

MAHAVIR

SENIOR MODEL SCHOOL



From the Team Leader

Dear Mahavirians and Children,

As the summer break approaches, it brings with it a wonderful opportunity to pause, refresh, explore, and grow. Holidays are not merely a break from school; they are a beautiful phase of learning beyond the classroom walls. While we all look forward to relaxation and family time, it is equally important that the continuum of learning is maintained in meaningful and joyful ways.

With this thought in mind, the Holiday Homework has been thoughtfully designed for each class. The purpose of this work is to keep the young minds engaged, curious, creative, and connected to learning in an enjoyable manner.

Dear children, summer vacations are a wonderful time to discover yourselves, strengthen your interests, and create memories that last forever. Learning happens in many forms — helping your parents with household chores, reading every day, pursuing a hobby, learning a new skill, exploring nature, spending quality time with family, and engaging in creative activities. Each experience teaches something valuable and contributes to your growth as confident, responsible, and independent learners.

Therefore, I encourage every Mahavirian to:

- Read at least two pages of any book every day.
- Pursue a hobby that brings happiness and creativity.
- Learn a new skill such as swimming, skating, dancing, painting, playing a musical instrument, gardening, cooking, or anything that excites and inspires you.
- Devote at least one hour daily to self-study so that the continuity of learning is maintained.

At the same time, spend quality time with your family, stay physically active, play outdoors, appreciate nature, and take care of your health and well-being.

I would also like to lovingly remind all children that the Holiday Homework should be done independently and sincerely. When you complete your work on your own, you develop confidence, responsibility, creativity, and problem-solving skills. Independent work nurtures originality of thought and helps you become a self-reliant learner — a quality that will benefit you throughout life.

Dear parents, your encouragement and gentle guidance during the holidays will go a long way in helping children develop healthy habits, time management, and a love for lifelong learning. More than perfection, we value participation, effort, and the joy of learning.

May this summer break be filled with happiness, learning, exploration, laughter, and beautiful experiences for all of you.

Wishing you a safe, productive, and joyful summer vacation!

Ruchika Sukhija

Principal

HOLIDAY HOMEWORK

GRADE : XI A

ENGLISH

1. News Reading and Presentation

- Students must read the newspaper daily during the summer break.
- Students ought to **collect and compile** the news items they find most important and urgent (minimum 15 items).
- On reopening; each student will give a presentation.
- Presentations should be **creative**: options include dramatic reading, role-play, mock news bulletin, or illustrated charts.
- A written portfolio of the collected news must also be submitted.

2. Practice questions and Assignment questions

Each chapter/poem has **three practice questions** (short-answer, 40–50 words) and **three assignment questions** (long-answer, 120–150 words).

A) We Are Not Afraid to Die...

Practice questions

1. What qualities of leadership does the narrator display during the storm?
2. How does the family's unity help them survive?
3. Identify one moment of irony in the narrative.

Assignment questions

1. Critically analyze the theme of courage in adversity.
2. Discuss the role of optimism in survival situations.
3. Evaluate the narrative style and its impact on the reader.

B) The Voice of the Rain

Practice questions

1. What is the central metaphor of the poem?
2. How does the rain describe its own journey?
3. Explain the significance of the dialogue form.

Assignment questions

1. Analyze the poem as a reflection on creativity.
2. Discuss the cyclical nature of rain and art.
3. Evaluate Whitman’s style in blending science and poetry.

C) The Summer of the Beautiful White Horse

Practice questions

1. What values are highlighted in the Armenian community?
2. How do the boys justify their actions?
3. Identify the role of humor in the story.

Assignment questions

1. Critically analyze the theme of honesty versus temptation.
2. Discuss the significance of childhood innocence.
3. Evaluate the narrative’s moral lesson.

