



**ST. JOSEPH'S SCHOOL, MAHARAJGANJ**  
**Summer Vacation Holiday Homework**  
**CLASS 12 MATHEMATICS**

<b>SUBJECTS</b>	<b>TOPIC / PORTION</b>
<b>ENGLISH</b>	<p>As part of your summer vacation homework, you are instructed to maintain a daily diary for 30 days. The purpose of this activity is to improve your grammar, writing skills, creativity, and expression in English.</p> <p><b>Instructions:</b></p> <ul style="list-style-type: none"><li>• Each entry should be between 120–150 words.</li><li>• Use the following tenses in your writing: Simple Present Tense Simple Past Tense Past Perfect Tense Simple Future Tense (using “would”).</li></ul> <p>Prepare a tense chart on the chart paper.</p>
<b>PHYSICS</b>	<p><b>Chapter 1: Electric Charges and Fields</b></p> <p>Focus: Deep dive into Coulomb's Law, Electric Field Lines, and Gauss's Law.</p> <p><b>Assignment: Board-Level Concept &amp; Derivation Portfolio</b></p> <p><b>Task 1 (Core Derivations): Practice and write down the complete, step-by-step mathematical derivations for:</b></p> <ul style="list-style-type: none"><li>• The Electric Field Intensity at any point on the axial line of an electric dipole.</li><li>• The Electric Field Intensity at any point on the equatorial line of an electric dipole.</li><li>• The Electric Field Intensity due to an infinitely long straight uniformly charged wire using Gauss's Law.</li></ul> <p><b>Task 2 (Conceptual Mapping): Draw the electric field line patterns for:</b></p> <ul style="list-style-type: none"><li>• An isolated positive charge (<math>q &gt; 0</math>).</li><li>• An isolated negative charge (<math>q &lt; 0</math>).</li><li>• An electric dipole (equal and opposite charges).</li><li>• Two identical positive charges placed close to each other.</li></ul> <p><b>Task 3 (Numerical Practice): Solve 10 high-level numerical problems from your textbook or past board exams strictly based on Coulomb's Law (including the superposition principle) and Electric Flux.</b></p> <p>Deliverable: A formal assignment folder containing the 3 major derivations, 4 neat field- line sketches, and 10 solved numerical.</p>

<p>PHYSICAL EDUCATION</p>	<p><u>Summer Holiday Homework (Practical-1)</u>  *Topic: Khelo India Fitness* Assessment  * Instructions to Students</p> <ol style="list-style-type: none"> <li>1. Write all the work neatly in your Lab Manual.</li> <li>2. Include proper headings, diagrams (figures), and labeling.</li> <li>3. Maintain clean handwriting and proper presentation.</li> </ol> <p>Practice all fitness tests daily in the early morning at home.  <u>**Submission**</u>  Submit the completed Lab Manual after summer vacation.  Marks will be awarded based on:</p> <ol style="list-style-type: none"> <li>1. Neatness</li> <li>2. Diagrams</li> <li>3. Completeness</li> </ol> <p>Practical performance</p>										
<p>MATHEMATICS</p>	<p style="text-align: center;"><b>Chapter 1: Relations and Functions</b></p> <p><b>Activity 1: Types of Relations</b>  Prepare a chart showing:</p> <ol style="list-style-type: none"> <li>I) Reflexive relation</li> <li>II) Symmetric relation</li> <li>III) Transitive relation</li> <li>IV) Equivalence relation</li> </ol> <p>Use real-life examples such as:</p> <p>A) Friendship relations.      B) Family relations.      C) Student roll numbers</p> <p><b>Activity 2: Real-Life Application of Trigonometry</b>  Find examples where inverse trigonometry is used:</p> <p>A) Height of buildings      B) Navigation      C) Engineering</p> <p><b>Activity 3: Draw graphical representation on chart paper for inverse of</b>  A) <math>\sin x</math>.      B) <math>\cos x</math>.      C) <math>\tan x</math>.</p> <p><b>Activity 4: Write Domain and Range of inverse trigonometrically function.</b>  <b>Activity 5: Complete Lab manual Activity 2 and 3 on your lab manual copy.</b></p>										
<p>CHEMISTRY</p>	<p>Q.1. Write experiment number 1 in lab manual.  Q.2. Solve 10 PYQs from Chapter 1 and 2 (only numericals).  Q.3. Make a chart of Periodic Table (mention s, p, d, f block).  Q.4. Learn and write all the important definitions given below:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">a) Henry’s Law.</td> <td style="width: 50%;">b) Raoult’s Law</td> </tr> <tr> <td>c) Ideal &amp; Non-Ideal Solution.</td> <td>d) Osmosis and Osmotic Pressure</td> </tr> <tr> <td>e) Reverse Osmosis and Plasmolysis</td> <td>f) Kohlrausch’s Law</td> </tr> <tr> <td>g) Molar Conductivity</td> <td>h) Nernst Equation</td> </tr> <tr> <td>i) Primary and Secondary Cell</td> <td>j) Electrochemical Series</td> </tr> </table>	a) Henry’s Law.	b) Raoult’s Law	c) Ideal & Non-Ideal Solution.	d) Osmosis and Osmotic Pressure	e) Reverse Osmosis and Plasmolysis	f) Kohlrausch’s Law	g) Molar Conductivity	h) Nernst Equation	i) Primary and Secondary Cell	j) Electrochemical Series
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