BHAI PARMANAND VIDYA MANDIR
Holidays Homework 2026-27
Class IX
Theme: - "Inclusive Development for a Sustainable Future"

Dear Young Minds,
Summer vacations are not only a time to unwind and rejuvenate, but also an opportunity to think, create, and grow. This year's Holiday Homework is thoughtfully designed around the theme: **"Inclusive Development for a Sustainable Future."**Through engaging and creative activities, you will explore how empathy, equality, innovation, and responsible living can contribute towards building a world where progress benefits everyone. As future changemakers, your ideas and actions have the power to shape a more inclusive and sustainable society.Along with completing your assignments, make sure to **revise your concepts regularly and nurture the habit of learning something new each day**. Stay curious, think creatively, and make meaningful use of your summer break.
Wishing you a joyful, inspiring, and productive summer vacation!

INSTRUCTIONS:

- ➔ Holidays Homework carries marks in Internal Assessment. Hence, submission of the work post vacation is compulsory for each and every student.
- ➔ Students can only seek guidance from their parents or elders. They are expected to complete all the tasks on their own.
- ➔ Creativity and originality of the work will be appreciated.
- ➔ The assigned tasks must be done in a very neat and presentable manner.
- ➔ Questions must be done in the given sequence.
- ➔ Students will be assessed for the handwriting, presentation, neatness, completion of all the given questions and indexing of the work.
- ➔ It is mandatory to do all the activities; however there may be internal choices.
- ➔ Use the material available at home.

SUBJECT ENRICHMENT ACTIVITY

THEME: Inclusive Development for a Sustainable Future

Inclusive development ensures that progress benefits every section of society while safeguarding the environment for future generations. Sustainable growth can only be achieved when technological innovation, social equality, economic progress, and environmental responsibility work together. Through thoughtful ideas and creative solutions, we can build a future that is fair, green, and prosperous for all.

Dear Students,
The following activities are designed around the theme **"Inclusive Development for a Sustainable Future"** to foster creativity, critical thinking, communication skills, and awareness of how individuals can contribute towards building a more inclusive and sustainable world.

ACTIVITY – 1: Reflect, Create, Inspire!

Article Writing and Poster Making

Students are required to complete both parts of the activity on the same allotted topic.

Part A: Reflective Article Writing

Research your allotted topic by reading or watching a reliable source such as an article, speech, TED Talk, documentary clip, podcast, or educational video.
Write an **ARTICLE (250–300 words)** reflecting on:

- Key ideas or information you gained
- Insights that inspired or surprised you
- How inclusion and sustainability are interconnected in the given topic
- How the resource influenced your understanding of building a better future

Part B: Poster Making

Design an informative and creative poster based on the same topic. Your poster must include:

Heading / Slogan

Create a catchy and meaningful title

Visual Elements

Use drawings, symbols, charts, icons, or illustrations relevant to your topic

Key Message

Write **4–5 short impactful points**

Call to Action

End with a strong concluding message encouraging positive change
Example:
"Build a Future Where Progress Belongs to Everyone."

TOPIC ALLOTMENT

Roll Numbers 1–10 : Equal Access to Quality Education
Roll Numbers 11–20 : Technology for Every Hand: Digital Inclusion for All
Roll Numbers 21–30 : Renewable Energy for Rural Development
Roll Numbers 31–40 : Sustainable Cities and Inclusive Urban Spaces
Roll Numbers 41 Onwards : Gender Equality and Innovation for a Sustainable Future

POINTS TO REMEMBER

- Complete both the article and poster on the **same allotted topic**
- Use authentic and reliable sources for research
- Keep your article well-structured and meaningful
- Ensure the poster is neat, creative, and visually appealing
- Maintain originality in both written and visual work

KEY PARAMETERS

- Relevance to theme
- Creativity and originality
- Depth of reflection
- Clarity of message
- Presentation and neatness

MATERIAL REQUIRED

For Article Writing:

Use **A-4 size ruled sheets** (any light color)

For Poster Making:

Use **A-3 or A-4 size sheets**, sketch pens, colours, pencils, and decorative material available at home.

