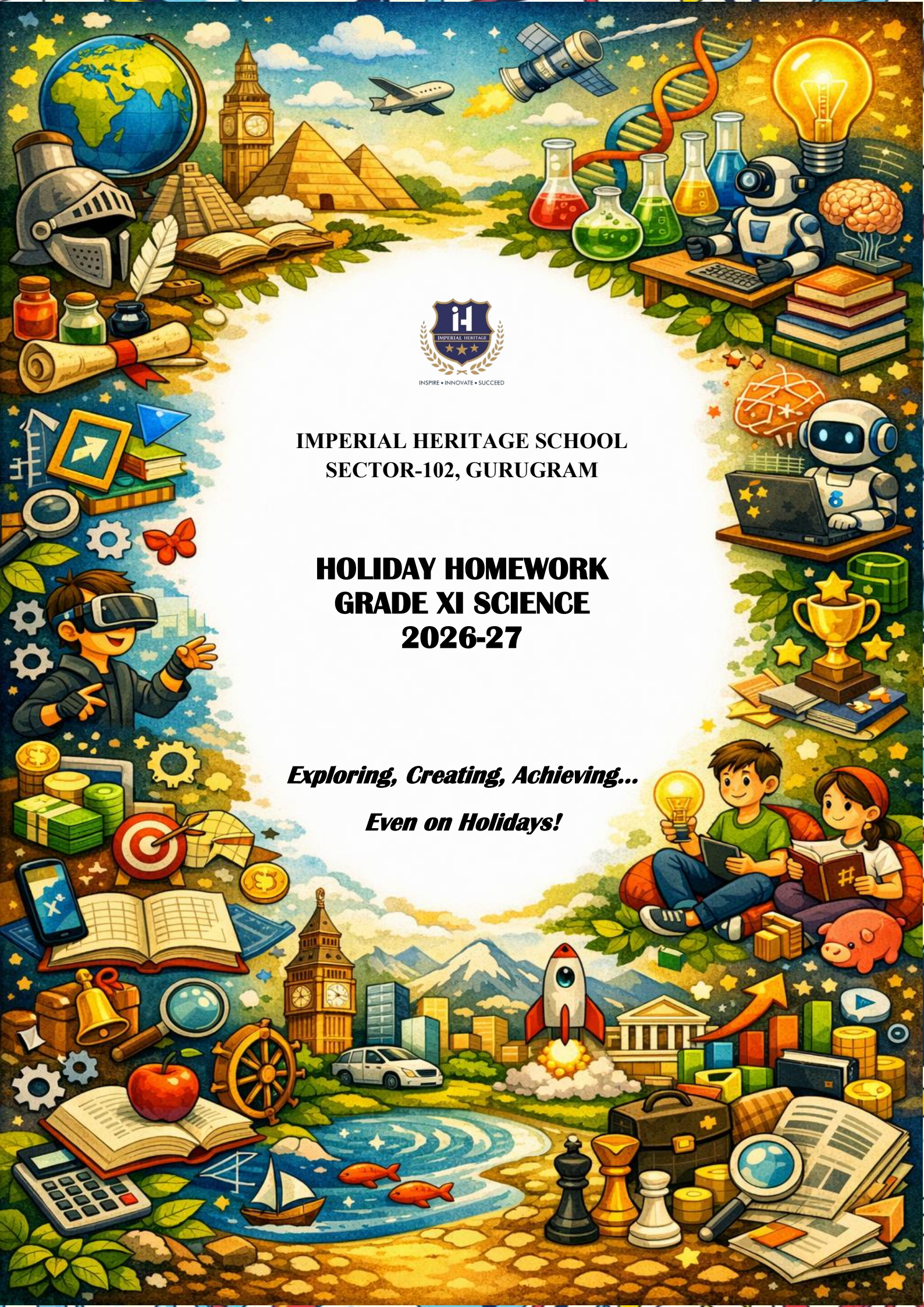


INSPIRE • INNOVATE • SUCCEED

IMPERIAL HERITAGE SCHOOL
SECTOR-102, GURUGRAM

HOLIDAY HOMEWORK
GRADE XI SCIENCE
2026-27

Exploring, Creating, Achieving...

Even on Holidays!

