

# SUMMER VACATION



**PM SHRI KV  
NO.2  
DELHI CANTT,  
FIRST SHIFT  
SESSION 2026-27**

# CLASS – VI

## SANSKRIT

पी एम श्री केंद्रीय विद्यालय क्रमांक 2 ( प्रथम पाली )

दिल्ली छावनी

ग्रीष्मकालीन अवकाश गृहकार्य (2026-27)

कक्षा षष्ठी

1. षट् धातु के रूप नद् नकार (वर्तमान काल) में लिखिए □
2. सर्वनाम शब्द (अस्मद् एवं युष्मद् ) लिखिए
3. वर्ण संयोजन और वर्ण विच्छेद करके दस,दस उदाहरण लिखिए□
4. संस्कृत में प्रतिज्ञा लिखिए और याद कीजिए□
5. बालक (पुल्लिंग) और रमा या बालिका ( स्त्रीलिंग) फल (तपुंसकलिंग )के शब्द रूप लिखिए□
6. संख्यावाची शब्द (1-20) तक लिखें।

Note :- संस्कृत की नोट बुक में कार्य करें।

पीएम श्री केंद्रीय विद्यालय क्रमांक 2 दिल्ली छावनी  
ग्रीष्मकालीन छुट्टियों का गृहकार्य :- 2026-27

कक्षा छठी

विषय -

हिन्दी

प्रश्न 1 निम्नलिखित सभी विषयों पर लगभग 100-100 शब्दों में अनुच्छेद लिखिए-

- (1) गणतंत्र दिवस
- (2) विद्यार्थी जीवन में अनुशासन का महत्व
- (3) मेरा प्रिय त्योहार-दीपावली
- (4) विश्व योग दिवस का महत्व (21 जून)

प्रश्न 2 अपने मित्र को जन्मदिन की बधाई देते हुए एक बधाई पत्र लिखिए।

प्रश्न 3 विद्यालय के प्राचार्य को तीन दिन के अवकाश हेतु एक प्रार्थना पत्र लिखिए।

प्रश्न 4 निम्नलिखित शब्दों के विलोम शब्द लिखिए-

उचित, आदर, वीर, अंधकार, कोमल, सुखद, शत्रु, अस्त, आय, संयोग, एक, सरल, मानव, दिन, शाम, रंक

प्रश्न 5 ग्रीष्मकालीन छुट्टियों के दौरान एक डायरी का निर्माण करें जिसके अंदर आप प्रत्येक दिन के कार्यों का वर्णन करेंगे।

प्रश्न 6 सामयिक परीक्षा (PT-1) के पाठ्यक्रम से संबंधित पाठों को पढ़ेंगे और याद भी करेंगे। (1 से 3 पाठ)

# ENGLISH

PM SHRI KENDRIYA VIDYALAYA NO. 2 DELHI CANTT. (SHIFT-I)

Holiday Homework For Summer Vacation (May-June 2026)

Class: VI

Subject: English

**Activity - I:** Listening Comprehension:

Listen to the following story and answer the question given below.

**Video link :**

<https://drive.google.com/file/d/1CO4Q8KWibPPquz8T6PyMOrEL5AsNXIT2/view?usp=drivesdk>

**Worksheet link:**

<https://docs.google.com/document/d/13wQvPO1pP53Bf9iUWsv0I3a1n5KmoJI41Lwjqq73Xc/edit>

**Activity - II.** Write an application to the principal for three days leave.

**Activity - III.** Write 10 regular and 10 irregular verb forms (V1, V2 and V3) and learn them.

**Activity - IV.** Write a paragraph on **ANY ONE** of the following:

- a. How I spent my summer vacation
- b. My best friend during summer vacation

**Activity - V.** Write 10 famous thoughts by famous persons of India.

**Activity - VI.** Write a short moral story of your own having 2-3 animals as characters.

**Activity - VII.** Make a poster on "save trees" or "save forest."

**Activity - VIII.** Learn all the work done in your English notebook.

**Note:** Do all the work in English notebook.

# MATHS

1. Make a Rangoli (Geometry art project) with the help of shapes, lines and angles.

2. Draw a map of your House and colour it.

3. Write multiplication tables 2 to 30

4. Fill in the blanks in the given pattern :

2,4,6,8, ..... , ..... , .....