ACTIVITY - 2: Word Quest: The Flashcard Adventure

Developing a strong vocabulary helps in expressing ideas clearly and confidently.

TASK:

Prepare **10 flashcards**, each presenting **one vocabulary word related to the theme assigned according to your roll number.**

THEME ALLOTMENT

- **Social Inclusion and Equality** (Roll No. 1–4)
- **Technology for All** (Roll No. 5–8)
- **Leadership for Change** (Roll No. 9–12)
- **Global Citizenship** (Roll No. 13–16)

- **Digital Access and Literacy** (Roll No. 17–20)
- **Justice and Human Rights** (Roll No. 21–24)
- **Health and Well-being** (Roll No. 25–28)
- **Cultural Diversity** (Roll No. 29–32)
- **Climate Action** (Roll No. 33–36)
- **Sustainable Communities** (Roll No. 37–40)
- **Inclusive Development** (Roll No. 41 onwards)

Each Flashcard Must Include:

Front Side:

- Vocabulary word clearly written

Back Side:

- Meaning
- Part of speech
- One synonym
- One antonym
- One example sentence

Students are encouraged to practice pronunciation and use each word in daily conversation.

MATERIAL REQUIRED:

Use **index cards or small pieces of paper**

ACTIVITY – 3: Essay Explorer

Learning Through Observation

Strong writing develops through careful reading, analysis, and reflection. This activity is designed to help students understand the essential elements of descriptive and narrative essay writing by closely studying sample essays and answering analytical questions related to essay writing as a skill.

Read descriptive and narrative essays, and analyse their structure, style, and language features.

Refer to the attached document containing sample essays for analysis.

After reading the essays, answer the following questions in complete sentences. Support your responses with examples from the essays wherever necessary.

ANALYTICAL QUESTIONS

Section A: Understanding Structure

1. What is the title of the essay you analysed?
2. What type of essay is it – descriptive or narrative?
3. How does the writer introduce the topic?
4. How are the body paragraphs organised?
5. How does the conclusion create an impact on the reader?

Section B: Language and Style

6. Identify examples of descriptive or expressive language used in the essay.
7. How does the writer create imagery for the reader?
8. Mention any figurative language used and explain its effect.
9. How does sentence variety improve the writing?

Section C: Writing Techniques

10. What technique does the writer use to capture attention at the beginning?
11. How are ideas connected smoothly throughout the essay?
12. How does the writer maintain clarity and coherence?

Section D: Reflection and Learning

13. What did you learn about effective essay writing from this analysis?
14. Which writing techniques would you like to use in your own essays and why?
15. What, according to you, are the three most important elements of a strong essay?

POINTS TO REMEMBER

- Read the essays carefully before answering
- Write answers in complete and meaningful sentences
- Support your observations with examples
- Present your work neatly and systematically
- Focus on analysis rather than summary

KEY PARAMETERS FOR ASSESSMENT

- Depth of analysis
- Understanding of essay-writing elements
- Clarity of responses
- Accuracy of language
- Presentation and neatness

MATERIAL REQUIRED

- Attached sample essay document
- A-4 size ruled sheets (any light color)

WORD LIMIT

- 40–60 words per answer

Please find the attached document containing the sample essays for your reference and analysis.

Sample Essay - IX HHW - 2026

Please find the attached worksheet for completion and submission as per the given instructions.