“Curiosity Never Goes on Vacation—and neither does the joy of learning.”

Dear Parents,

Warm greetings!

At Imperial Heritage School, we view learning as a continuous journey—one that extends far beyond the classroom walls. The purpose of holiday homework is not merely to keep students occupied, but to inspire them to explore, reflect, and grow independently. It is an opportunity for children to connect classroom knowledge with the world around them, while discovering their own unique ways of learning.

The Purpose Behind Holiday Homework

Holiday assignments are thoughtfully designed to:

- Sustain the rhythm of learning even during the break
- Encourage application of concepts in everyday life
- Develop responsibility, discipline, and effective time management
- Strengthen analytical thinking, creativity, and problem-solving abilities

Learning Through Projects

Each assignment is aligned with CBSE guidelines and focuses on experiential, project-based learning. These tasks are curated to ensure meaningful engagement, allowing students to bridge theory with practical understanding in a creative and enjoyable manner.

Assessment Parameters

Holiday homework will form a part of Internal Assessment and will be evaluated on:

- Content
- Presentation
- Relevance
- Creativity
- Originality
- Timely Submission

Kindly Note the Project/Practical written work assigned will be evaluated as CBSE project.

Guidelines for Students

- Be Authentic: Your work should reflect your own ideas and efforts.
- Plan Ahead: Break tasks into small parts and complete them gradually.
- Follow Instructions: Read each guideline carefully before beginning.
- Maintain Neatness: Clear, organized work always creates a strong impression.
- Think Creatively: Present your work in an innovative and engaging manner.
- Read Daily: Cultivate the habit of reading to expand your imagination and language skills.
- Practice Mathematics: Consistency is key—regular practice leads to mastery.
- Seek Guidance, Not Substitution: Parents may guide, but students must complete the work independently.
- Prioritize Quality: Focus on depth, clarity, and meaningful content.

A Fresh Thought for Our Learners

“Where Questions Bloom”
When holidays stretch like open skies,
Let wonder wake and questions rise.
Not all learning lives in books,
It hides in paths and curious looks.
In silent thoughts, in things you make,
In every risk you choose to take,
In colours mixed or stories spun,
In problems solved just for the fun.

A restless mind, a seeking heart,
That’s where true journeys always start.
So learn, explore in your own way—
Let curiosity lead each day.

Submission Date: 6th July, 2026

We eagerly await the thoughtful and creative work our students will present. May this vacation be a time of joyful discovery, meaningful experiences, and personal growth.

Wishing you all a safe, refreshing, and enriching summer break!

Warm regards,

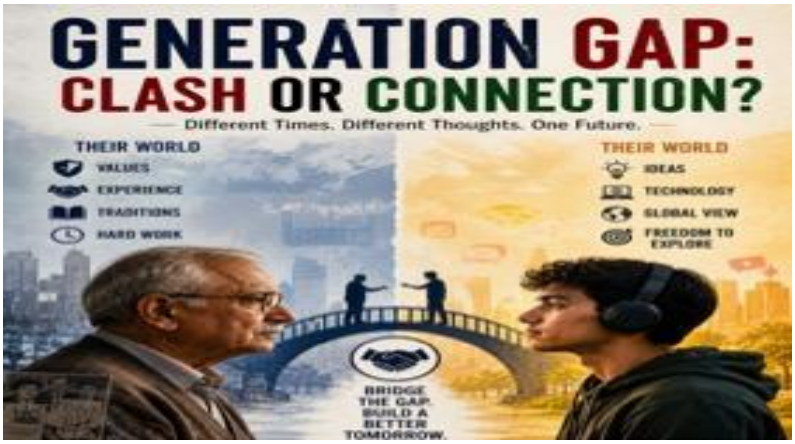
Ms. Neelu Sharma
Principal

ENGLISH

I. CBSE ASL BASED PROJECT

Topic - Generation Gap: Clash or Connection?
Integrated Chapter - The Portrait of a Lady (Hornbill)

Objective - Creating a project on intergenerational conflict provides an opportunity to explore the dynamics, causes, and consequences of conflicts between different age groups within families, communities, and society. Here's a project outline:



Students will listen to podcasts/ interviews/radio or TV documentaries on the given topic and do thorough research on the same. Prepare a report including surveys, statistical data, graphs etc countering or agreeing with the speakers in 800 to 1000 words and submit.