3,5,7,9, ..... , ..... , .....

1,3,6,10, ..... , ..... , .....

1,4,9,16, ..... , ..... , .....

1,2,3,5,8, ..... , ..... , .....

1,3,9,27, ..... , .....

5. Expand the following pattern up to 10 numbers

$$1 = 1$$

$$1 + 3 = 4$$

$$1 + 3 + 5 = 9$$

.....  
.....  
.....  
.....  
.....

6. Define the following : (a) Natural number (b) Whole number (c) Even number (d) Odd number (e) Prime number (f) Composite number (g) Triangular number (h) Regular Polygon (i) Virahanka number

7. Arrange the given numbers in ascending order.

(a) 78,792; 79,228; 8,79,992; 1,54,092

(b) 7,96,441; 96,441; 7,09,641; 8,59,821

(c) 8,89,774; 6,88,940; 7,18,444; 5,68,710

(d) 4,00,751; 7,36,547; 3,98,694; 3,26,880

e) 1,56,442; 7,26,452; 5,95,442; 5,34,561

8. Arrange the given numbers in descending order.

(a) 81, 800; 60,875; 72,984; 6,98,504

(b) 8,43,019; 9,60,548; 8,65,881; 8,59,004

(c) 6,60,062; 1,63,050; 8,99,035; 5,69,204

(d) 13,80,651; 63,37,547; 3,90,694; 3,36,880

(e) 78,56,422; 88,26,452; 8,95,442; 8,34,561

9. Write the following in figures.

(i) seven million, four hundred and eleven thousand, two hundred and sixty

(ii) eighty-five million, one hundred and sixteen thousand, five hundred and five

(iii) five hundred thousand, two hundred and fifteen

(iv) two hundred and sixteen million, One hundred and ten thousand, and thirty-nine

(v) forty-five million, four hundred and sixty

10. Use the given digits without repetition and make the greatest and smallest numbers.

(a) 1, 8, 7, 4 (b) 6, 7, 4, 1 (c) 8, 7, 5, 0

11. Make a model based on angles

# SCIENCE

Curiosity  
Today...  
Discovery  
Tomorrow!

## CLASS 6 SCIENCE (CURIOSITY)

### SUMMER HOLIDAY HOMEWORK

MAY - JUNE 2026

Be Curious • Be Creative • Be a Young Scientist! ♥



#### SECTION A - OBSERVATION SKILLS

##### 1. Science Around Me

Observe your surroundings and list:

- ☆ 5 natural things
- ☆ 5 man-made things



##### 2. Daily Observation Diary

Write daily:

- ☆ Weather conditions
- ☆ One scientific observation



#### SECTION B - PLANTS & LIVING WORLD

##### 3. Plant Study

Observe a plant for 7 days.

Record:

- ☆ Growth changes
- ☆ Type of leaves
- ☆ Watering pattern



##### 4. Living vs Non-living

List:

- ☆ 10 living things
- ☆ 10 non-living things

Write differences.



#### SECTION C - EXPERIMENTS

##### 5. Simple Experiments

Perform and record:

(a) Dissolve salt/sugar in water



(b) Observe floating and sinking objects



Write:

- ☆ Observation
- ☆ Conclusion



##### 6. Air Around Us

Prove that air occupies space.

Example:

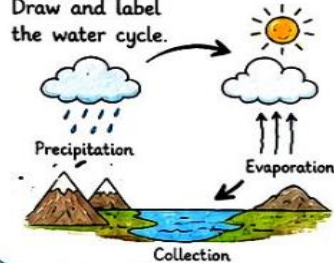
Balloon activity



#### SECTION D - WATER & ENVIRONMENT

##### 7. Water Cycle

Draw and label the water cycle.



##### 8. Save Environment

Write 8-10 ways to protect our environment.