HHW Worksheet

Remember:*The future belongs to those who create progress that includes everyone and protects everything.*

GENERAL INSTRUCTIONS:

➔ ***Holiday Homework carries marks in assessment. Therefore, submission after the vacation is compulsory for all students.***

➔***Parents may act as facilitators; however, the work must be done independently by the student.***

➔ ***Originality of the work will be appreciated.***

➔ ***The work must be neat, well-organized, and presentable.***

➔***Questions must be attempted in the given sequence.***

➔ ***The student will be assessed on: handwriting, presentation, neatness, completion of all the given tasks and proper indexing of the work.***

➔***It is mandatory to do the assigned task.***

➔ ***For Submission, Keep Social Science HHW in separate clear bags or spiral it(task and worksheets to be spiraled separately and then to be kept in a clear bag with your name written.)***

TASK I: THE GLOBAL SCORECARD

The "Global Scorecard" Research Guide

Each student must answer these specific questions and list down their findings in creative manner.

Pillar 1: The "Trade" Battle (What do they sell?)

- **The Big Question:** If these two countries were shops, what would be the "Best-Sellers" on their front shelves?
- **Research Questions:**
    1. List the **Top 3 goods** exported by each country. (e.g., Is it raw nature like *Oil/Gold* or man-made like *Cars/Apps*?)
    2. Who are their **Top 2 "Customer" countries** (Trading Partners)?
    3. **The "Gap" Finder:** Does the country buy more than it sells? If yes, what is the one thing they should start making themselves to save money?

Pillar 2: The "Tourism" Magnet (Why visit?)

- **The Big Question:** If I have $1,000 to spend on a holiday, why would I pick Country A over Country B?
- **Research Questions:**
    1. How many **international tourists** visited last year? (Quantity)
    2. What is their **Tourism USP**? (Is it *History/Monuments*, *Nature/Beaches*, or *Modern Cities/Shopping*?)
    3. **The "Gap" Finder:** What is one thing that stops tourists from visiting? (e.g., Is it expensive flights, safety, or lack of promotion?)

Pillar 3: The "Future" Factor (Innovation & Greenery)

- **The Big Question:** Is the country living in the past or building for the future?
- **Research Questions:**
    1. What is one **famous invention or brand** from this country? (e.g., Apple for the USA, Samsung for South Korea, Tata for India).
    2. How much of their energy comes from **Green Sources** (Solar, Wind, Water)?
    3. **The "Gap" Finder:** Is the country's technology accessible to everyone, or only to people in big cities?

Pillar 4: The "USP"The Big Question:

What is the one "Superpower" this country has that no one else does?

- **Research Questions:**
    1. If this country disappeared tomorrow, what would the world miss the most? (e.g., "The world would have no coffee," or "The world would have no software engineers.")
    2. What is their **Global Ranking** in a fun category? (e.g., Happiest Country, Cleanest Country, or Most Innovative Country).

Pillar 5: The unsung heroes of sustainability.

- **The big question:** Can traditional communities become the key leaders in solving the world's climate and sustainability challenges?
- **Research Question:**

1. Compare any two traditional practices followed by communities in different countries. What scientific principles or environmental knowledge are reflected in these traditions?
2. How do the socio-economic and legal difficulties faced by these communities vary across different countries? Examine how factors such as poverty, lack of land ownership, language barriers, and limited government recognition influence their participation and contribution to the national economy

3. In what ways could climate action progress more rapidly across different countries if these communities were given greater legal recognition, decision-making power, and financial support

Conclusion:

- After comparing the different countries across trade, tourism, innovation, and sustainability, which country do you think is best prepared for the future and why? Support your answer with examples from your research.
- Which country exerts more influence in the world?

