

H.L. INTERNATIONAL SCHOOL

CLASS: X | SUMMER BREAK HOLIDAY HOMEWORK

✿ Wish you a productive, healthy, and happy learning break! ✿

1. SCIENCE

Biology Homework

- **Practical/Model Project:** Make a model of any one Digestive system, Respiratory system, Excretory system of human being or Nutrition in amoeba.

Chemistry Practical File

Instructions: Prepare a separate Chemistry Practical File. Write all experiments neatly in your own handwriting with proper diagrams on the blank left-side pages.

Experiment 1: Study of Properties of Acids and Bases Using Indicators

Aim: To study the properties of acids and bases using indicators.

Materials Required: Dilute HCl, NaOH solution, red and blue litmus, turmeric paper.

- 1. Test acid and base solutions with indicators.
- 2. Observe colour changes.

Observation:

- Acid turns blue litmus red.
- Base turns red litmus blue.

Result: Indicators help identify acidic and basic substances.

Precautions: Handle chemicals carefully.

Experiment 2: Determination of pH Using pH Paper

Aim: To determine the pH of different solutions.

Materials Required: pH paper, lemon juice, soap solution, distilled water.

- 1. Dip pH paper into each solution.
- 2. Compare colour with pH chart.

Sample Solution	Observed pH Color Chart	Nature of Solution
-----------------	-------------------------	--------------------

Lemon juice	pH 2–3	Acidic
Distilled water	pH 7	Neutral
Soap solution	pH 9–10	Basic

Result: pH indicates acidic or basic nature of a solution.

Precautions: Use fresh pH paper.

Experiment 3: Properties of Acetic Acid

Aim: To study the properties of acetic acid.

Materials Required: Acetic acid, blue litmus paper, sodium bicarbonate.

- 1. Observe the smell of acetic acid.
- 2. Test with blue litmus paper.
- 3. Add sodium bicarbonate.

Observation:

- Vinegar-like smell.
- Blue litmus turns red.
- Brisk effervescence is observed.

Result: Acetic acid shows acidic properties.

Precautions: Avoid direct inhalation of fumes.

Experiment 4: Cleaning Capacity of Soap in Soft and Hard Water

Aim: To compare the cleaning capacity of soap in soft and hard water.

Materials Required: Soap solution, hard water, soft water, test tubes.

- 1. Add equal amounts of soap solution to both samples.
- 2. Shake vigorously.
- 3. Compare lather formation.

Observation: More lather forms in soft water.

Result: Soap works better in soft water.

Precautions: Use equal quantities of solutions.

Experiment 5: Study of Chemical Reactions

Aim: To observe a displacement reaction.

Materials Required: Copper sulphate solution, iron nail, test tube.

- 1. Take copper sulphate solution in a test tube.
- 2. Dip an iron nail in it.
- 3. Leave for 20–30 minutes.

Observation:

- Blue colour fades.
- Brown coating appears on the nail.

Result: Iron displaces copper from copper sulphate solution.

Chemical Equation: $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

Precautions: Use clean iron nail and glassware.

Physics Assignment

Solve all the following questions systematically in your physics notebook.

Section A: Multiple Choice Questions (1 Mark Each)

1. A ray parallel to principal axis after reflection from concave mirror passes through:
a) Pole b) Focus c) C d) Between F & C
2. If magnification of a mirror is +1, the mirror is:
a) Concave b) Convex c) Plane d) Can't say
3. Power of a lens is -2.5 D. The lens is:
a) Convex, $f = 40 \text{ cm}$ b) Concave, $f = -40 \text{ cm}$ c) Convex, $f = 0.4 \text{ m}$ d) Concave, $f = -0.4 \text{ m}$
4. When light goes from water to air, it:
a) Bends towards normal b) Bends away from normal c) Goes undeviated d) Reflects totally
5. The focal length of plane mirror is:
a) 0 b) 25 cm c) Infinity d) -25 cm
6. 1 Diopetre is power of lens with $f =$
a) 1 cm b) 10 cm c) 100 cm d) 1 m

Section B: Short Answer Type Questions (2 Marks Each)

1. Why is convex mirror preferred as rear-view mirror? Give 2 reasons.
2. Define refractive index. Write 2 factors on which it depends.
3. State New Cartesian Sign Convention for spherical mirrors.
4. Why does a pond appear shallower than it actually is? Draw ray diagram.
5. What is meant by “principal focus” of a convex lens? Show with diagram.

