GEETA DEVI DAV PUBLIC SCHOOL

BHANDARKOLA, SATAR ROAD, DEOGHAR

DIWALI & CHHAT PUJA HOLIDAY HOMEWORK-(2026-27)

CLASS: -IX

ENGLISH

A. PROJECT WORK

Topic: Subject–Verb Concord

Prepare a comprehensive project on Subject–Verb Concord (Agreement) covering the following points:

1. Introduction: Define Subject–Verb Concord and explain its importance in English grammar.
2. Basic Rules: Explain the rules governing the agreement between subjects and verbs with suitable examples.
3. Special Rules of Concord: Explain the following:
   - Singular and plural subjects.
   - Subjects joined by and, or, nor.
   - Either…or / Neither…nor.
   - Each, every, everyone, somebody, nobody, etc.
   - Collective nouns.
   - Uncountable nouns.
   - Subjects separated from verbs by intervening phrases.
   - Expressions of quantity and amounts.

4. Conclusion: Write a brief note on how correct Subject–Verb Concord improves grammatical accuracy.

Presentation Guidelines:

- Use an A4-size project file.
- Include a cover page, index, introduction, rules, examples, exercises
- Highlight important rules and use tables wherever necessary.
- Maintain neatness, originality and proper organisation.

B. ASSIGNMENT WORK

Prescribed Textbook: Kaveri

1. Rabindranath Tagore – Life and Achievements

Prepare a detailed write-up on the life and achievements of Rabindranath Tagore, covering:

- His early life, childhood and education.
- His literary journey and major literary works.
- His contribution to poetry, short stories, novels, drama and music.
- His role in Indian literature and cultural awakening.
- His achievement of the Nobel Prize in Literature in 1913.
- His contribution to education and the establishment of Visva-Bharati.
- His enduring legacy and relevance in the modern world.

Word Limit: 300–350 words.

2. Poem: I Cannot Remember My Mother – Critical Appreciation

Write a critical appreciation of the poem by Rabindranath Tagore, including the following aspects:

- Introduction to the poet and the poem.
- Central idea and theme of the poem.
- The poet's feelings of love, affection and longing for his mother.
- The significance of childhood memories and the mother's presence in nature.
- Poetic devices, imagery and symbolism used in the poem.
- Tone, mood and emotional appeal.
- The message conveyed by the poem.
- Your personal response to the poem.

Word Limit: 250–300 words.

GENERAL INSTRUCTIONS

1. Complete all the work in your English assignment notebook
2. Write in your own words. Avoid copying directly from the internet or guidebooks.
3. Support your answers with relevant examples and textual references wherever appropriate.
4. Pay special attention to grammar, spelling, punctuation and presentation.
5. All work must be completed before reopening of the school.

Note: This holiday homework will be evaluated on the basis of content, conceptual understanding, originality, grammatical accuracy, presentation and timely submission.

HINDI

1. आखिरी चट्टान, रीढ़ की हड्डी तथा झाँसी की रानी के सारे शब्दार्थ तथा प्रश्नोत्तर याद करें

2. व्याकरण : अलंकार - अनुप्रास , यमक तथा श्लेष अलंकार के 5-5 उदाहरण कक्षाकार्य की कॉपी पर लिखें

3. क्रिया विशेषण की परिभाषा तथा भेद याद करें।

अनुच्छेद लिखें (150 शब्द) :

1. परिश्रम ही सफलता की कुंजी है

अथवा

2. समय का सदुपयोग

SANSKRIT

1)निम्नलिखित धातुरूपाणि लिखित्वा स्मरन्तु -

पुंलिङ्गशब्दाः – पितृवत्, राजन्, भवत्, विद्वस्, गुणिन्

स्त्रीलिङ्गशब्दाः – मातृवत् , धेनुवत्

2)परियोजनाकार्यम् -

अन्नमयकोशस्य विज्ञानमयकोशस्य च के लाभा: सन्ति, इति चित्रमाध्यमेन प्रदर्शयत।

MATHEAMTICS

Chapter 1: Propositions and Their Converse

A. Very Short Answer Questions (1 Mark)

1. What is a proposition?
2. Is the sentence “7 is a prime number” a proposition?
3. Write the truth value of: “Every square is a rectangle.”
4. Is “How are you?” a proposition? Give a reason.
5. Write the converse of: “If a number is divisible by 4, then it is even.”