The "Exhibition Display" Requirements

Students can make:

1. The "Scorecard Table"
2. The "Spider Web" Chart
3. Icons representing each country's top export.
4. World Map highlighting both locations.
5. Poster/chart/Infographics
6. A 3D Bar Chart comparing military spending.
7. The "Expert Recommendation" (Conclusion)

ASSIGNED COUNTRIES:

SECTION A: The Titans of Tech (USA vs. Japan)
SECTION B: The Rise of the Asian Giants (India vs. China)
SECTION C: The Resilience & Resource Race (Russia vs. Ukraine)
SECTION D: Nature's Giants: Brazil vs. Australia
SECTION E: : The Connoisseurs of Culture (France vs. Italy)
SECTION F: The Oceania Neighbors (Australia vs. New Zealand)
SECTION G:The European Engines (United Kingdom vs. Germany)

TASK III: EK BHARAT SHRESHTHA

"Create an engaging scrapbook exploring the vibrant cultural heritage of different regions across India. Highlight traditional music, famous dance forms, and unique cultural practices. Include at least two dance forms, one musical tradition, and key cultural elements such as festivals, cuisine, traditional attire, art, and way of life. Explain the origin and importance of each aspect and show how they represent the identity, traditions, and diversity of the people. Enhance your scrapbook with pictures, illustrations, cut-outs, or other creative materials. Conclude your project with a brief reflection describing what you learned about the cultural richness and diversity of India."

Roll No. 1-15	**SIKKIM**
Roll No. 16-30	**ARUNACHAL PRADESH**
Roll No. 31 onwards	**NAGALAND**

INSTRUCTIONS:

- ➔ **Holidays Homework carries marks in assessment. Hence, submission of work post vacation is compulsory for all students.**
- ➔ **Parents are requested to only guide their children while doing the assignment.**
- ➔ **Originality of the work will be appreciated.**
- ➔ **The Holiday work must be done in a very neat and presentable manner.**
- ➔ **The child will be assessed for ORIGINALITY , NEATNESS , ACCURACY AND PRESENTATION.**
- ➔ **You can include more than one sheet for a given Task.**

THEME: Inclusive Development for a Sustainable Future.

Inclusive development means creating growth and progress that benefits every section of society without harming the environment or future generations. A sustainable future can only be achieved when economic growth, social equality, and environmental protection work together. In today's rapidly changing world, nations must focus on development that includes people of all backgrounds, regions, genders, and economic conditions.

Meaning of Inclusive Development

Inclusive development ensures that all people have equal access to opportunities, resources, education, healthcare, employment, and decision-making. It aims to reduce poverty, inequality, and social exclusion while improving the quality of life for everyone.

METHODOLOGY: Students are required to do the following tasks:

WHERE TO DO : A4 SIZE RULED SHEET

TASK 1: Solar Energy System for Inclusive Development

A rural community is transitioning to **solar-powered energy** to ensure **inclusive development and a sustainable future**. A solar battery system stores energy for households.

- On Day 0, the battery has **800 units** of energy.
- Due to **daily usage**, energy decreases linearly by **120 units per day**.
- However, a solar panel installation program is gradually improving energy input. From Day 0 onward, the system gains an **additional constant input of 40 units per day** (already included in the net change).
- Due to aging of equipment, after a certain number of days, efficiency drops and the **net loss increases**.

Let the net energy in the battery after **x days** be represented by a linear polynomial (valid until efficiency changes).

Q1. Form a linear polynomial E(x) representing the energy after x days.

Q2. If the slope is negative, explain why the system is still considered "developing." Can a system show improvement even with overall decay? Justify.

Q3. After 10 days, due to battery wear, the daily energy loss increases by 30 units per day (solar input remains same).

- Write a **new linear polynomial** valid for x>10
- Is the function still a single linear polynomial for all x? Explain why or why not.

Q4. The community wants the battery to last **at least 20 days before reaching zero**. Find the **required net daily change**.
Q5. A proposal suggests doubling solar input from **40 to 80 units/day**.

- Form the new polynomial.
- Will this make the system sustainable (energy never reaches zero)?

TASK 2: Designing an Inclusive Public Transport Network

A rapidly growing city is planning a **sustainable and inclusive public transport system** so that all residents—especially those in underserved areas—have equal access to mobility.

