

CLASS-10  
PHYSICAL SCIENCE  
PERIOD PLANS

**CHAPTER: 02 – CHEMICAL REACTIONS AND EQUATIONS**

**PERIOD PLAN-02 :** Writing of chemical equation  
Steps to balance chemical equation  
Balancing chemical equations

Content Analysis	Class Room Environment	Teaching Learning Material																																																
<p><b>Writing of chemical equation:</b>  <b>Word equation :</b> A word equation shows a chemical reaction with reactants and products separated by an arrow mark.  <b>Chemical equation :</b> A word equation consists of chemical formulas is called chemical equation. If it is unbalanced it is called skeleton equation.  <b>Reactants :</b> The substances which participate in chemical reaction are called reactants.  <b>Products :</b> The substances which formed in chemical reaction are called products.</p>	<p><b>Conversation :</b> about writing chemical equation.  <b>Explanation :</b> about word equation, skeleton equation , chemical equation.</p> <p>.....</p> <p><b>Sentence :</b> If calcium oxide dissolved in water produces calcium hydroxide.  <b>Word equation:</b>            Calcium oxide + Water → Calcium hydroxide  <b>Skeleton equation:</b> CaO + H<sub>2</sub>O → Ca(OH)<sub>2</sub>  <b>Examples:</b>            Reactants → Products            Zn + HCl → ZnCl<sub>2</sub> + H<sub>2</sub>            Na<sub>2</sub>SO<sub>4</sub> + BaCl<sub>2</sub> → BaSO<sub>4</sub> + NaCl</p>	Chart																																																
<p><b>Balanced chemical equations:</b> If the number of atoms of different elements equal both sides in a chemical equation, then it is called balanced chemical equation.  <b>Steps to balance chemical equation:</b>            * First write the unbalanced equation (skeleton equation)            * compare the number of atoms of each element on both sides. Change the suitable coefficient of compounds to balance the equation.            * Reduce the coefficients to their smallest whole numbers.            * check the number of atoms of different elements on both sides of equation same or not.</p>	<p><b>Conversation :</b> about balancing chemical equation.  <b>Example:</b>            Burning of propane            Propane reacts with oxygen and gives carbon dioxide and water vapour.            Propane + Oxygen → carbon dioxide + water vapour</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">C<sub>3</sub>H<sub>8</sub> + O<sub>2</sub> → CO<sub>2</sub> + H<sub>2</sub>O</td> <td style="text-align: center;">LHS</td> <td style="text-align: center;">RHS</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">3</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">8</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">O</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">C<sub>3</sub>H<sub>8</sub> + O<sub>2</sub> → 3CO<sub>2</sub> + H<sub>2</sub>O</td> <td style="text-align: center;">LHS</td> <td style="text-align: center;">RHS</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">8</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">O</td> <td style="text-align: center;">2</td> <td style="text-align: center;">7</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">C<sub>3</sub>H<sub>8</sub> + O<sub>2</sub> → 3CO<sub>2</sub> + 4H<sub>2</sub>O</td> <td style="text-align: center;">LHS</td> <td style="text-align: center;">RHS</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">O</td> <td style="text-align: center;">2</td> <td style="text-align: center;">10</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">C<sub>3</sub>H<sub>8</sub> + 5O<sub>2</sub> → 3CO<sub>2</sub> + 4H<sub>2</sub>O</td> <td style="text-align: center;">LHS</td> <td style="text-align: center;">RHS</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">3</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">H</td> <td style="text-align: center;">8</td> <td style="text-align: center;">8</td> </tr> <tr> <td style="text-align: center;">O</td> <td style="text-align: center;">10</td> <td style="text-align: center;">10</td> </tr> </table>	C <sub>3</sub> H <sub>8</sub> + O <sub>2</sub> → CO <sub>2</sub> + H <sub>2</sub> O	LHS	RHS	C	3	1	H	8	2	O	2	3	C <sub>3</sub> H <sub>8</sub> + O <sub>2</sub> → 3CO <sub>2</sub> + H <sub>2</sub> O	LHS	RHS	C	3	3	H	8	2	O	2	7	C <sub>3</sub> H <sub>8</sub> + O <sub>2</sub> → 3CO <sub>2</sub> + 4H <sub>2</sub> O	LHS	RHS	C	3	3	H	8	8	O	2	10	C <sub>3</sub> H <sub>8</sub> + 5O <sub>2</sub> → 3CO <sub>2</sub> + 4H <sub>2</sub> O	LHS	RHS	C	3	3	H	8	8	O	10	10	Chart
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<p><b>Balancing chemical equations:</b>            1) H<sub>2</sub> + O<sub>2</sub> → H<sub>2</sub>O            2) Fe<sub>2</sub>O<sub>3</sub> + Al → Fe + Al<sub>2</sub>O<sub>3</sub>            3) Zn + HCl → ZnCl<sub>2</sub> + H<sub>2</sub>            4) H<sub>2</sub>SO<sub>4</sub> + NaOH → Na<sub>2</sub>SO<sub>4</sub> + H<sub>2</sub>O            5) CH<sub>4</sub> + O<sub>2</sub> → CO<sub>2</sub> + H<sub>2</sub>O            6) C<sub>2</sub>H<sub>6</sub> + O<sub>2</sub> → CO<sub>2</sub> + H<sub>2</sub>O</p>	<p><b>Children can balance some chemical equations:</b>            1) 2H<sub>2</sub> + O<sub>2</sub> → 2H<sub>2</sub>O            2) Fe<sub>2</sub>O<sub>3</sub> + 2Al → 2Fe + Al<sub>2</sub>O<sub>3</sub>            3) Zn + 2HCl → ZnCl<sub>2</sub> + H<sub>2</sub>            4) H<sub>2</sub>SO<sub>4</sub> + 2NaOH → Na<sub>2</sub>SO<sub>4</sub> + 2H<sub>2</sub>O            5) CH<sub>4</sub> + 2O<sub>2</sub> → CO<sub>2</sub> + 2H<sub>2</sub>O            6) 2C<sub>2</sub>H<sub>6</sub> + 7O<sub>2</sub> → 4CO<sub>2</sub> + 6H<sub>2</sub>O</p>	A project work should be given to them that they can balance some (atleast 20)chemical equations																																																

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