B. Short Answer Questions (2 Marks)

6. Identify which of the following are propositions: (a) 5 + 3 = 8 (b) Please open the door. (c) Every natural number is a whole number. (d) x + 2 = 5

7. Write the converse of the following statements: (a) If a number is divisible by 6, then it is divisible by 3. (b) If a triangle is equilateral, then it is isosceles. (c) If two angles are complementary, then their sum is 90°.
8. Determine whether the following proposition is true or false: “If a number is divisible by 10, then it is divisible by 5.”
9. Write a counterexample to the statement: “Every odd number is a prime number.”

C. Long Answer Questions (3–4 Marks)

10. Write the converse of the following statements and determine whether the original statement and its converse are true or false. (a) If a number is a multiple of 8, then it is a multiple of 4. (b) If a quadrilateral is a square, then it is a rectangle.
11. Consider the statement: “If a triangle is right-angled, then the sum of the squares of its two smaller sides is equal to the square of its largest side.”

Write its converse and discuss its truth value.

12. Give two examples each of true and false propositions from everyday mathematics.

Chapter 2: How Quantities Combine – Understanding Data

A. Short Answer Questions (2 Marks)

1. The average marks of 20 students is 65 and the average marks of 30 students is 75. Find the combined average.
2. Why is the average of two group averages not always equal to the combined average?
3. A mixture contains 200 g of a 10% salt solution and 300 g of a 20% salt solution. Find the percentage of salt in the final mixture.
4. Two groups have averages 12 and 18, with 10 and 20 observations respectively. Find the combined average.
5. A student scores 70 in a test weighted 30% and 80 in a test weighted 70%. Find the weighted average.

B. Long Answer Questions (3-4 Marks)

6. In a school, 40 students of Class IX-A have an average score of 72, while 30 students of Class IX-B have an average score of 78. Find the average score of all 70 students.
7. A shopkeeper mixes 5 kg of tea costing ₹240 per kg with 3 kg of tea costing ₹300 per kg. Find the average cost per kg of the mixture.
8. A 100% stacked bar chart shows the percentage of students choosing Mathematics, Science, and English in two sections of a school. Explain why the chart can compare proportions but may not show which section has more students.
9. The average of 15 observations is 24. The average of another 25 observations is 32. Find the average of all 40 observations.

C. Higher Order Thinking Question (4 Marks)

10. A mixture of 20 kg contains 30% sugar. Another mixture of 30 kg contains 50% sugar. Find the percentage of sugar in the combined mixture.

3. Mathematics in Diwali & Chhath Puja

Prepare a creative chart showing the applications of Mathematics in festivals.

Examples:

- Calculate the total cost of Diwali decorations.
- Find the area and perimeter of a Rangoli.
- Calculate festival expenses using percentages.
- Identify geometrical shapes in Chhath Puja decorations.

4. Coordinate Geometry Activity

Draw a Cartesian plane on graph paper, plot at least 10 points and identify their respective quadrants.

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SUBJECT:- PHYSICS

Q.1. Solve the NCERT INTEXT question from the topic of work & energy.

Q2. Solve 5 numericals from topic (Work & Energy):

1. A force of 7 N acts on an object. The displacement is, say 8 m, in the direction of the force. Let us take it that the force acts on the object through the displacement. What is the work done in this case?
2. An object of mass 15 kg is moving with a uniform velocity of 4 m s^{-1}. What is the kinetic energy possessed by the object?
3. What is the work to be done to increase the velocity of a car from 30 km h^{-1} to 60 km h^{-1} if the mass of the car is 1500 kg?
4. Find the energy possessed by an object of mass 10 kg when it is at a height of 6 m above the ground. Given, g = 9.8 m s^{-2}.
5. An object of mass 20 kg is dropped from a height of 4 m. Calculate its potential energy and kinetic energy when it has fallen through a distance of 2 m. (Take g = 10 m s^{-2}).