Urban planners use **coordinate geometry** to model the city on a grid, where:

- Each location is represented as a point on the coordinate plane
- Roads are represented as straight lines
- Distance between two points represents **travel cost (time/fuel/money)**

Background Discussion (Theory Integration)

In planning:

The **distance formula** helps determine the shortest path between two locations

- The **midpoint formula** helps identify locations that are equally accessible
- **Collinearity** ensures efficient straight-line transport routes
- The **section formula** helps locate transport facilities for fair and efficient accessibility.

City Model

Three major residential zones are located at:

- A(−2,6) (low-income housing area)
- B(8,6) (commercial zone)
- C(4,−4)(industrial area)

A new **metro station** is to be planned.

Answer the following questions:

Q1. Using the distance formula, verify whether triangle ABC is **isosceles, scalene, or equilateral**.

Q2. Find the midpoint of AB.

- Why might this point seem ideal for a facility?
- Critically analyze why **equal distance does not always mean equal benefit** in real-life planning.

Q3. Check whether points A, B, and the midpoint of AC are collinear.

Explain: What does collinearity imply for designing a **direct transport corridor**?

Q4. The planners want a station that is **equidistant from A, B, and C**.

Without full calculation, answer:

- Which geometric concept ensures this condition?
- Why might this theoretically be the “most fair” location.

Q5. Using the section formula, find the coordinates of the point that divides the line joining A(−2,6) and C(4,−4) internally in the ratio 2:1

TASK 3: Presentation Framework

Make a presentation on the topics according to your
Roll number 1 to 15: Circumcenter
Roll number 16 to 30: Incenter
Roll number 31 onwards: Orthocenter

TASK 4:

Do the following questions on A4 (both side ruled) sheets:

HHW Class IX Worksheet 2026-27

1.आवश्यक निर्देश- कार्य का मूल्यांकन होगा तथा अंक दिए जाएगें |

2. शब्दरूप,धातुरूप व अव्यय शब्द याद भी करने हैं,मौखिक अभिव्यक्ति के भी अंक दिए जाएगें |

कार्य 1-

* अस्मद् ,युष्मद् व तत् सर्वनाम शब्दरूप (स्त्री. व पु.) अभ्यास पुस्तिका में लिखो व हर शब्द के आधार पर संस्कृत वाक्य संरचना करो | (तीनों वचनों व सातों विभक्तियों के आधार पर)

कार्य 2-

* किम् के शब्दरूपों (तीनों लिंग) के आधार पर प्रश्नवाचक वाक्य बनाओ |

कार्य 3-

* अव्यय शब्द अर्थ सहित कंठस्थ करो व कार्य 1के वाक्यों में उनका प्रयोग करो

कार्य 4-

* जिन धातुरूपों में 'य' का प्रयोग होता हैं,ऐसे 5 धातुरूप (लट्,लंग,लृट् व लोट् लकार)अभ्यास पुस्तिका में लिखो(भक्ष्,चिन्त्,नृत्,पाठ,त्रुट्)(भक्षयति,चिन्तयति नृत्यति,पाठयति,त्रोटयति)

सामान्य निर्देश -

- मूल्यांकन हेतु ग्रीष्मकालीन गृहकार्य अनिवार्य है।
- सभी प्रश्नों के उत्तर शुद्ध वर्तनी में पूर्ण कीजिए ।
- प्रत्येक कार्य स्पष्ट व सुंदर लेख में पूर्ण कीजिए|
- मई माह तक करवाए गए सारे विषय दोहराएँ |

❖ संपूर्ण कार्य **A4** आकार की शीट में करें |

विषय संवर्धन गतिविधि

THEME - सतत भविष्य :समावेशी विकास

विवरण- सतत भविष्य हेतु समावेशी विकास एक ऐसी सर्वग्राही अवधारणा है, जो सामाजिक न्याय और पारिस्थितिक संतुलन के मध्य सामंजस्य स्थापित करती है। यह न केवल आर्थिक प्रगति का मार्ग प्रशस्त करती है, बल्कि यह भी सुनिश्चित करती है कि विकास की मुख्यधारा से समाज का अंतिम व्यक्ति वंचित न रहे।सतत विकास की टिकाऊ तकनीकें अंत्योदय (अंतिम व्यक्ति के उत्थान) को केंद्र में रखकर किफायती नवाचारों के माध्यम से सामाजिक-आर्थिक विषमता को न्यून करती हैं और भविष्य को सुरक्षित बनाती हैं।