Your project file should contain the following details:

1: Cover page

- Prepare a creative cover page giving relevant details of your project.

2: Index

- Make 3 columns – Serial no, topic, page no.

3: Statement of Purpose

- Write down at least five objectives of the given project.

4: Acknowledgement

- Sample to be provided by the teacher.

5: Certificate of Completion

- Sample to be provided by the teacher.

6: Action Plan

- Sample to be provided by the teacher.

7: Materials Used

- List down all the materials used by you in making of the project.

8: Report

- Report to be written in approx.1000 words.

9: Student Reflections

- Share your views/conclusion on the given topic and write the learning outcomes

10: Evidence of your report

- Photographs and other pieces of evidence of the research to be pasted.

11: Bibliography

- Pen down the sources from where the information was accessed.

Note:

1. Make a file of your choice with A4 size sheets only.
2. Sheets can be colourful or plain.
3. Presentation should be neat.
4. The project must showcase your creativity.
5. Student findings should be his/her original work.

II. HOLIDAY HOMEWORK WORKSHEET

Complete the Holiday HW Worksheet uploaded on ERP. Q/As to be done in the notebook.

III. SUGGESTED READING

'The Invisible Man' by H.G. Wells is a long reading text prescribed by CBSE for extensive study. Please find the link below for online reading. Write the summary of the novel in 120-150 words and present it creatively with an illustration. Happy Reading!

https://cbseacademic.nic.in/web_material/doc/novels/2_The%20Invisible%20Man,%20by%2 0H.%20G%20-%20Class%20-%20XII.pdf

PHYSICS

Physics Investigatory Project

An investigatory project is a practical assignment based on experimental work that helps students understand scientific concepts through the scientific method. It involves selecting a topic, researching it, forming a hypothesis, conducting experiments, and analyzing results. These projects encourage active learning, develop research skills, and promote scientific thinking and creativity. While preparing the project, students should focus on presenting a clear and accurate understanding of the topic, giving more importance to current observations and findings rather than relying heavily on past work.

Guidelines for the Project:

The investigatory project should contain following points in proper order

1. Cover page
2. Certificate
3. Declaration
4. Acknowledgement
5. Index
6. Aim
7. Introduction
8. Theory and principle
9. Formula
10. Diagram
11. Applications
12. Conclusion
13. Bibliography

Rubrics for assessment are as follows:

Understanding of Concept	Experimental design/ Methodology	Data Collection and Observation	Data analysis and Interpretation	Conclusion and Applications	Originality and Creativity	Timely Submission

1. List of Physics Investigatory Project

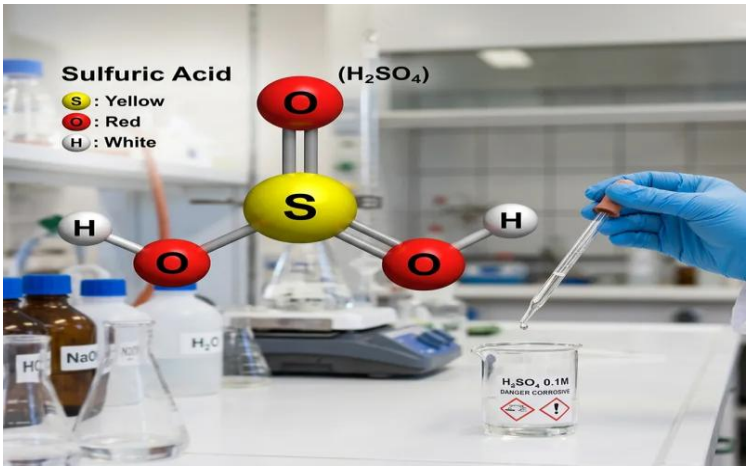
S.No.	Name of Student	Project topic
1.	Utkarsh Tyagi	To study the formation of standing waves in strings and organ pipes.
2.	Priyansh Agarwal	To study the Projectile motion and find its trajectory Time of flight, Maximum height, Horizontal range.
3.	Arnav Yadav	To study Pascal's law and its applications.
4.	Ananya	To study the law of conservation of angular momentum and its applications.