SUBJECT - CHEMISTRY

Answer the following questions:

(1)Name the three subatomic particles of an atom and write their charges and relative masses.
(2)Describe Rutherford's alpha-particle scattering experiment and write its conclusions.
(3)Explain Bohr's atomic model with a neat, labelled diagram.
(4)Define atomic number and mass number. Calculate the number of protons, electrons and neutrons in $^{23}_{11}Na$.
(5)What are isotopes and isobars? Give one example of each.
(6)State the law of conservation of mass and the law of constant proportions.
(7)What is a molecule? Differentiate between atoms and molecules with suitable examples.
(8)What is valency? Write the chemical formulae of any five compounds using valencies.
(9)What is a mixture? Differentiate between homogeneous and heterogeneous mixtures with examples.
(10)Why do we need to separate the components of a mixture? Give three reasons.
(11)Explain the process of filtration and evaporation with suitable examples.
(12)What are sedimentation and decantation? Explain with an example.
(13)Explain the process of sublimation. Name two substances that undergo sublimation.

(14)Describe the process of separating the components of a mixture of sand, salt and iron filings.
(15)What is chromatography? Explain its principle and mention one application.
Project Work (Any One)
(1)Journey Inside the Atom: Prepare a colourful chart showing the evolution of atomic models.
(2)Separation of Mixtures: Prepare a chart showing different methods of separation of mixtures with pictures.
(3)Atomic Foundation of Matter: Prepare a colourful chart showing the symbols and valencies of the first 20 elements.
General Instructions
(1)Complete the written assignment neatly in your Chemistry notebook.
(2)Prepare the project in a separate file.
(3)Draw neat and labelled diagrams wherever necessary.
(4)Use colourful headings and illustrations.
(5)Submit the homework on the first day after the holidays.

SUBJECT- BIOLOGY

ASSIGNMENT

1.A flower's anthers are removed before maturity. Later, pollen from another flower of the same species is placed on its stigma. Identify the type of pollination.

2.Arrange the following stages in the correct sequence:

Formation of zygote
Pollination
Fertilisation
Pollen germination
3.Why does the menstrual cycle stop during pregnancy?
4.Why are flowers that bloom at night generally white or light-coloured?
5.A farmer wants to produce a large number of genetically identical plants quickly. Suggest a suitable method and explain its advantages.
6.What would happen to genetic diversity if all plants of a species reproduced only through self-pollination for several generations?
7.Explain why vegetatively propagated plants may be more vulnerable to diseases.

Project: FLOWER DISSECTION AND STUDY

Objective: To study the reproductive parts of a flower.
Activities:
I)Collect a fresh hibiscus or mustard flower.
II)Separate its floral parts carefully and paste their part in A4 size paper.
III)dentify sepals, petals, stamens and pistil.
IV)Explain the functions of male and female reproductive parts.

SUBJECT- SOCIAL SCIENCE

Write about the five Indian rulers who revolted against the Delhi Sultanate and Mughal Empire from 1206 to 1707 AD.

ECONOMICS

Chapter 1: Building Blocks of Economics (The Problem of Choice)

Section A: Multiple Choice Questions (1 Mark Each)
Q1. The fundamental cause of all economic problems is:

a) Overpopulation b) Scarcity of resources in relation to unlimited wants
c) High prices of goods d) Lack of employment opportunities

Q2. A student has ₹100 and must choose between buying a reference book or saving the money to purchase a sports kit later. The student buys the book. What does the forgone sports kit represent?

a) Total Cost b) Opportunity Cost c) Fixed Cost d) Variable Cost

Q3. Which factor of production includes all natural resources such as water, forests, and minerals?

a) Capital b) Labour c) Land d) Entrepreneurship

Q4. An economy in which central decisions regarding "What, How, and For Whom to produce" are shared by both private businesses and the government is called a:

a) Market Economy b) Planned Economy
c) Mixed Economy d) Traditional Economy

Section B: Short Answer Questions (3 Marks Each)

Q5. Explain the three basic/central questions that every economy must answer.

Q6. Differentiate between "Needs" and "Wants" with suitable examples.