कार्य-1 अन्वेषण कार्य (Research Work)

➢ उत्तम भविष्य:सतत विकास से संबंधित किन्ही दस परियोजनाओं सूची बनाइएI

➢ पर्यावरण संरक्षण हेतु 'मिशन लाइफ' को एक सरकारी योजना के बजाय 'जन आंदोलन' बनाने की आवश्यकता बताते हुए अपने मित्र को **120-150** शब्दों में एक पत्र लिखिए |

अथवा

कार्य- 1 अक्षय ऊर्जा: स्वच्छ व आत्मनिर्भर भारत अनुच्छेद लेखन

➢ अक्षय ऊर्जा: स्वच्छ व आत्मनिर्भर भारत ' विषय पर जानकारी एकत्र कीजिए तथा संकेत बिन्दुओं की सहायता से २००-२५० शब्दों में अनुच्छेद लिखिए|

- प्रस्तावना: नवीकरणीय ऊर्जा का अर्थ
- आत्मनिर्भरता की ओर कदम:
- पर्यावरणीय लाभ व आर्थिक अवसर
- चुनौतियाँ व समाधान:

कार्य- 3 संवाद लेखन

ई-कचरा **(E-waste)** की समस्या और इसके टिकाऊ समाधान पर बातचीत करते हुए दो छात्रों के मध्य हुए संवादों को **120-150** शब्दों में लिखिए।

संवाद लेखन में निम्नलिखित बिंदुओं का प्रयोग अनिवार्य है|

- ई-कचरे का बढ़ता स्तर
- पर्यावरणीय और स्वास्थ्य जोखिम
- अवैज्ञानिक निपटान की समस्या
- उत्तरदायित्व और जागरूकता:

कार्य- 4 शब्द संपदा स्मृति पत्रक (FLASH CARDS)

दिए गए विषयों से संबंधित कोई बीस नवीन शब्द अर्थ सहित शद्ध वर्तनी में लिखिए -

निर्देश :

आकार -10 x 7 से०मी०

- संस्कृति : भारतीय अस्मिता (अनुक्रमांक १ से १० तक)
- साहित्य और आत्मचिंतन (अनुक्रमांक ११ से २० तक)

- जैव विविधता : सृष्टि का संतुलन (अनुक्रमांक २१ से ३० तक)
- आरोग्य : तन-मन का संतुलन (अनुक्रमांक ३१ से अंतिम अनुक्रमांक तक)

संलग्न कार्य पत्रिकाएँ पूर्ण करें

General instructions -

1. Take science project work according to your roll no.
2. Attempt all the questions mentioned in the project on A4 sheets and present it in a file.
3. Your work should be presented in a creative manner.
4. Practice assignment also to be done on A4 sheets.
5. Revise all the topics covered in the class.

Roll no 1 to 13 - **Biology**
Roll no 14 to 26 - **Chemistry**
Roll no 27 onwards - **Physics**

BIOLOGY

Project Title: "Cells, Cancer & Community: Investigating Biology for a Healthier Future"

Students will investigate:

How understanding cells and cell cycle helps society prevent disease, improve healthcare access, and build a sustainable future.

Part A: Concept Foundation (Biology Understanding)

Explain with Diagrams:

- Difference between normal cell division and cancerous cell division

Part B: Investigation Project

Lifestyle and Cell Health Investigation

Research Question:

Which lifestyle habits in my family/community may affect healthy cell functioning?