D) Speech Writing

Practice questions

1. Write a short speech on “The Role of Youth in Nation-Building.”
2. Draft a speech on “Digital Literacy in Schools.”

Assignment question

1. Evaluate the effectiveness of speeches in social change.

3. Novel Reading

Students must read **any one** of the following novels during the summer holidays:

1. *To Kill a Mockingbird* by Harper Lee
2. *The Diary of a Young Girl* by Anne Frank
3. *The Kite Runner* by Khaled Hosseini
4. *Pride and Prejudice* by Jane Austen
5. *The Catcher in the Rye* by J.D. Salinger

4. Synopsis and Book Jacket Exhibition

- Students will prepare a **one-page synopsis** of the novel they read.
- They will design a **book jacket** including:
 - Title and author
 - Creative illustration
 - Blurb (summary + appeal)
 - Critical comment or quotation
- These will be exhibited in the **Book Alooza Summer Activity Exhibition**.
- Evaluation will be based on **creativity, comprehension, and presentation**.

Submission Guidelines

- Practice questions must be written in the practice register, and assignment questions must be written in the assignment register.
- Deadline: First day after summer vacation.
- Evaluation will consider **clarity, originality, depth of analysis, and presentation**.

ACCOUNTANCY

A Comprehensive project of sole proprietorship business.

Select any business of your choice and develop 50 transactions of imaginary nature.

The transactions should relate to the day to day business. Prepare journal entries for the same in proper format. The entire project must be handwritten.

The project should be creative and should include the following:

1. Cover page
2. Acknowledgement
3. Introduction to the business
4. Bibliography

Do not make the index as more topics will be added to the project over the academic year.

B. Complete the **worksheet** on analysis of transaction and paste the same in your register. The printout of the worksheet should be in landscape orientation.

C. Prepare a **prototype/working model** for the solution to any of the economic problems (eg. unemployment , housing, poverty, transportation, etc.) The model should be prepared using Eco friendly material in groups of 4-5 students. The idea should be free from plagiarism.

D. **Revise** the syllabus done so far.

BUSINESS STUDIES

PROJECT 1: Topic-“ Start-ups”

Objective

To help students understand the concept of startup, how start-ups raise funds, analyze real-world businesses, and explore government initiatives for the entrepreneurs.

Project Guidelines

1. Cover Page (Creative)

- Title of project
- Add relevant images/logos of start-ups
- Student Name, Class, Section

2. Introduction (Meaning of Startup)

3. Sources of Funds for startup (Explain with examples)

4. Government schemes for startup

5. Case Study: Famous Start-up

Choose **any ONE famous start-up** (example: Mamaearth, Nykaa , boAt, Ola cabs, etc.)

Include:

- Founder(s)
- Business idea/ origin of the idea
- Initial challenges
- Product journey

- Funding journey
- Marketing strategy
- Current status
- Growth story
- Financial statements
- Social media presence
- Customer review
- Future plan

PROJECT 2: Student will be thoughtfully organized into groups of four, fostering teamwork and collaborative learning. Each group will be assigned one topic from the given four, encouraging them to explore their area in depth, share ideas, and present their collective understanding in a creative and meaningful way.

1. Visit to a whole sale market (garments, etc)	2. Visit to a Departmental store	3. Visit to a Handicraft Unit	4. Visit To Mall
<p>1. The students are required to observe the following:</p> <p>a) Sources of merchandise- manufacturer, importer, textile mill</p> <p>b) Local market practices- bulk purchase with discount, bargaining</p> <p>c) Any linked up businesses like transporters, packagers, money lenders, agents, etc.</p>	<p>1. The students are required to observe the following:</p> <p>a) Different departments and their layout.-grocery, personal care, household item, beverages, etc.</p>	<p>1. The students are required to observe the following:</p> <p>a) The raw material and the processes used in the business: wood, clay, fabric, threads, beads, stone,etc and tell the process.</p>	<p>1. The students are required to observe the following:</p> <p>a)Basic details- Name of the mall, location, Purpose of the visit, Date and time of visit,</p> <p>b)Brief overview of what was observed Structure of the Mall: Number of floors, Number of shops: occupied vs unoccupied</p> <p>c)Nature of Shops: Type (clothing, electronics, etc.),</p> <p>d)Ownership status: chain/franchise, individual owner collected.</p>