Section C: Long Answer & Case-Based Questions (5 Marks Each)

Q7. "Human wants are unlimited and constantly changing, but resources are limited."

a) Explain how this statement creates the "Problem of Choice."

b) Analyze how excessive consumption driven by unlimited wants places pressure on natural resources and the environment.

c) Suggest two sustainable methods to manage a scarce resource like water in your local area.

Chapter 2: The Price Puzzle (What Drives the Market)

Section A: Multiple Choice Questions (1 Mark Each)

Q8. What happens to the market price of a commodity when its demand exceeds its supply in a free market?

a) The price decreases b) The price increases

c) The price stays unchanged d) Supply automatically doubles

Q9. Market Equilibrium is reached when:

a) Quantity Demanded > Quantity Supplied

b) Quantity Demanded < Quantity Supplied

c) Quantity Demanded = Quantity Supplied

d) Price is set at zero by the government

Q10. When the government sets a maximum price limit on essential items below the equilibrium market price, it generally creates a situation of:

a) Excess Supply b) Shortage / Excess Demand

c) Market Surplus d) Price Inflation

Section B: Short & Data-Interpretation Questions (3 to 4 Marks)

Q11. Read the market schedule for apples given below and answer the questions that follow:

Price per kg (₹)	Quantity Demanded (kg)	Quantity Supplied (kg)
₹40	50	10
₹80	30	30
₹120	10	45

a) Identify the Equilibrium Price and Equilibrium Quantity.

b) Describe the market outcome at ₹40 (Excess Demand or Excess Supply) and state by how much.

c) What will happen to the price if it is currently at ₹120? Explain using market forces.

Section C: Analytical / Real-World Questions (5 Marks Each)

Q12. "Prices of vegetables like tomatoes tend to fluctuate heavily depending on the season and time of day."

a) Explain why tomato prices drop significantly toward the evening in open vegetable markets.

b) Why does the government sometimes impose price control measures on essential commodities like medicines and fertilizers?

c) Explain how online festival sales use high demand and price adjustments to clear large volumes of goods.

ARTIFICIAL INTELLEGENCE (AI)

Brief Notes: Data Literacy, Math for AI & Introduction to Generative AI

1. Data Literacy

1.1 What is Data?

Data is a collection of raw facts, figures, observations or information that can be processed to obtain meaningful results.

Examples: Students' marks, names, ages, temperature readings and attendance records.

1.2 What is Data Literacy?

Data Literacy is the ability to read, understand, analyse, interpret and communicate data effectively.

Importance of Data Literacy:

1. Helps in better decision-making.
2. Identifies patterns and trends.
3. Helps solve real-life problems.
4. Supports AI and Machine Learning.
5. Improves critical thinking.

1.3 Types of Data

Type	Meaning	Example
Structured Data	Organised in rows and columns	Excel spreadsheet, database
Unstructured Data	No fixed format	Images, videos, audio
Semi-structured Data	Has some organisational structure	JSON, XML, emails

1.4 Sources of Data

- Primary Data: Data collected directly by the researcher.
  - Surveys Interviews Observations Experiments
- Secondary Data: Data already collected by someone else.
  - Newspapers Books Government reports Websites

1.5 Data Collection

Data collection is the process of gathering information for analysis.

Common methods:

- Surveys and questionnaires Interviews Online forms Sensors Experiments

1.6 Data Processing

Data processing involves converting raw data into meaningful information.

Main steps:

1. Data Collection Data Cleaning Data Organisation
2. Data Analysis Data Visualisation Interpretation

1.7 Data Cleaning

Data cleaning is the process of identifying and correcting errors in a dataset.

It includes:

- Removing duplicate records. Correcting spelling mistakes.
- Handling missing values. Correcting inconsistent data.
- Removing irrelevant information.

1.8 Data Visualisation

Data visualisation means representing data through charts, graphs and diagrams to understand it easily.

15.5 Data visualization - Introduction to Python Programming | OpenStax

Bar Graph: Used to compare different categories of data.

Line Graph - Definition, Facts, Examples & Quiz | Data Visualization for Students

Line Graph: Used to show changes or trends over time.