Investigate:

- Sleep patterns
- Junk food consumption
- Exercise habits
- Screen time
- Smoking/passive smoking exposure

Explain how these factors affect:

- Cell repair
- DNA damage
- Cell cycle regulation
- Cancer risk

1. Environmental Carcinogens Around Us

Research Question:

What environmental factors in my locality may increase risk of abnormal cell growth?

Investigate:

- Air pollution
- Plastic burning
- Pesticide use
- Tobacco shops
- Excessive sun exposure
- Industrial waste

Explain:

- How carcinogens damage DNA?
- Mutation → uncontrolled mitosis → tumor formation

Stem Cells and Future Medicine

Research Question:

How can cell biology innovations create an inclusive and sustainable healthcare future?

Investigate:

- Stem cells
- Regenerative medicine
- Organ growth research
- Cancer therapies
- Personalized medicine

Part C: Creative Application Task

Innovation Challenge

Design a futuristic idea:

"Invent a sustainable healthcare innovation using cell biology"

Submission Guidelines

- **7-8 pages**
- **Include diagrams, charts, real data, photographs**
- **Handwritten / Scrapbook / File format**

CHEMISTRY

Topic: Separation of a Complex Mixture
Objective

To design a method for separating a mixture using appropriate separation techniques based on physical properties.

Part A: The Challenge

You are given a mixture containing:

- Sand
- Common salt
- Iron filings
- Ammonium chloride

Your task is to **separate all four components** in the most efficient way possible.

Part B: Planning the Process

You are NOT given the steps.Instead, you must:

1. Choose suitable separation techniques from the list below
2. Decide the **correct sequence** of steps
3. Justify why each method is used at that stage

Available Techniques (Clues)

- Magnetic separation
- Sublimation
- Filtration
- Evaporation
- Dissolution in water

Part C: Your Design–Write your answer in the following format:

1. Sequence of Steps (in correct order) (Write the methods you will use step-by-step)

2. Justification of Each Step-Explain:

- What property is being used (e.g., solubility, magnetism, etc.)
- Why that step must come at that particular stage

Part D: Observation Record (After Performing Activity)

Step	Method Chosen	What Happened?	Substance Obtained

Part E: Thinking Questions

1. Why is it important to follow a specific order of separation?
2. What could go wrong if water is added at the beginning?
3. Which method depends on change of state? Explain.
4. Which substances in the mixture are soluble and insoluble?
5. Can sublimation be used after adding water? Why or why not?

Part F : Diagram Work-Draw and label:

- Any TWO separation setups used in your method

Part G: Safety & Precautions

List at least 4 precautions you would follow while performing this experiment.

PHYSICS

Theme: ***Learning Physics Through Real-Life Travel & Graphs***

A Journey to Ladakh

Imagine you are planning a summer trip from **Delhi to Leh Ladakh**. Your task is to plan and analyze your journey using concepts of motion.

1. **Mode of Transport**
    - Choose how you want to travel:
        - ✈️ Flight
        - 🚗 Car
        - 🚌 Bus
        - 🚆 Train + Road
    - Explain **why** you selected this mode (comfort, cost, speed, adventure, etc.)
2. **Distance Covered**
    - Find and write the **total distance** from Delhi to Leh.

    - If using multiple transport modes, mention distance for each.
3. **Time Taken**
    - Estimate or research the **total time taken** for your journey.
4. **Average Speed Calculation**

- Calculate your **average speed**
- Show complete calculation

5. **Journey Halts (Important)**
    - List all stops (example: Manali, Keylong, etc.)
    - Mention:
        - Distance between stops
        - Time taken
        - Reason for halt (rest, fuel, food, sightseeing)
6. **Add Creativity**
    - Draw a **route map**
    - Add pictures or sketches of mountains, roads, vehicles
    - Make it look like a **travel diary**

Reflection Questions:

- Which part of your journey had the **highest speed**? Why?
- Where did you move the **slowest**? Why?
- How does terrain affect motion?