Section C: Ray Diagrams Practice Tasks

Draw neat, scaled ray diagrams and specify the precise position, nature, and size of the image for the following setups:

- 1. Concave mirror when object is placed: a) At F b) Between C and F c) Beyond C
- 2. Convex lens when object is placed: a) At 2F b) Between F and O c) At infinity
- 3. Concave lens when object is placed anywhere between infinity and Optical Centre (O)

Section D: Long Answer & Numericals (3 Marks Each)

1. An object 2 cm high is placed 12 cm from concave mirror of $f = 8$ cm. Find v , h' , nature.
2. A 4 cm tall object is placed 30 cm from convex lens of $f = 20$ cm. Find image distance and size.
3. Power: Two lenses of power +3.5 D and -2D. What is the focal length of combination?
4. Refraction: Refractive index of glass = 1.5, water = 1.33. Find n of glass w.r.t water.
5. Snell's Law: Light enters glass at $i = 30^\circ$. If $n = 1.5$, find angle of refraction.

Section E: Long Answer Type & Case Study (5 Marks Each)

1. Derive lens formula $1/f = 1/v - 1/u$ for convex lens using ray diagram.
2. A student uses a lens of $f = -50$ cm. What is the nature and power of lens? Where should an object be placed to form image at infinity?
3. Case Study: Rohan holds a concave mirror of $f = 15$ cm at 10 cm from a printed page.
 - a) Where is the image formed?
 - b) What is magnification?
 - c) Why does text look enlarged?

Section F: Assertion-Reason Questions

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the appropriate option.

1. Assertion (A): Concave mirror can form real and virtual images.
Reason (R): Nature of image depends on position of object.
2. Assertion (A): Stars twinkle but planets don't.
Reason (R): Stars are point sources, planets are extended sources.
3. Assertion (A): Concave lens always forms virtual image.
Reason (R): Concave lens is diverging in nature.

2. SOCIAL STUDIES

Project Topic: Consumer Rights

Objective: Make a comprehensive project file for your CBSE internal assessment marks. Please carefully adhere to the standard project layout given below:

- **Cover Page:** Must include the Project Title, Student's Name, Roll Number, Class/Section, School Name, and the Academic Year.
- **Statement of Purpose / Objective:** A short brief explaining why you chose this specific topic and what you aim to find out.
- **Certificate of Authenticity:** A formal declaration signed by your Economics teacher and the external examiner stating that this is your original work.
- **Acknowledgment:** Thanking your teacher, school principal, parents, and anyone else (like survey respondents) who helped you complete the project.
- **Table of Contents (Index):** A neat list of headings, subheadings, and their corresponding page numbers.
- **Conclusion:** Summarize the final results of your study. What did you discover?
- **Bibliography / References:** List all the websites, books, newspapers, or journals you used to gather information.

3. ENGLISH

1. READING TASK

Read any one English novel/storybook of your choice and prepare a structured report including:

- Name of the book
- Author
- Main characters
- Summary (150–200 words)
- Moral/Message of the story

2. WRITING SKILLS

A. Analytical Paragraph Writing

Write two analytical paragraphs (120–150 words each) based on the given visual aids:

1. A bar graph showing students' favourite sports.
2. A pie chart showing the daily use of social media by teenagers.

B. Formal Letter to the Editor

Write formal letters to the Editor on the following pressing topics (100-120 words):

1. Increasing environmental pollution in your city.

- 2. Rising use and dependency on mobile phones among school-going students.

3. GRAMMAR PRACTICE

Execute the following practice exercises in your separate English grammar notebook:

- Write 10 sentences of Tenses (covering all standard grammatical forms).
- Write 10 practical examples of Direct and Indirect / Reported Speech.
- Write 10 technical examples of Active and Passive Voice conversion.
- Write 10 context-appropriate examples using Modals.