5.	Krishang Gupta	To Study the Hooke's Law and three moduli of elasticity.
6.	Anubhav Karoria	To study the effect of detergent on surface tension of water.
7.	Dhairya Jindal	To study Bernoulli's theorem and its applications.
8.	Diksha Shekhawat	To study S.H.M. and calculate expression for its time period and Total Energy.
9.	Anupriya	Study of the Qualitative Ideas of the Blackbody Radiation.
10.	Janhvi	To investigate the cooling rate of a liquid under different conditions.
11.	Moksh Yadav	To study friction, laws, types and coefficient of friction offered by a surface.

2. **Complete the Physics Revision Worksheet in your notebook. The worksheet has been uploaded on the ERP.**

CHEMISTRY

An investigatory project in chemistry serves as a hands-on, research-based tool that bridges theoretical knowledge with practical application. It enables students to explore scientific questions, analyze everyday products, master laboratory techniques, and develop critical thinking by designing experiments and interpreting data



Topics for Investigatory Project

S.No.	NAME OF STUDENT	TOPIC
1.	Ananya	Checking the bacterial contamination in drinking water by testing sulphide ion
2.	Anubhav	Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
3.	Anupriya	Comparative study of the rate of fermentation of following materials wheat flour,potato juice,carrot juice etc
4.	Arnav	Study the acidity of different samples of tea leaves.
5.	Dhairya	Study the effect of acids and bases on the tensile strength of fibers.
6	Diksha	Study of the methods of purification of water
7	Jaanvi	Study of acidity of fruit and vegetable juices.
8	Krishang	Study of the methods of purification of water
9	Moksh	Study the effect of acids and bases on the tensile strength of fibers.
10	Priyansh	Study the acidity of different samples of tea leaves
11	Utkarsh	Study of common food adulterants in fat,oil,butter,sugar,turmeric powder ,chilli powder and pepper

Guidelines for the Project:

The investigatory project should contain:

1. Cover page with name of topic
2. Acknowledgment
3. Certificate
4. Index
5. Aim
6. Introduction
7. Content-Theory, procedure, observation data, diagram, result, application etc
8. Bibliography

Rubrics for assessment:

Neatness	Creativity	Correct Observation	Conclusion and Applications	Timely Submission

Do the revision assignment uploaded on ERP.
Revise chapter 1 and 2

MATHEMATICS

PART A - Write the following activities in your Practical file.

1. To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n.
2. To verify that for two sets A and B, n(A x B) = pq and the total number of relations from A to B is 2^{pq}, where n(A) = p and n(B) = q.
3. To distinguish between a Relation and a Function.
4. To verify the relation between the degree measure and the radian measure of an angle.
5. To verify that the graph of a given inequality of the form $ax + by + c < 0$, $a, b > 0$, $c < 0$ say $5x + 4y - 40 < 0$, represents only one of the two half planes.

PART B - Attempt the following projects as per the allotment.

Topic – Relations and Functions (For odd roll numbers)

Title - "Understanding Real Functions Through Graphs and Real-Life Applications"

In mathematics, a function is a relation that assigns each element of a set (domain) to exactly one element of another set (range). Functions are widely used in science, engineering, and everyday problem-solving to describe relationships between quantities.
The objective of this task is to study different types of real functions, understand their behaviour, draw their graphs, and explore their importance in real-life situations.

Instructions: You are required to study and analyze the following real functions:

- Identity Function
- Modulus Function
- Greatest Integer Function
- Signum Function

For each function, you must:

1. Define each function clearly.
2. Write its domain and range.
3. Draw neat graphs.
4. Write at least 2 real-life applications for each function.
5. Conclusion.

You can add 4–5 lines mentioning *"Which function did you find most interesting and why?"* (Optional)

Topic: Trigonometric Functions (For even roll numbers)

Title: "Exploring Trigonometric Functions Through Graphs and Real-Life Applications"

Trigonometric functions relate angles to ratios of sides of a triangle. The main functions are sine, cosine, and tangent. These functions have a wide range of application in sound waves and vibrations, Alternating current (AC electricity), Height and distance calculations, and Circular motion (wheels, planets).

In this task, students will explore trigonometric functions and understand how changes in equations affect their graphs. Students will also relate these functions to real-life applications such as sound waves, electricity, and motion.