#### SECTION E - SCIENCE IN DAILY LIFE

##### 9. Uses of Science

List the uses of science at:

☆ Home



☆ School



##### 10. Energy Sources

List:

☆ Renewable sources



☆ Non-renewable sources



##### 11. Reasoning Questions

Answer the following:

(a) Why do plants need sunlight?

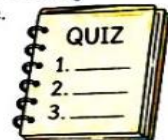


(b) Why do objects fall down?



##### 12. Science Quiz

Prepare 10 interesting questions from daily life science.



#### SECTION G - PROJECT WORK

##### 13. Science Scrapbook

Make a science scrapbook.

Include:

- ☆ Diagrams
- ☆ Experiments
- ☆ Facts



##### 14. Model Making

Make a simple model on any one:

- ☆ Water cycle
- ☆ Solar system



#### SUBMISSION GUIDELINES

- ☆ Maintain a neat and well-organized file.
- ☆ Use diagrams, colours and labels.
- ☆ Write observations clearly.
- ☆ Be honest and original in your work.
- ☆ Submit after the holidays.



EXPLORE... OBSERVE...  
EXPERIMENT... LEARN... GROW! ♥

SCIENCE IS ALL AROUND US.  
KEEP EXPLORING!

# SOCIAL SCIENCE

SUMMER BREAK HOMEWORK

PM SHRI KENDRIYA VIDYALAYA NO 02 DELHI CANTT

CLASS-VI SUBJECT -SST

1. ON AN OUTLINE MAP OF INDIA LOCATE ALL STATES AND UNION TERRITORIES
2. ON AN OUTLINE MAP OF WORLD LOCATE ALL CONTINENTS AND MAJOR OCEANS.
3. DESCRIBE WATER MANAGEMENT SYSTEM OF INDUS VALLEY CIVILIZATION.
4. DESCRIBE TOWN PLANNING OF INDUS VALLEY CIVILIZATION
5. DRAW LATITUDES AND LONGITUDES AND WRITE DEFINITION.
6. WHAT DID HARAPPANS EAT? WRITE FOOD ITEMS PROCURED.



## ACTIVITY-BASED QUESTIONS

- 1. Activity: Draw a chart to show various types of Intelligence with examples.**
- 2. Activity: Create a collage to show advantages of AI.**

# ART & CRAFT

## PM SHRI KENDRIYA VIDYALAYA NO. 2 DELHI CANTT (Shift - 1)

Summer Vacation Holiday Homework 2026-27

Art Education – Class VI

**Topic: Still Life Drawing – My Favourite Things**  
**(Complete each task on a separate A4 white sheet.)**

Question 1: Draw any 3–4 simple household objects (like a cup, book, fruit, or bottle) arranged on a table.

- Use basic pencil sketching and try to show light and shadow.

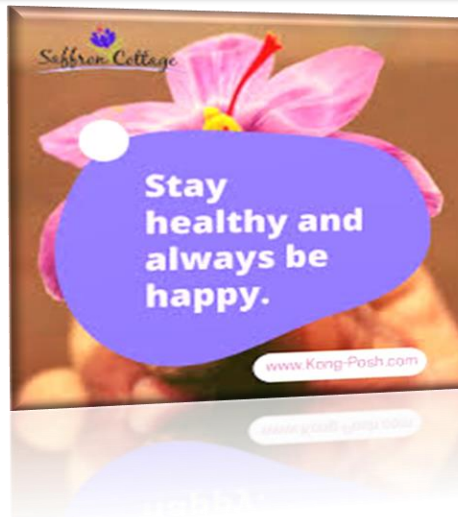
Question 2: Draw a fruits basket and colour it.

- Draw summer's fruits in the basket and colour it.
- Use **colours** (crayons, colour pencils, or watercolours) to fill your drawing neatly and brightly.
- Make sure your composition is balanced and covers the page well.

### Additional Notes

- **Complete unfinished classwork** in your Art notebook. Write the page number clearly at the top of each page.
- **Cover and decorate your Art file** using art paper, stickers, or your own creative ideas. Write your name, class, section, and roll number on the cover.

