

LUTHRA ACADEMY HIGH SCHOOL

GANDHINAGAR

SUMMER HOLIDAY HOMEWORK

Class 10th Standard

Academic Session: 2026-27

Class: 10th Standard

GUIDELINES:

- The student should maintain a separate notebook for summer holiday work.
- Students are advised to include yoga, exercise, and prayers in their daily routine to stay physically fit and mentally peaceful.

MATHEMATICS

1. COORDINATE GEOMETRY

1. Find the coordinates of the point which divides the line segment joining the points $(4, -3)$ and $(8, 5)$ internally in the ratio $3:1$.
2. Check whether the points $(5, -2)$, $(6, 4)$, and $(7, -2)$ form the vertices of an isosceles triangle.
3. Find a relation between x and y such that the point (x, y) is equidistant from the points $(3, 6)$ and $(-3, 4)$.

2. SURFACE AREAS AND VOLUMES

1. A solid toy is in the form of a hemisphere surmounted by a right circular cone. The height of the cone is 2 cm and the diameter of the base is 4 cm. Determine the volume of the toy.
2. A copper rod of diameter 1 cm and length 8 cm is drawn into a wire of length 18 m of uniform thickness. Find the thickness of the wire.
3. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent.

3. POLYNOMIALS

1. Find the zeroes of the quadratic polynomial $x^2 - 2x - 8$, and verify the relationship between the zeroes and the coefficients.
2. Form a quadratic polynomial whose zeroes are $3 + \sqrt{2}$ and $3 - \sqrt{2}$.
3. If one zero of the polynomial $(k-1)x^2 + kx + 1$ is -3 , then find the value of k .

4. PROBABILITY

1. One card is drawn from a well-shuffled deck of 52 cards. Calculate the probability that the card will (i) be an ace, (ii) not be an ace.
2. Two dice, one blue and one grey, are thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is (i) 8? (ii) 13?
3. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number, (ii) a perfect square number.

5. QUADRATIC EQUATIONS

1. Find the roots of the quadratic equation $2x^2 - 7x + 3 = 0$ by applying the quadratic formula.
2. Find the values of k for the quadratic equation $2x^2 + kx + 3 = 0$, so that it has two equal real roots.
3. The diagonal of a rectangular field is 60 meters more than the shorter side. If the longer side is 30 meters more than the shorter side, find the sides of the field.

PHYSICS

1. LIGHT: REFLECTION AND REFRACTION

1. Draw neat, step-by-step ray diagrams showing image formation by a **concave mirror** when the object is placed: (a) Between Pole (P) and Focus (F), (b) At Center of Curvature (C), (c) Beyond C.
2. Draw ray diagrams showing image formation by a **convex lens** when the object is placed: (a) Between optical center (O) and F_1 , (b) At $2F_1$.
3. Define the terms: Principal Focus, Focal Length, and Center of Curvature.

2. HUMAN EYE AND THE COLOURFUL WORLD

1. What is Myopia (Short-sightedness)? Explain its causes and show how it can be corrected using a suitable lens diagram.
2. What is Hypermetropia (Long-sightedness)? Explain its causes and show its correction using a lens diagram.
3. Explain the phenomenon of the dispersion of white light passing through a glass prism. Draw a neat diagram showing the spectrum.

3. ELECTRICITY

1. State Ohm's Law. Draw a circuit diagram to verify it experimentally.
2. Derive the formula for the equivalent resistance of three resistors connected in: (a) Series, (b) Parallel.
3. An electric lamp of resistance $20\ \Omega$ and a conductor of $4\ \Omega$ resistance are connected in series to a 6 V battery. Calculate the total resistance of the circuit and the current flowing through it.

4. MAGNETIC EFFECT OF CURRENT

1. State Fleming's Left-Hand Rule and its application in an electric motor.
2. What is a Solenoid? Draw the pattern of magnetic field lines produced around a current-carrying solenoid.
3. Explain the phenomenon of Electromagnetic Induction (EMI). State Fleming's Right-Hand Rule.

CHEMISTRY

CHEMICAL REACTIONS AND EQUATIONS

1. Balance the following chemical equations cleanly:
 - $\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$
 - $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
2. Define and give one chemical equation example for each: (a) Combination Reaction, (b) Decomposition Reaction, (c) Displacement Reaction, (d) Double Displacement Reaction.
3. What is the difference between exothermic and endothermic reactions? Give examples.