<p>d) Nature of the goods dealt in.</p> <p>e) Types of buyers and sellers-non perishable goods (such as readymade cloth ,fabric)</p> <p>f) Mode of the goods dispersed, minimum quantity sold, types of packaging employed.</p> <p>h) Seasonal factors (if any) affecting the business.</p> <p>i) Weekly/ monthly non-working days.</p> <p>j) Strikes, if any- causes thereof.</p> <p>k) Mode of payments-cash, UPI, bank transfer, credit sale etc.</p>	<p>b) Nature of products offered for sale-FMCG,packaged food item,personal hygiene,etc</p> <p>c) Display of fresh arrivals- tags like ‘News Arrival’,etc</p> <p>d) Promotional campaigns- discount offers, festival offers,loyalty programme,membership benefits.</p> <p>e) Spaces and advertisements- posters, banners, digital screen,proper use of space,etc.</p> <p>f) Assistance by Sales Personnel.</p> <p>g) Billing counter at store – Cash, Credit Card/ Debit Card, swipe facility.</p> <p>h) Added attractions and facilities at the counter- small items like chocolates, goodies for impulse buying</p>	<p>b)People /parties/firms from which they obtain their raw material.-local market, rural artisan, government supported handicraft centers,etc.</p> <p>c) The market, the buyers, the middlemen, and the areas covered- tourist, exporters,retailers.</p> <p>c) The countries to which exports are made.</p> <p>d) Mode of payment to workers(daily wages, piece wage rate system),cash etc, suppliers etc.- cash, UPI, credit,etc.</p> <p>e) Working conditions.</p>	<p>d)Goods Dealt In: Local brands vs International brands</p> <p>e) Type of goods (luxury, daily use, niche)</p> <p>f)Service Businesses- Spa, gym, salons, etc.</p> <p>g)Rented vs Owned Shops- Any known information or assumption based on boards/notices</p> <p>h)Promotional Schemes- Discounts, offers, loyalty programs, etc.</p> <p>i)Most Visited Shops- Based on footfall, crowd observation</p> <p>j)Special Attractions: Food court, cinema, gaming zone, kids' play area</p> <p>k) Innovative Facilities-Escalators, touchscreen directories, wheelchairs,etc.</p>
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<p>l) Wastage and disposal of dead stock</p> <p>m) Nature of price fluctuations, reason thereof.</p> <p>n) Warehousing facilities available\availed-stored in dry ,clean environment avoid damage</p> <p>o) Any other aspect.</p> <p>p)Images of wholesale market, banners, shops- Neatly labeled</p> <p>o)References (if any): Website or other sources of information used, Leaflets or brochures collected</p>	<p>i)) Additional facilities offered to customers- air conditioned, parking facilities, shopping carts, etc.</p> <p>j) Any other relevant aspect- cctv camera, ecofriendly paper bag,etc.</p> <p>k)Images of departmental store</p> <p>l)References (if any): Website or other sources of information used, Leaflets or brochures collected</p>	<p>f)Modernization of the process over a period of time-online selling, better packaging</p> <p>g) Facilities, security and training for the staff and workers- skill development programmes by government,etc,</p> <p>h) Subsidies available/ availed.</p> <p>i) Any other aspect- promotion through exhibition like trade fair, use of eco-friendly and sustainable material,etc.</p> <p>j)Images of handicraft unit</p> <p>k)References (if any): Website or other sources of information used, Leaflets or brochures collected</p>	
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Students are required to design well-structured **multiple-choice questionnaire** then interact with a **shopkeeper/ vendor**. Based on the interaction, students will collect responses by selecting appropriate options. Students must ask any shopkeeper/vendor the following:

- From where do you purchase your goods?
- What type of customers do you usually get?
- What factors affect your pricing?
- Do prices change seasonally? How?
- What type of packaging do you use?
- What are your modes of payment?
- Do you face losses due to wastage?
- Do you provide credit to customers?
- What challenges do you face in business?
- How do you attract customers?

ANALYSIS (VERY IMPORTANT)

Students must write analysis based on above observation.

Guidelines for both projects

1. Project should be handwritten on A4 size used sheets.
2. Paste appropriate pictures(atleast 5 pictures)
3. Total length of the project should be 15 pages.
4. The project should be in a handmade folder.
5. The project should contain – Cover Page, Acknowledgement, Index, relevant photos, analysis, conclusion and Bibliography

Assessment Rubric (20 Marks for each project)

Content & research(Quality)-5 marks
Creativity & presentation-3 marks
Case study & practical work/questionnaire-3 marks
Analysis & conclusion-1 marks
viva/understanding-8 marks

ECONOMICS

Session 26-27

Dear students Utilize your holidays to deepen your understanding of Economics through hands-on activities. Complete all tasks neatly in a separate homework notebook. Submit by the first day after holidays. Enjoy learning!