**Enjoy your holidays and let your artistic side shine! We look forward to seeing your beautiful work after the vacation.**



# CLASS – VII

## SANSKRIT

पी एम श्री केन्द्रीय विद्यालय क्रमांक 2 ( प्रथम पाली )

दिल्ली छावनी

ग्रीष्मकालीन अवकाश गृहकार्य (2026-27)

### कक्षा सप्तमी

1. भू धातु के पांचों लकार में रूप लिखिए ( लट्, लृट्, लोट्, लङ्, विधि लिङ्ग )
2. किम् रूप ( पुल्लिंग, स्त्रीलिंग, नपुंसक लिंग ) में लिखिए ।
3. इकारान्त पुल्लिंग ( हरि ) शब्द रूप लिखिए, नदी शब्द के स्त्रीलिंग रूप लिखिए
4. उच्चारण स्थान याद करें तथा लिखिए ।
5. संख्यावाची शब्द (1-100) लिखिए ।
6. संस्कृत में प्रतिज्ञा लिखिए और याद कीजिए।

Note :- संस्कृत की नोट बुक में कार्य करें ।

## HINDI

पी.एम. श्री केन्द्रीय विद्यालय क्रमांक 2 दिल्ली छावनी

ग्रीष्मकालीन छुट्टियों (Summer Vacation) का गृहकार्य :- 2026-27

कक्षा - 7

विषय - हिन्दी

प्रश्न 1 निम्नलिखित सभी विषयों पर लगभग 100-100 शब्दों में अनुच्छेद लिखिए-

- (1) स्वतंत्रता दिवस (15 अगस्त)
- (2) पर्यावरण प्रदूषण
- (3) मेरा प्रिय त्योहार-होली
- (4) विश्व योग दिवस का महत्त्व (21 जून)

प्रश्न 2 अपने मित्र को नववर्ष की बधाई देते हुए एक बधाई पत्र लिखिए।

प्रश्न 3 विद्यालय के प्राचार्य को स्थानांतरण प्रमाण-पत्र हेतु एक प्रार्थना पत्र लिखिए।

प्रश्न 4 निम्नलिखित शब्दों के तीन-तीन पर्यायवाची शब्द लिखिए-

सूर्य, पृथ्वी, समुद्र, राजा, फूल, पहाड़, अमृत, आकाश, अग्नि, गणेश, मित्र, वृक्ष, चंद्रमा, दिन, रात

प्रश्न 5 सामयिक परीक्षा (PT-1) के पाठ्यक्रम से संबंधित पाठों को पढ़ेंगे और याद भी करेंगे। (1 से 3 पाठ)

प्रश्न 6 अपनी मल्हार पुस्तक में से कोई 4 कविताएँ लिखेंगे और याद भी करेंगे।

# ENGLISH

## SCRAP BOOK :

1. Paste the pictures of the things from the nature that inspire you and How.
2. Paste pictures of the place you visited in your vacations and write your experience.

## NOTEBOOK TASK:

1. Read unit 1 and 2 and write the difficult word with their meanings in your notebook.
2. Write a paragraph describing your Smart Watch.
3. Write verb forms of at least 25 action words. Like

Present	Past	Past Participle	Present participle	3 <sup>rd</sup> person singular
Play	Played	Played	Playing	Plays
Go	Went	Gone	Going	goes

4. Read any FIVE STORIES of your own choice and write the characters and theme.
5. You are Manas/ Manisha. Write a letter to your brother congratulating him on being appointed the leader of the school.

## COMIC BOOK MAKING: Make your own Comic Book using newspapers.

- a. Collect and cut different pictures from the newspaper.
- b. Make a short story using those pictures.
- c. Arrange and paste them on the A4 size sheets and write their dialogues like a comic book.
- d. Read some comic books for reference.

Reading Comprehension: Click on the link below and complete the worksheet on A4 size sheets.