BIOLOGY

1. LIFE PROCESSES

1. Draw a neat, labeled structural diagram of the Human Alimentary Canal (Digestive System).
2. Explain the mechanism of regular urine formation inside the human kidney. Draw a labeled diagram of a Nephron.
3. Describe the process of double circulation in the human heart. Why is it necessary?

2. CONTROL AND COORDINATION

1. Draw the structural layout of a human Neuron (Nerve Cell) and label the Dendrite, Axon, and Cell Body.
2. Define reflex action. Draw a schematic diagram showing a complete Reflex Arc pathway.
3. List the major plant hormones (Auxin, Gibberellin, Cytokinin, and Absciscic Acid) and state one primary function of each.

HINDI (हिंदी)

1. पाठों पर आधारित प्रश्न

1. 'हरिहर काका' पाठ के आधार पर स्पष्ट कीजिए कि समाज में पारिवारिक और सामाजिक संबंधों में आ रही गिरावट के क्या कारण हैं? काका की लाचारी पर अपने विचार लिखिए।
2. 'बड़े भाई साहब' पाठ में लेखक ने बड़े भाई के चरित्र की किन विशेषताओं को उभारा है? वे छोटे भाई को क्या सीख देना चाहते थे?
3. बड़े भाई साहब के अनुसार जीवन की समझ केवल किताबी ज्ञान से नहीं आती, बल्कि अनुभव से आती है। इस कथन को पाठ के प्रसंगों द्वारा स्पष्ट कीजिए।

2. पद्य एवं गद्य संकलन अभ्यास

1. **साखी (कबीर):** कबीर की साखियों में 'निंदक नेड़ा राखिए' और 'पोथी पढ़ि पढ़ि जग मुआ' का क्या सामाजिक संदेश है? व्याख्या कीजिए।
2. **दोहे (बिहारी):** बिहारी के दोहों में निहित सौंदर्य और गागर में सागर भरने की कला को किसी एक दोहे का उदाहरण देकर समझाइए।
3. **जम्मू कश्मीर व लद्दाख में हिंदी:** जम्मू-कश्मीर और लद्दाख के सांस्कृतिक विकास में हिंदी भाषा के योगदान और इसके प्रसार पर एक संक्षिप्त नोट तैयार कीजिए।
4. **हमारा प्यारा भारतवर्ष:** कविता के आधार पर भारतवर्ष के प्राकृतिक और सांस्कृतिक गौरव का वर्णन अपने शब्दों में कीजिए।
5. **कैकेयी का अनुताप:** कैकेयी को अपने किए पर क्या पछतावा हुआ? उसके अनुताप (पश्चाताप) की तर्कसंगत विवेचना कीजिए।
6. **कश्मीर का लोक नाटक बॉड पाऽथर:** कश्मीर की लोक कला 'बॉड पाऽथर' की विशेषताओं, इसकी प्रस्तुति शैली और सामाजिक संदेश पर प्रकाश डालिए।
7. **जम्मू की चित्रकला:** जम्मू क्षेत्र की पारंपरिक चित्रकला शैलियों (जैसे बसोहली चित्रकला) के इतिहास और मुख्य विषयों पर एक विवरणात्मक आलेख तैयार कीजिए।
8. **हिंदी जानकी बोली:** इस प्रसंग की मुख्य भाषागत विशेषताओं पर संक्षिप्त टिप्पणी लिखिए।

9. **भिक्षुक:** 'भिक्षुक' कविता के माध्यम से कवि ने समाज के किस वर्ग की दयनीय स्थिति का चित्रण किया है? हमारे प्रति उनका क्या कर्तव्य होना चाहिए?