Understanding and representing data | Data analysis, statistics, and probability | Achievable Praxis Core: Math (5733)

Pie Chart: Used to represent parts of a whole.

What is a histogram? | HK Playground

Histogram: Used to show the frequency distribution of numerical data.

1.9 Data Privacy and Security

- Data Privacy: Protecting personal information from unauthorised access or misuse.
- Data Security: Protecting data from theft, damage or unauthorised access.

Examples: Strong passwords, encryption, secure websites and two-factor authentication.

2. Math for AI – Statistics and Probability

Mathematics plays an important role in Artificial Intelligence. Statistics and Probability help AI systems analyse data, identify patterns and make predictions.

2.1 Statistics

Statistics is the branch of mathematics that deals with collecting, organising, analysing and interpreting data.

A. Mean (Average)

Mean is the sum of all observations divided by the total number of observations.

Formula:

$$Mean=\frac{\text{Sum of observations}}{\text{Number of observations}}$$

Example: 10, 20, 30, 40, 50

$$Mean=\frac{10+20+30+40+50}{5}=30$$

B. Median

Median is the middle value of a dataset when the data is arranged in ascending or descending order.

Example: 10, 20, 30, 40, 50

Median = 30

For an even number of observations, median is the average of the two middle values.

Example: 10, 20, 30, 40

$$Median=\frac{20+30}{2}=25$$

C. Mode

Mode is the value that occurs most frequently in a dataset.

Example: 10, 20, 20, 30, 40

Mode = 20

D. Range

Range is the difference between the highest and lowest values.

$$Range=Maximum-Minimum$$

Example: 10, 20, 30, 40, 50

Range = 50 − 10 = 40

E. Comparison of Mean, Median and Mode

Measure	Meaning
Mean	Average value
Median	Middle value
Mode	Most frequently occurring value
Range	Difference between maximum and minimum

2.2 Probability

Probability is the branch of mathematics that measures the likelihood or chance of an event occurring.

Formula:

$$P(E)=\frac{\text{Favourable outcomes}}{\text{Total possible outcomes}}$$

Example: Tossing a fair coin.

Possible outcomes = Head, Tail
Probability of getting Head:
\[P(H)=\frac{1}{2}=0.5=50\% \]

2.3 Important Probability Terms

Term	Meaning
Experiment	An activity with uncertain results
Outcome	Result of an experiment
Event	A particular outcome or group of outcomes
Sample Space	Set of all possible outcomes
Favourable Outcomes	Outcomes supporting an event

2.4 Probability Scale

Probability always lies between 0 and 1.
0
Impossible
0.5
Equally likely
1
Certain

- Probability = 0: Event is impossible.
- Probability = 1: Event is certain.
- Probability = 0.5: Event has an equal chance of occurring or not occurring.

2.5 Applications of Statistics and Probability in AI

Weather forecasting. Predicting examination results.
Recommendation systems. Fraud detection.
Medical diagnosis. Spam email detection.
Predicting customer behaviour.

Example: An AI weather application analyses previous rainfall data and uses probability to predict the chance of rain.

3. Introduction to Generative AI

3.1 What is Artificial Intelligence?

Artificial Intelligence (AI) is a branch of computer science that enables machines to perform tasks that normally require human intelligence.
Examples:

- Speech recognition Face recognition Language translation
- Decision-making Problem-solving

3.2 What is Generative AI?

Generative AI is a type of Artificial Intelligence that can create new content such as text, images, music, videos and computer code based on user instructions.
Examples:

- Writing stories and essays. Creating images. Generating music.
- Writing computer programs. Creating presentations.

3.3 Traditional AI vs Generative AI

Traditional AI	Generative AI
Analyses existing data	Generates new content
Mainly classifies or predicts	Creates text, images, audio, etc.
Detects spam emails	Generates an email
Recognises faces	Generates images
Predicts weather	Creates a weather report

3.4 Examples of Generative AI Tools

Download High-Quality ChatGPT Icon PNG and Logo

ChatGPT

Text generation, answering questions, coding and learning.

Gemini – Google's AI Assistant for Smart Conversations & Productivity – Daidu.ai

Google Gemini

Text, image understanding, research and content generation.