Section A: Project Work (Choose ONE – 10-12 pages, hand-written)

1. Impact of GST on Daily Life:

Collect data on 5 everyday items (e.g., food, clothes) before and after GST implementation. Analyse changes in prices, using tables/graphs. Discuss pros/cons for consumers and government. Include newspaper clippings or photos.

2. Infrastructural Development in India :

Survey 5-10 local people on latest infra developments in the country. Tabulate findings (e.g., benefits received, challenges). Suggest 3 improvements with reasons linked to syllabus chapters.

3. Unemployment Trends in India:

Use RBI/NITI Aayog data (from official websites) for the last 5 years. Draw bar graphs/line charts showing rural/urban, educated/uneducated unemployment. Analyze causes and government measures (e.g., Skill India).

4. West Asia conflicts and Indian inflation: Explain how the current tensions in West Asia (Israel–Gaza, Red Sea disruption, Iran–US tensions) have affected crude oil prices and India’s imports.

Section B: Practical Exercises (Compulsory – Submit in notebook)

1. Statistics Practice (Ch. 1-5):

Solve back exercise questions of chapter 4 and chapter 5 stats, in copy (unsolved practical)

2. Internal Assessment project (Compulsory for all, separate file to be made)

Conduct a survey of class 11th students of your school to find out how they spend their pocket money. Draft a questionnaire according to the rules and get it filled by at least 20 class mates. Present the complete analysis in the form of a project file using the statistical tools. Your project should include the following:

- A. Important terms and definitions
- B. Questionnaire
- C. Method of data collection
- D. Details of presentation techniques used
- E. Graphs and diagrams

Section C: Creative Task

1. Create a caricature (hand-drawn) / comic strip on any one of the following
 - a. Tariff Wars
 - b. Election Chaos
 - c. AI vs Humanity
 - d. Phone addiction
 - e. How Today's Geopolitics Affects Your Daily Life in India

2. Read Economy and Business page of any leading newspaper on daily basis and prepare the list of new words, Key Economic terms and their meanings, in your classes copy date wise. (minimum 5 words on daily basis to be done).

3. Make a team of 4 students, **research about careers related to Economics** and pick any one area /field and present it in the PPT format .PPT should include Job Profile, Work environment, eligibility criterion, entrance exams and institutes offering it course fee, certifications required, skills required for the profession, future scope and average salary, top recruiters and firms. Any other information.

MATHEMATICS

Part A (Activity file)

1. Sets and Subsets
2. Operations on Sets using venn diagram
3. Graph of trigonomrtrical function

Part B (Working Model) :- Prepare a working model based on any Mathematical concepts (integration with Computational Thinking and AI).

Part C (Practice Worksheet)- Worksheets Based on Sets, Relation and function and trigonometric Functions (in form of DPP)

VERY SHORT ANSWER TYPE QUESTIONS

1. Write the radian measure of $5^{\circ}37'30''$.
2. Write the degree measure of $\frac{11}{16}$ radian.
3. Write the value of $\tan\left(\frac{19\pi}{3}\right)$.
4. What is the value of $\sin(-1125^{\circ})$,
5. Write the value of $2\sin 75^{\circ}\sin 15^{\circ}$.
6. What is the maximum value of $3 - 7\cos 5x$.
7. Express $\sin 12\theta + \sin 4\theta$ as the product of sines and cosines.
8. Express $2\cos 4x\sin 2x$ as an algebraic sum of sines and cosines.
9. Write the maximum value of $\cos(\cos x)$ and also write its minimum value.
10. Write is the value of $\tan \frac{\pi}{12}$.