Instructions: You are required to study and analyze the following trigonometric functions:

- $\sin f_0 x$
- $\sin f_0 2x$
- $2\sin f_0 x$
- $\sin f_0 (x/2)$

For each function, you must:

1. Identify its domain and range
2. Determine its amplitude and period
3. Show graphical representation.
4. Compare it with the basic sine function on the basis of amplitude, period, graph shape.
5. Explain at least one real-life application.

Assessment Criteria:

- Accuracy of concepts
- Clarity of explanations
- Presentation and neatness.
- Connection to real-life applications

PART C (To be done in Practice Notebook)

1. Do all examples of Chapters 1, 2, 3, 4 and 5.
2. Do 5 questions daily of chapters 1, 2, 3, 4 and 5 from NCERT Exemplar and other reference books.
3. Do the revision assignment uploaded on ERP.

ARTIFICIAL INTELLIGENCE

Activity 1: AI Around Us (To be done on A3 Sheet)

Identify any 10 AI-enabled applications used in daily life.

Example:

- Voice Assistants
- Face Unlock
- Recommendation Systems
- Chatbots

Write:

- Name of application
- How AI is used
- Benefits

Activity 2: Creative Work (To be done on A3 Sheet)

Create a mind map on: "Applications of NLP."

Examples:

- Google Translate
- Voice Assistants
- AI Chatbots
- Spam Detection
- Text Summarization

Activity 3: IBM Certification (https://skillsbuild.org/students**)**

Click the link given above and choose any 4 Courses related to your curriculum. Get the certification and add it to your Practical file.

Activity 4: Python Programs
(Practical File work to be done in the online Google Word File and share that file directly on kanchan.chowdhary@imperialheritageschool.com)

Input & output (Screenshot) both to be included in the file.

1. Write a program to add multiple rows in one go to a CSV file.
2. Write a program to demonstrate a 2D array
3. Write a programme to create a numpy array by taking values from the user through np.empty().
4. Write a programme to create a data frame using dictionaries of lists or arrays
5. Write a program to select a specific element from the data frame.
6. Program to add the column at specific position in the data frame.
7. Program to fill the missing values in the data frame.
8. Program to print the first 10 values of the separated data into X&Y in the iris data set.
9. Write a program to split the data of the iris data set into training set and testing set
10. Write a program to evaluate the matrices of the iris data set.
11. Create a simple Python code to display the parts of speech.
12. Create a simple chatbot using Python.
13. Create a simple Python code to demonstrate the use of the nested if statement
14. Create a Python code of a list and include all the slicing categories in it.
15. Create a programme to write data to a CSV file row by row.

Activity 5: Do the revision assignment in the notebook uploaded on ERP.

PHYSICAL EDUCATION

The students are supposed to make a project file as per the details given below.

Instructions:

- This project needs to be done on one side of ruled paper and the other side of the plain paper provided in your Lab Manual (physical education practical file).
- The Lab Manual has to be covered with a brown paper cover sheet.
- Inside the Lab Manual, you may use coloured pens, but keep it colourful without making it too flashy, a clean and professional look is best.

Cover Page of the Project:

Title (e.g., "Physical Education Practical File–048")
Session: 2026–27 (Academic Year)
School Name:
Your Name:
Class and Section:
Roll No: (For XI Class, Class roll number only)

Second Page: Index

- **You have to complete the Index according to the details given in your Lab Manual. No page should be left blank in the Index.**

Inside the File – Topics:

- Write all fitness test administrations with details, including pasted coloured pictures (SAI Khelo India Test / H.P.E. Tests) and Brockport Physical Fitness Test also.
- Write the procedure for Asanas, their benefits, and contraindications for any two Asanas for each lifestyle disease (obesity, diabetes, asthma, hypertension, and back pain), with coloured pictures ($2 \times 5 = 10$; at least 10 yoga postures).
- Write about any one of the following: the IOA (Indian Olympic Association) sport/game of your choice. Include a labelled diagram of the field and equipment, along with rules, terminologies, and skills associated with the game. And paste the coloured photograph of related sports equipment.

NOTE: - No black & White photos allowed in physical education Lab manual (practical file).