Copilot - Aalborg University

Microsoft Copilot

AI assistance, content creation and productivity.

DALL-E vs Midjourney - Comparing Features Side-by-Side

DALL-E

Image generation from text descriptions.

Adobe Firefly evolves into an all-in-one creative AI studio with new tools for audio, video, and imaging - The Economic Times

Adobe Firefly

AI-powered image and creative content generation.

3.5 How Does Generative AI Work?

Generative AI works by learning patterns and relationships from large amounts of training data.

Basic working process:

1. Data Collection: Collects large amounts of text, images, audio or other data.
2. Training: The AI model learns patterns from the collected data.
3. User Prompt: The user provides an instruction or question.
4. Processing: The model processes the prompt.
5. Content Generation: The model generates a response or new content.

3.6 What is a Prompt?

A prompt is an instruction or input given to an AI tool to generate a desired output.

Example of a prompt:

"Write a short paragraph on the importance of trees for Class IX students."

A good prompt should be:

- Clear Specific Relevant Detailed enough

3.8 Advantages of Generative AI

Saves time and effort.
Helps in learning and education.
Assists in programming and problem-solving.
Improves creativity.
Supports content creation.

3.9 Limitations and Risks of Generative AI

1. Incorrect Information: It may generate false or misleading information.
2. Bias: It may produce biased results based on training data.
3. Privacy Risks: Personal information may be exposed if shared carelessly.
4. Copyright Issues: Generated content may raise copyright concerns.
5. Overdependence: Excessive use may reduce independent thinking.
6. Deepfakes: It can generate fake images, videos or voices.

Important: Always verify AI-generated information. AI should be used responsibly and ethically.

4. Quick Revision – Important Questions

These questions are useful for Class IX examination preparation.

Very Short Answer Questions (1 Mark)

1) What is data?
2) Define Data Literacy.
3) What is structured data?
4) What is data cleaning?
5) What is data visualisation?
6) Define statistics.
7) What is the mean of a dataset?
8) Define probability.
9) What is a sample space?
10) What is Generative AI?
11) What is a prompt?
12) Name any two Generative AI tools.

Short Answer Questions (2 Marks)

1. Differentiate between primary and secondary data.
2. Write any four steps involved in data processing.
3. Differentiate between structured and unstructured data.
4. Explain mean and median with examples.
5. Differentiate between mean, median and mode.
6. Explain the probability scale with examples.
7. Differentiate between Traditional AI and Generative AI.
8. Write any four applications of Generative AI.
9. What are the advantages and limitations of Generative AI?
10. What is prompt engineering?

Numerical Questions (Important)

Q1. Find the mean of 10, 20, 30, 40 and 50.

Answer: 30

Q2. Find the median of 5, 10, 15, 20 and 25.

Answer: 15

Q3. Find the mode of 2, 3, 3, 4, 5, 3, 6.

Answer: 3

Q4. A dice is rolled once. Find the probability of getting an even number.

Answer:

Favourable outcomes = 2, 4, 6 = 3

Total outcomes = 6

$$P(E)=\frac{3}{6}=\frac{1}{2}$$

Q5. A coin is tossed once. Find the probability of getting a tail.

Answer:

$$P(T)=\frac{1}{2}$$

5. Practice MCQs

Class IX AI – MCQ Test

Q1. Which of the following is structured data?

A. Photograph B. Excel spreadsheet C. Video D. Audio recording

Q2. Which measure represents the middle value?

A. Mean B. Mode C. Median D. Range

Q3. What is the range of 10, 20, 30, 40?

A. 20 B. 30 C. 40 D. 10

Q4. What is the probability of getting Head in a fair coin toss?

A. 0 B. ½ C. 1 D. 2

Q5. Which of the following is a Generative AI tool?

A. Calculator B. ChatGPT C. Notepad D. Paint

Q6. What is an instruction given to an AI tool called?

A. Dataset B. Prompt C. Algorithm D. Database

Q7. Which chart is best for showing trends over time?

A. Pie chart B. Bar graph C. Line graph D. Table

Q8. Which is an example of secondary data?

A. Personal interview B. Your own survey

C. Government report D. Personal experiment

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