SHORT ANSWER TYPE QUESTIONS

11. Find the length of an arc of a circle of radius 5 cm subtending a central angle measuring 15° .
12. If $\sin A = \frac{3}{5}$ and $\frac{\pi}{2} < A < \pi$ Find $\cos A, \sin 2A$.
13. What is the sign of $\cos x/2 - \sin x/2$ when
 - (i) $0 < x < \pi/4$
 - (ii) $\frac{\pi}{2} < x < \pi$
14. Prove that $\cos 510^\circ \cos 330^\circ + \sin 390^\circ \cos 120^\circ = -1$.
15. Find the maximum and minimum value of $7\cos x + 24\sin x$.
16. Evaluate $\sin(\pi + x)\sin(\pi - x)\operatorname{cosec}^2 x$.
17. Find the angle in radians between the hands of a clock at 7: 20PM.
18. If $\cot \alpha = \frac{1}{2}, \sec \beta = \frac{-5}{3}$ where $\pi < \alpha < 3\pi/2$ and $\frac{\pi}{2} < \beta < \pi$. Find the value of $\tan(\alpha + \beta)$.
19. If $\cos x = \frac{-1}{3}$ and $\pi < x < \frac{3\pi}{2}$. Find the value of $\cos x/2, \tan x/2$
20. If $\tan A = \frac{a}{a+1}$ and $\tan B = \frac{1}{2a+1}$ then find the value of $A + B$
21. A horse is tied to a post by a rope. If the horse moves along a circular path, always keeping the rope tight and describes 88 metres when it traces 72° at the centre, find the length of the rope.
22. Find the minimum and maximum value of $\sin^4 x + \cos^2 x; x \in R$
23. Find x if $\tan(x - 15^\circ) = \tan(x + 15^\circ)$
24. If $\sec x = \sqrt{2}$ and $\frac{3\pi}{2} < x < 2\pi$, find the value of $\frac{1 - \tan x - \operatorname{cosec} x}{1 - \cot x - \operatorname{cosec} x}$
25. If $f(x) = \frac{\cot x}{1 + \cot x}$ and $\alpha + \beta = \frac{5\pi}{4}$ then find $f(\alpha) \cdot f(\beta)$.

26. Prove that $\tan 70^\circ = \tan 20^\circ + 2\tan 50^\circ$

27. Prove that $\tan 13x = \tan 4x + \tan 9x + \tan 4x \tan 9x \tan 13x$.

[Hint: $13x = 9x + 4x$]

Prove the following Identities

28. $\frac{\tan 5\theta + \tan 3\theta}{\tan 5\theta - \tan 3\theta} = 4\cos 2\theta \cdot \cos 4\theta$. [Hint: Break into sin and cos]

29. $\frac{\cos x + \sin x}{\cos x - \sin x} - \frac{\cos x - \sin x}{\cos x + \sin x} = 2\tan 2x$.

30. $\frac{\cos 4x \sin 3x - \cos 2x \sin x}{\sin 4x \cdot \sin x + \cos 6x \cdot \cos x} = \tan 2x$.

[Hint: Transformation formula from product to sum or different]

31. $\frac{1 + \sin \theta - \cos \theta}{1 + \sin \theta + \cos \theta} = \tan \frac{\theta}{2}$. [Hint: Use half angle formula]

32. $\tan \alpha \cdot \tan(60^\circ - \alpha) \cdot \tan(60^\circ + \alpha) = \tan 3\alpha$.

33. $\sqrt{2 + \sqrt{2 + 2\cos 4\theta}} = 2\cos \theta$. [Hint: Use half angle formula]

34. $\frac{\cos x}{1 - \sin x} = \tan \left(\frac{\pi}{4} + \frac{x}{2} \right)$.

35. $\cos 10^\circ + \cos 110^\circ + \cos 130^\circ = 0$.

36. $\frac{\sin(x+y) - 2\sin x + \sin(x-y)}{\cos(x+y) - 2\cos x + \cos(x-y)} = \tan x$

37. $\sin x + \sin 2x + \sin 4x + \sin 5x = 4\cos \frac{x}{2} \cdot \cos \frac{3x}{2} \cdot \sin 3x$ [Hint: Use

transformation formula from sum of product.]