4. LITERATURE SECTION

Chapter 1: Nelson Mandela – A Long Walk to Freedom

1. What does Mandela mean by "an extraordinary human disaster"?
2. What ideals did Mandela cherish throughout his life?

Chapter 2: Two Stories About Flying

1. How did the young seagull finally overcome his fear of flying?
2. How did the black aeroplane help the pilot?

5. POETRY SECTION

Dust of Snow

1. How did the crow change the poet's mood?
2. What message does the poem convey?

Fire and Ice

1. What do fire and ice symbolize?
2. How can hatred be as destructive as desire?

6. VOCABULARY ENRICHMENT

Write the standard dictionary meanings and construct one complex-compound sentence using each of the following vocabulary words:

1. Determination
2. Courage
3. Freedom
4. Compassion
5. Perseverance
6. Optimistic

7. Generosity
8. Achievement
9. Inspire
10. Confidence

7. PROJECT WORK

Topic: "Environmental Conservation and Sustainable Development"

Prepare a comprehensive project file (4–5 pages) incorporating:

- Introduction to the Topic
- Primary Causes of Environmental Degradation
- Socio-Economic Effects on Society
- Practical Sustainable Solutions
- Active Role of Students
- Conclusion and Personal Insights
- Relevant Pictures, Case Studies and Illustrations

8. SPEAKING ACTIVITY

Prepare a structured public speech (2–3 minutes duration) on any one selected topic: Importance of Education, Save Environment, Digital India, or Healthy Lifestyle.

9. HANDWRITING PRACTICE

Write one full page daily from a reputed English newspaper, monthly magazine, or textbook to consciously improve handwriting speed, clarity, spelling, and vocabulary context.

4. HINDI (हिन्दी)

परियोजना कार्य (Creative Project Work)

निर्देश: दिए गए सभी विषयों की गहन समीक्षा कीजिए एवं एक आकर्षक, हस्तलिखित परियोजना फाइल (A4 शीट्स पर) तैयार कीजिए:

- 1. वर्तमान समय में महिलाओं की स्थिति और अधिकार
- 2. भारतीय संस्कृति में त्योहारों का महत्व
- 3. स्वस्थ जीवन शैली के लिए व्यायाम और आहार का महत्व
- 4. पर्यावरण संरक्षण और जलवायु परिवर्तन

निम्नलिखित महान साहित्यकारों एवं कवियों का विस्तृत जीवन परिचय, साहित्यिक विशेषताएँ तथा उनकी प्रमुख कृतियों का सचित्र उल्लेख कीजिए:

1. सूर्यकांत त्रिपाठी 'निराला'
2. मुंशी प्रेमचंद
3. महादेवी वर्मा
4. हरिवंशराय बच्चन

5. MATHEMATICS

Complete this assignment directly in your designated Mathematics assignment register.

Section A: Short Answer Type Questions [2 Marks Each]

Q1. If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$, where x, y are prime numbers, then find HCF(a, b) and LCM(a, b).

Q2. Explain why $7 \times 11 \times 13 + 13$ is a composite number.

Q3. Find the HCF of 96 and 404 by the prime factorization method. Hence, find their LCM.

Q4. Find the zeroes of the quadratic polynomial $4x^2 - 4x + 1$.

Q5. Find a quadratic polynomial whose sum and product of zeroes are -3 and 2 respectively.

Q6. If one zero of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3, then find the value of k .

Q7. For what value of k will the following pair of linear equations have no solution?

$$3x + y = 1 \quad \text{and} \quad (2k - 1)x + (k - 1)y = 2k + 1$$

Q8. Check whether the pair of equations $x + 3y = 6$ and $2x - 3y = 12$ is consistent or inconsistent.

Q9. Find the value of p for which the pair of linear equations $4x + py + 8 = 0$ and $2x + 2y + 2 = 0$ has a unique solution.

Q10. Solve the equations $x + y = 14$ and $x - y = 4$ using the substitution method.

