

NAME: ANSWERS
 TEACHER: _____

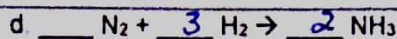
DATE DUE: _____

Year 9 Term 1 – Chemistry

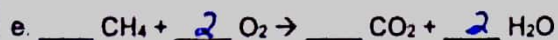
HOMWORK SHEET No. 2 – Learning Goal 2

/61

/6	<p>1. Write definitions for the following terms:</p> <p>(a) molecule: <u>two or more atoms chemically bonded together</u></p> <p>(b) compound: <u>two or more types of atoms chemically bonded together</u></p> <p>(c) chemical reaction: <u>a process involving the exchange of atoms or electrons</u></p> <p>(d) product: <u>is produced in a chemical reaction ("new" substance)</u></p> <p>(e) reactant: <u>undergoes chemical change in a chemical reaction</u></p> <p>(f) chemical equation: <u>symbolic representation of a chemical reaction</u></p>														
/7	<p>2. Label the following as physical change (P) or chemical reaction (C)</p> <table border="0"> <tr> <td>a. Burning Leaves <u>C</u></td> <td>h. Fireworks Exploding <u>C</u></td> </tr> <tr> <td>b. Cutting Diamonds <u>P</u></td> <td>i. Lighting a match <u>C</u></td> </tr> <tr> <td>c. Crushing a pencil <u>P</u></td> <td>j. Painting a wall blue <u>P</u></td> </tr> <tr> <td>d. The salivary amylase enzyme that breaks down food in the mouth <u>C</u></td> <td>k. A bicycle rusting <u>C</u></td> </tr> <tr> <td>e. Salt mixing in with water <u>P</u></td> <td>l. Ice cream melting <u>P</u></td> </tr> <tr> <td>f. Shattering Glass with a baseball <u>P</u></td> <td>m. Scratching a key across a desk <u>P</u></td> </tr> <tr> <td>g. Corroding Metal <u>C</u></td> <td>n. Baking a cake <u>C</u></td> </tr> </table>	a. Burning Leaves <u>C</u>	h. Fireworks Exploding <u>C</u>	b. Cutting Diamonds <u>P</u>	i. Lighting a match <u>C</u>	c. Crushing a pencil <u>P</u>	j. Painting a wall blue <u>P</u>	d. The salivary amylase enzyme that breaks down food in the mouth <u>C</u>	k. A bicycle rusting <u>C</u>	e. Salt mixing in with water <u>P</u>	l. Ice cream melting <u>P</u>	f. Shattering Glass with a baseball <u>P</u>	m. Scratching a key across a desk <u>P</u>	g. Corroding Metal <u>C</u>	n. Baking a cake <u>C</u>
a. Burning Leaves <u>C</u>	h. Fireworks Exploding <u>C</u>														
b. Cutting Diamonds <u>P</u>	i. Lighting a match <u>C</u>														
c. Crushing a pencil <u>P</u>	j. Painting a wall blue <u>P</u>														
d. The salivary amylase enzyme that breaks down food in the mouth <u>C</u>	k. A bicycle rusting <u>C</u>														
e. Salt mixing in with water <u>P</u>	l. Ice cream melting <u>P</u>														
f. Shattering Glass with a baseball <u>P</u>	m. Scratching a key across a desk <u>P</u>														
g. Corroding Metal <u>C</u>	n. Baking a cake <u>C</u>														
/1	<p>3. Identify the essential difference between physical changes and chemical reactions?</p> <p><u>A physical change is reversible but a chemical change cannot be reversed.</u></p>														
/5	<p>4. List the five key indicators that a chemical reaction has occurred?</p> <table border="0"> <tr> <td><u>temperature change (inc or dec)</u></td> <td><u>change in odour or taste</u></td> </tr> <tr> <td><u>change in colour</u></td> <td><u>Precipitate (solid) is formed</u></td> </tr> <tr> <td><u>Gas is evolved (released)</u></td> <td></td> </tr> </table>	<u>temperature change (inc or dec)</u>	<u>change in odour or taste</u>	<u>change in colour</u>	<u>Precipitate (solid) is formed</u>	<u>Gas is evolved (released)</u>									
<u>temperature change (inc or dec)</u>	<u>change in odour or taste</u>														
<u>change in colour</u>	<u>Precipitate (solid) is formed</u>														
<u>Gas is evolved (released)</u>															
/6	<p>5. Label the reactants and products in this chemical reaction:</p> <p style="text-align: center;"> $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$ Reactants → Products </p> <p>(a) Label the subscript and coefficient for the molecule of oxygen in the above equation:</p> <p>(b) How many atoms of oxygen are present on each side of the equation shown in question? <u>18</u></p> <p>(c) Chemical reactions must have equal numbers of each atom on each side to satisfy the Law of <u>Conservation of mass</u>.</p>														
/14	<p>6. (i) Balance each of these chemical equations and (ii) OPTIONAL classify each as either synthesis, decomposition, single replacement, double displacement, or combustion.</p> <p>a. <u> </u> P₄ + <u> 3 </u> O₂ → <u> 2 </u> P₂O₃ Classification: <u>synthesis</u></p> <p>b. <u> 2 </u> Al + <u> 6 </u> HCl → <u> 3 </u> H₂ + <u> 2 </u> AlCl₃ Classification: <u>single displacement</u></p> <p>c. <u> </u> Pb(OH)₂ + <u> 2 </u> HCl → <u> 2 </u> H₂O + <u> </u> PbCl₂ Classification: <u>double displacement</u></p>														



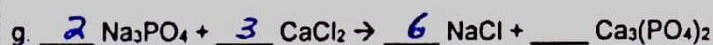
Classification: *Synthesis*



Classification: *Combustion*



Classification: *Decomposition*



Classification: *Double displacement*

7. Write a full, balanced chemical equation for the following reactions.

a. Solid iron metal combines with oxygen gas to produce Iron oxide.



b. Lithium sulphate reacts with potassium phosphate to produce lithium phosphate and potassium sulphate.



c. Liquid methanol (CH_4O) is burned in air (diatomic oxygen molecules) to produce carbon dioxide and water molecules..



e. When heated solid sodium bicarbonate breaks down into sodium carbonate, water, and carbon dioxide gas



/8

8. Write a full, balanced chemical equation for the following reactions that predicts the products made by the given reactants.

d. A silver coin reacts with sulphuric acid.



e. Solutions of sodium hydroxide and iron (III) nitrate react together.



f. A piece of sodium metal is dropped into liquid water.



g. Butane gas (C_4H_{10}) is burned in the presence of oxygen.



/8

9. (a) Define the terms exothermic reaction and endothermic reaction.

Exothermic Rn - a chemical Rn which releases energy

Endothermic Rn - a chemical Rn which absorbs energy.

(b) Why do some reactions release heat (exothermic) yet others require heat (endothermic)?

Exothermic Rns involve reactants with a high amount of stored energy in their bonds but products with lower amounts of energy in their bonds. The excess energy is released. Opposite

(c) Given a chemical equation, how do you recognise a exothermic or endothermic reaction?

There is no real way to recognise an exo or endothermic reaction from an equation - unless energy is shown as being a reactant (left side), exo or a product endo

/6