

Name: _____ Period: _____ Date: _____

Chemistry of Gases

Assignment - Student Edition

I. Vocabulary Matchup

Match the definition with its correct term.

Definition	Term
1. Chemicals which speed up a reaction but do not get used up in the reaction.	a) Pop test
2. The test for hydrogen	b) Carbon dioxide
3. The high-energy, spread out state of oxygen, hydrogen and carbon dioxide.	c) Glowing splint test
4. Gas which is needed by living things.	d) Hydrogen
5. The test for carbon dioxide	e) Compound
6. Groups of atoms which are bonded together	f) Catalyst
7. Highly flammable gas sometimes used as a fuel.	g) Oxygen
8. The test for oxygen	h) Limewater test
9. The gas released by living things and during combustion reactions.	i) Gas
10. Groups of different atoms bonded together.	j) Molecule

II. True or False?

Decide if the following statements are true or false. Correct the false statements to make them true.

1. Gas particles always consist of independent atoms.
2. Gases have no fixed shape or volume.
3. Oxygen gas is produced during respiration and used during photosynthesis.
4. Hydrogen gas is highly flammable while carbon dioxide is not.
5. If a lit splint was placed in carbon dioxide it would make a 'pop' sound.







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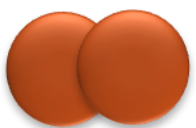
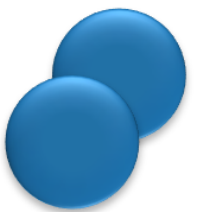

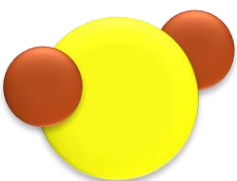

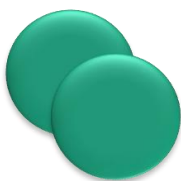

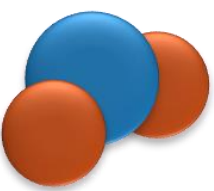
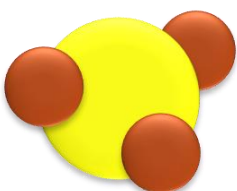
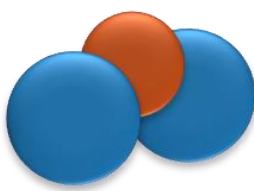

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III. Naming Gases

Study the gases shown in each diagram below. For each gas:

- Use the color code to give the chemical formula and name the gas.

Color Code for Atoms					
					
Hydrogen	Oxygen	Nitrogen	Carbon	Chlorine	Sulfur

<p>1.</p>  <p>Formula: Name:</p>	<p>2.</p>  <p>Formula: Name:</p>	<p>3.</p>  <p>Formula: Name:</p>	<p>4.</p>  <p>Formula: Name:</p>
<p>5.</p>  <p>Formula: Name:</p>	<p>6.</p>  <p>Formula: Name:</p>	<p>7.</p>  <p>Formula: Name:</p>	<p>8.</p>  <p>Formula: Name:</p>
<p>9.</p>  <p>Formula: Name:</p>	<p>10.</p>  <p>Formula: Name:</p>	<p>11.</p>  <p>Formula: Name:</p>	<p>12.</p>  <p>Formula: Name:</p>

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Questions:

Which of the gases in the table above are:

1. Elements?

2. Both molecules and compounds?

3. Molecules but not compounds?

IV. Physical Properties of Gases

The table below shows the properties of oxygen, hydrogen and carbon dioxide. Use it to answer the questions which follow.

Properties	Oxygen	Hydrogen	Carbon Dioxide
Color:	Transparent/ colorless	Transparent/ colorless	Transparent/ colorless
Smell:	Odorless	Odorless	Odorless
Density:	1.15 g cm ⁻³	0.07 g cm ⁻³	1.55 g cm ⁻³
Boiling point:	-183°C	-252°C	-
Melting point:	-218°C	-259°C	Sublimes at -79°C
% in atmosphere:	21%	0.000005%	0.035%
Solubility in water:	Slightly soluble	Insoluble	Moderately soluble

1. List the gases from most to least abundant in the air we breathe.

2. List the gases from most to least dense.

3. If you cooled these gases, which would become liquid first?

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4. Why is it easier to use a chemical test to identify these gases rather than your senses?

5. Which gas would be most abundant in sea water? Give a reason for your answer.

6. If each of the three gases were placed in separate, equal-sized balloons. How could you decide which gas was oxygen, which was carbon dioxide, and which was hydrogen?

V. Making and Testing Gases

The phrases below are from different methods for making and testing oxygen, hydrogen, and carbon dioxide gas. Indicate next to each statement using the letters O (oxygen), H (hydrogen) and C (carbon dioxide) to which method each statement belongs.

1. Combine hydrogen peroxide and manganese dioxide in a conical flask with delivery tube.
2. Bubble the gas through limewater.
3. Add magnesium metal to dilute hydrochloric acid into a conical flask delivery tube.
4. A squeaky pop sound is heard.
5. Place a glowing splint over the mouth of the test tube.
6. Place a lit splint over the mouth of a test tube.
7. Add marble chips and dilute acid to a conical flask with delivery tube.
8. Limewater turns cloudy.
9. The glowing splint relights.
10. Collect the gas in an upside-down test tube or measuring cylinder submerged in water.