38. $\frac{\sec 8\theta - 1}{\sec 4\theta - 1} = \frac{\tan 8\theta}{\tan 2\theta}$

39. Find the value of $\sqrt{3}\operatorname{cosec}20^\circ - \sec 20^\circ$

40. Draw the graph of $\cos x$, $\sin x$ and $\tan x$ in $[0, 2\pi]$.

41. Draw $\sin x$, $\sin 2x$ and $\sin 3x$ on same graph and with same scale.

42. Evaluate: $\tan\left(\frac{13\pi}{12}\right)$

43. If $\tan A - \tan B = x$, $\cot B - \cot A = y$ prove that $\cot(A - B) = \frac{1}{x} + \frac{1}{y}$

44. If $\frac{\sin(x+y)}{\sin(x-y)} = \frac{a+b}{a-b}$ then prove that $\frac{\tan x}{\tan y} = \frac{a}{b}$.

45. Find the range of $5\sin x - 12\cos x + 7$.

46. Show that $\cos^2 + \cos^2\left(x + \frac{2\pi}{3}\right) + \cos^2\left(x - \frac{2\pi}{3}\right) = \frac{3}{2}$

[Hint: Use $\cos 2\theta = 2\cos^2\theta - 1$]

47. Show that $\sin \alpha + \sin \beta + \sin \gamma - \sin(\alpha + \beta + \gamma)$

$$= 4\sin\left(\frac{\alpha + \beta}{2}\right)\sin\left(\frac{\beta + \gamma}{2}\right)\sin\left(\frac{\alpha + \gamma}{2}\right)$$

[Hint: Use transformation formula sum to product]

LONG ANSWER TYPE QUESTIONS

48. Find $\cos \pi/8$

49. Prove that $\sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ = \frac{1}{16}$.

50. $\cos \frac{\pi}{5} \cdot \cos \frac{2\pi}{5} \cdot \cos \frac{4\pi}{5} \cdot \cos \frac{8\pi}{5} = \frac{1}{16}$

51. $\cos 20^\circ \cdot \cos 40^\circ \cdot \cos 80^\circ = \frac{1}{8}$

52. Evaluate: $\cos^4 \frac{\pi}{8} + \cos^4 \frac{3\pi}{8} + \cos^4 \left(\frac{5\pi}{8}\right) + \cos^4 \left(\frac{7\pi}{8}\right)$

[Hint: Use $\cos 2\theta = 2\cos^2\theta - 1$]

53. If $\cos x = \cos \alpha \cdot \cos \beta$ then prove that $\tan\left(\frac{x+\alpha}{2}\right) \cdot \tan\left(\frac{x-\alpha}{2}\right) = \tan^2 \frac{\beta}{2}$

54. If $\tan(\pi \cos \theta) = \cot(\pi \sin \theta)$ then prove that $\cos\left(\theta - \frac{\pi}{4}\right) = \pm \frac{1}{2\sqrt{2}}$.

55. If $\sin(\theta + \alpha) = a$ and $\sin(\theta + \beta) = b$ then prove that
$$\cos 2(\alpha - \beta) - 4ab \cos(\alpha - \beta) = 1 - 2a^2 - 2b^2$$

56. If α and β are the solution of the equation, $a \tan \theta + b \sec \theta = c$, then show that $\tan(\alpha + \beta) = \frac{2ac}{a^2 - c^2}$.

57. Prove that $\cos^2 x + \cos^2 y - 2 \cos x \cdot \cos y \cdot \cos(x + y) = \sin^2(x + y)$

58. Prove that: $2 \sin^2 \beta + 4 \cos(\alpha + \beta) \sin \alpha \sin \beta + \cos 2(\alpha + \beta) = \cos 2\alpha$

59. Prove that: $\cos A \cos 2A \cos 4A \cos 8A = \frac{\sin 16A}{16 \cdot \sin A}$.

[Hint: Use transformation formula]

60. Evaluate: $\left(1 + \cos \frac{\pi}{8}\right) \left(1 + \cos \frac{3\pi}{8}\right) \left(1 + \cos \frac{5\pi}{8}\right) \left(1 + \cos \frac{7\pi}{8}\right)$

61. Prove that: $4 \sin \alpha \cdot \sin \left(\alpha + \frac{\pi}{3}\right) \cdot \sin \left(\alpha + \frac{2\pi}{3}\right) = \sin 3\alpha$.

[Hint: Use transformation formula of product to sum or diff.]