Section B: Medium Answer Type Questions [3 Marks Each]

Q11. Prove that $\sqrt{3}$ is an irrational number.

Q12. Prove that $5 - \sqrt{3}$ is irrational, given that $\sqrt{3}$ is irrational.

Q13. Find the largest number which divides 70 and 125, leaving remainders 5 and 8 respectively.

Q14. Find the zeroes of the quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeroes and the coefficients.

Q15. If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - p(x + 1) - c$, show that $(\alpha + 1)(\beta + 1) = 1 - c$.

Q16. If α and β are the zeroes of the polynomial $2x^2 + 5x + k$ such that $\alpha^2 + \beta^2 + \alpha\beta = 21/4$, find the value of k .

Q17. Solve the following pair of linear equations by the elimination method:

$$3x + 4y = 10 \quad \text{and} \quad 2x - 2y = 2$$

Q18. The taxi charges in a city consist of a fixed charge together with the charge for the distance covered. For a distance of 10 km, the charge paid is Rs. 105 and for a journey of 15 km, the charge paid is Rs. 155. What are the fixed charges and the charge per km?

Q19. The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?

Q20. Solve for x and y:

$$2/\sqrt{x} + 3/\sqrt{y} = 2 \quad \text{and} \quad 4/\sqrt{x} - 9/\sqrt{y} = -1$$

Section C: Long Answer Type Questions [5 Marks Each]

Q21. Three bells toll together at intervals of 9, 12, 15 minutes respectively. If they start tolling together, after what time will they next toll together? Explain the real-world application of LCM here.

Q22. State the Fundamental Theorem of Arithmetic. Use it to find the HCF and LCM of 40, 36 and 126. Also, verify whether $\text{HCF} \times \text{LCM}$ equals the product of the three numbers.

Q23. If α and β are the zeroes of the quadratic polynomial $p(x) = 3x^2 - 4x + 1$, find a quadratic polynomial whose zeroes are α^2/β and β^2/α .

Q24. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be $x + a$. Find the values of k and a.

Q25. Solve the following system of linear equations graphically:

$$2x + 3y = 12 \quad \text{and} \quad x - y = 1$$

Find the coordinates of the vertices of the triangle formed by these lines and the y-axis. Also, calculate the area of this triangle.

Q26. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. Determine the speed of the stream and that of the boat in still water.

Q27. A fraction becomes $9/11$ if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator, it becomes $5/6$. Find the original fraction.

Q28. Two numbers are in the ratio 5 : 6. If 8 is subtracted from each of the numbers, the ratio becomes 4 : 5. Find the two numbers using algebraic linear systems.

Q29. Five years ago, Nuri was thrice as old as Sonu. Ten years later, Nuri will be twice as old as Sonu. Determine the present ages of Nuri and Sonu.

Q30. Find the values of a and b for which the following system of linear equations has an infinite number of solutions.

6. INFORMATION TECHNOLOGY

Instructions for Segment - 2 (LIBRE OFFICE-WRITER PROJECT)

1. Take the print outs of whole project and submit in form of spiral file.
2. Attempt all the questions by reading the instructions carefully.
3. Don't forget to add the introductory page mentioning: your roll no, name, class, section, subject, topic name and submitted to whom: - the respective Teacher's name.

Do as directed:

1. Topic: "India is a developing nation". Write at least three paragraphs.

- Add a suitable heading style to the title.

- Apply a paragraph style on the first paragraph as Body Text, Indented.
- Apply Fill format feature to the rest of the paragraphs.
- Save and close the document.

2. Topic: Write a paragraph on “Conservation of Water”. Add a picture related to it. Do the following modifications:

- Resize the image according to the page size by setting the width as 3.77 and height as 3.99.
- Crop the picture with the scaling parameters of width as 50% and height as 50%.

3. Complete the following activities:

- Create a template to display the front page of science project.
- Create a template of Birthday Greeting Card.
- Create a template for business card of ABC Corporation using existing templates.

★ ★ ★ HAPPY HOLIDAYS! ★ ★ ★