Graphical Representation of Motion

Prepare this project neatly on A4 sheets with proper diagrams.

📄 **Page 1: Introduction**

- What is motion?
- Types of motion (uniform & non-uniform)
- Importance of graphs in physics

Page 2: Distance-Time Graph

- Draw **2 separate graphs**:
    1. Uniform motion (straight line)
    2. Non-uniform motion (curved line)

Label axes clearly:

- X-axis → Time
- Y-axis → Distance

Page 3: Speed-Time Graph

- Draw **2 graphs**:
    1. Constant speed
    2. Accelerated motion

📄 **Page 4: Finding Speed from Distance-Time Graph**

📄 **Page 5: Finding Acceleration & Distance from Velocity-Time Graph**

- Give a simple example
- Show shaded area in graph

📄 **Page 6: Bibliography**

- Books used

- Websites (if any)
- Notes/teacher material

COMBINED ASSIGNMENT OF PCB

1.Why is **crystallization** considered a better method than evaporation for purification of solids?

2. Explain the principle of **distillation**. How is it different from evaporation?

3.Describe the process of **chromatography**. Give one real-life application.

4. On what basis can mixtures be separated? List at least four physical properties used.

5. Why cannot a mixture of salt and water be separated by filtration? Which method would you use instead and why?

6. Explain the method of **sublimation** with an example.

7. A person takes a concentrated solution of salt, after sometime, he starts vomiting. What is the phenomenon responsible for such a situation? Explain.

8. If cells of onion peel and RBC are separately kept in a hypotonic solution, what among the following will take place? Explain the reason for your answer.

(a) Both the cells will swell.

(b) RBC will burst easily while cells of onion peel will resist the bursting to some extent.

(c) a and b both are correct.

(d) RBC and onion peel cells will behave similarly.

9. Name the organelles which show the analogy written as under

(a) Transporting channels of the cell——

(b) Powerhouse of the cell——

(c) Digestive bag of the cell——

(d) Storage sacs of the cell——

(e)Control room of the cell——

10. Why are saline (salt) solutions used in medical drips instead of pure water? What might happen to red blood cells if pure water is used instead?

11.Why do muscle cells in athletes have more mitochondria than skin cells?

12. You are asked to create synthetic skin tissue. Which organelle would be most important in protein production, and why?

13. If ribosomes suddenly stopped working in your body, what do you think would happen?

14. Some bacteria can survive without mitochondria. How is this possible?

15. A body thrown vertically upwards reaches a maximum height h, it then returns to ground Calculate the distance traveled and the displacement.

16. Starting from a stationary position, Rahul paddles his bicycle to attain a velocity of 6m/s in 30 s. Then he applies brakes such that the velocity of the bicycle comes down to 4 m/s in the next 5 sec. Calculate the acceleration of the bicycle in both the cases.

17. A ball thrown vertically upwards with a speed of 19.6 ms^{-1} from the top of a tower returns to the earth in 6 seconds. Find the height of the tower (take acceleration = 9.8 ms^{-2})

18. Two balls of different masses are thrown vertically upward with the same initial velocity. Maximum heights attained by them are h_1 and h_2 respectively. What is h_1/h_2?

19. A ball is thrown upward with a speed of 49 ms^{-1} and at the same time another ball is dropped from the top of a tower of height 100 m. Then after how much time they will meet each other and what is the position of the stones?

20. A body starts from rest and moves with a uniform acceleration of 5m/s2 for 5s and then it moves with a constant velocity for 4s. Later it slows down and comes to rest in 5s. Draw the velocity- time graph for the motion of the body and answer the following questions:

a) What is the maximum velocity attained by the body?

b) What is the distance traveled during this period of acceleration?

c) What is the distance traveled when the body was moving with constant velocity?

d) What is the retardation of the body while slowing down?

e) What is the distance traveled by retarding?

f) What is the total distance travelled?