - Lesson 4: Naming Chemical Compounds

a. Name the following compounds:

 $ZnCl_2$ zinc chloride SnS tin (II) sulfide OF_2 oxygen difluoride

b. Write the chemical formulas for the following names:

manganese (II) iodide MnI_2 boron tribromide BBr_3

7. W2 - Lesson 5: Chemical Reactions

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



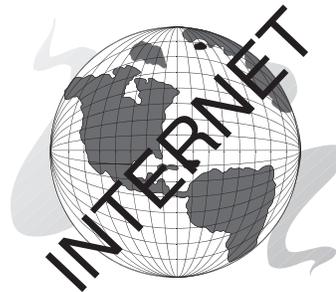
potassium chloride + sodium bromide \implies sodium chloride + potassium bromide

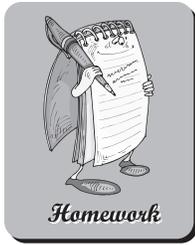


Internet Websites

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?

No, it falls apart.

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

It falls apart.

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