3. निबंध लेखन (शब्द सीमा: 150-200 शब्द)

नीचे दिए गए विषयों में से किन्हीं **तीन** पर अपने विचार व्यवस्थित रूप से लिखिए:

1. विज्ञान के लाभ तथा हानियां	5. मेरे जीवन का लक्ष्य	9. मेरा प्रिय अध्यापक
2. कोरोनावायरस	6. मेरा प्रिय नेता	10. स्वतंत्रता दिवस
3. पर्यावरण	7. भ्रष्टाचार	11. ग्लोबल वार्मिंग
4. विद्यार्थी अनुशासन	8. जीवन में पेड़ों का महत्व	12. प्रदूषण

ENGLISH

LITERATURE FOCUS

1. **Footprints Without Feet:** How did Griffin turn into an invisible lawless scientist? Detail any two instances of trouble he caused in the village of Iping.
2. **An Excellent Father:** Write a brief character sketch of Mr. Bennet based on his witty conversations regarding the arrival of Mr. Bingley.
3. **From the Diary of a Young Girl:** Anne Frank feels that "paper has more patience than people." Justify this reflection using examples from her diary writing entries.
4. **Papachi's Moth:** Describe the lifelong frustration of Papachi regarding the discovery of his moth. How did it affect his domestic behavior?
5. **Poetry Focus (Prayer, Miracles, When You Are Old):** Analyze Walt Whitman's view of daily miracles versus the changing layout of true love in 'When You Are Old'.
6. **The Necklace:** Mathilde Loisel's vanity and continuous discontent led to her ruin. Discuss the structural lesson taught in this story.

GRAMMAR & WRITING SKILLS

1. **Applied Grammar:** Practice editing sentences on Modals, Narration shifts, Clauses partitioning, and clear punctuation marks.
2. **Composition Formats:** Draft a formal notice (<50 words) inviting auditions for a script play, or write an application to the principal requesting full fee concession.
3. **Essay Writing Portfolio:** Compose a structured essay (150-200 words) on any one option:
 - Uses and Abuses of Internet | • Environmental Pollution | • Use of Mobile Phones by Students
 - Science and Human Happiness | • Value of Games and Sports | • Evils of Dowry System

SOCIAL SCIENCE

1. HISTORY

1. Explain the steps taken by French revolutionaries to create a sense of collective identity among the French citizens. Discuss Giuseppe Mazzini's role in Italian unification.
2. How did the invention of the printing press by Johann Gutenberg transform reading habits across Europe? Explain simply.

2. CIVICS

1. Compare the contrasting methods of handling power-sharing and linguistic diversity between Belgium and Sri Lanka.
2. Define federalism. What are the key features that distinguish a federal framework of government from a unitary system?

3. GEOGRAPHY

1. Define resources. Differentiate clearly between renewable and non-renewable resource profiles. What is sustainable development?
2. Describe the geographical conditions required for the successful cultivation of Rice and Wheat crops in India.
3. Differentiate between ferrous and non-ferrous minerals. Give two classic examples of conservation steps required for energy reserves.

4. ECONOMICS

1. Identify the core economic sectors contributing to the state income of J&K. Discuss the historical role of agriculture and handicraft production in stabilizing employment.
2. Outline any three institutional challenges and strategic initiatives required to promote youth entrepreneurship and generate secondary employment options across local sectors.

पुनरावलोकन कार्य (REVISION WORK)

- **Mathematics Check:** Revise and practice all the solved textbook examples from the chapters on Polynomials and Coordinate Geometry to prepare for the class evaluation test post-vacation.
- **Science Assessment Drill:** Create safe conceptual flashcards outlining the core operational differences between concave/convex mirror focal properties, and write balanced chemical equations for common synthesis processes.
- **Language Checklist:** Ensure all writing formats (Notice, Letter, Application, and Message writing blocks) match standard structural styles cleanly. Review the glossary definitions of text chapters across English and Hindi portfolios.

A MESSAGE FOR THE SUMMER BREAK / ग्रीष्मकालीन अवकाश संदेश

"Learning is a beautiful journey, but a healthy body and a calm mind are the vessels that carry us through it. Use these holidays not just to feed your mind with books, but to enrich your life with health, gratitude, and joy."

"शिक्षा एक सुंदर यात्रा है, लेकिन एक स्वस्थ शरीर और शांत मन वह माध्यम हैं जो हमें इसमें आगे ले जाते हैं। इन छुट्टियों का उपयोग केवल किताबों से ज्ञान प्राप्त करने के लिए ही नहीं, बल्कि अपने जीवन को स्वास्थ्य, कृतज्ञता और आनंद से समृद्ध करने के लिए भी करें।"

Stay safe, rest well, and enjoy your summer break to the fullest!

सुरक्षित रहें, स्वस्थ रहें और अपनी छुट्टियों का पूरा आनंद लें!