Link : [https://docs.google.com/document/d/1-60L8r0VIWsMe5a6ZFR5-deIVtjW\\_7KObJZLx4FpXNA/edit?usp=d](https://docs.google.com/document/d/1-60L8r0VIWsMe5a6ZFR5-deIVtjW_7KObJZLx4FpXNA/edit?usp=d)

# MATHS

- 5 million is equal to how many lakhs?
- Find the number of digits in the following  
(I) From 1-85 (ii) From 1 -195 (iii) From 1 -899
- Write the rules of place commas for Indian system and international system and write at least 3 examples of each.
- A football stadium can seat approximately 68,000 people. What will be nearest thousand?
- If a farmer produces 1,00,000 kg of rice per month, in 12 months he produces:
- Write few lines about 5 great Mathematician of India and draw/ paste photos also.
- Evaluate:  $(90 \div 9) + 8 \times (6 - 3)$   
(b) Find the value:  $(20 \times 5) - (80 \div 8) + 15$   
(c) Simplify:  $182 \div (9 \times 6) + 25 - 10$
- Write 5 puzzles and 5 riddles related to mathematics.
- Name the city's approximate population could be 1.5 crore.
- A basket contains 12 apples costing ₹15 each, 8 oranges costing ₹12 each, and 6 mangoes costing ₹25 each. Write an expression for total cost and find it.
- Write the following in words using Indian system and place commas also.  
(I) 43621015 (ii) 765437003 (iii) 50024376
- Round 92,58,000 to nearest crore.  
Write the difference and express in words:  
(a) 8 crore – 3 crore 70 lakh.  
(b) Use Indian system.  
Convert: (a) 9.8 crore into millions (b) 145 million into crore.
- Estimate:  $2,39,485 + 6,71,832$  by rounding each to nearest lakh.
- Express 75,38,46,120 in words using both the Indian and International Systems.
- Write the numbers and arrange the following in descending order:  
3 crore 15 lakh, 98 lakh 60 thousand, 5 crore 8 lakh, 9 crore 3 lakh.

18. The population of City A is 37,45,280 and City B is 1,02,95,800. A new survey predicts that the population of City A will increase by 8,45,000 in the next 5 years, and City B's population will rise by 5,00,000 in the same period.

- (a) Estimate and find the future population of both cities.
- (b) Compare their future populations using  $<$ ,  $>$ , or  $=$ .
- (c) Round off the future population of both cities to the nearest lakh.

19. A mobile phone factory currently produces 18,000 phones daily. Management plans to expand production to 25,000 phones daily starting next year. Based on daily output, they need an annual production estimate to prepare raw materials, staffing, and storage facilities. Without calculating large numbers efficiently, the company risks running short of resources or overstocking products.



Based on this, Answer the following questions

- (i) Calculate current annual production (365 days).
- (ii) Calculate future projected annual production.
- (iii) Express both in lakhs and crores.

20. Green Valley School spends 23547500 annually for staff salaries, maintenance, and electricity. Before the new academic year, the school principal must present a clear financial report to staff and parents. Reporting the budget using Indian and International systems improves understanding and prevents confusion. Clear financial presentations help parents trust school management.



- (i) Place commas using both systems.
- (ii) Write ₹23547500 in Indian system (in words).
- (iii) Write in International system (in words).

# SCIENCE



## SUMMER HOLIDAY HOMEWORK

### SCIENCE – CLASS VII



#### TASK 1 MY GREEN BUDDY

- Grow any one plant in your home garden or in a pot.
- Click your photos with the plant at different growth stages.
- Paste 2–3 photos in a file page.



#### TASK 2 EXPLORATORY PROJECT: SOIL TESTING



- Collect soil from 2–3 places: Garden, Roadside, Park etc.
- Test using natural indicators.
- Write a report based on the observation which includes:

- Soil type (acidic/basic/neutral)
- Possible reasons for the nature of the soil (pollution, fertilizers etc.)
- Best soil for plants with reason.



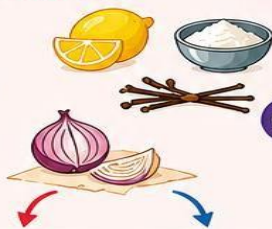
Natural Indicators

#### TASK 3 CREATIVE & EXPERIENTIAL ACTIVITIES

PERFORM ANY ONE ACTIVITY

##### ACTIVITY 1: OLFACTORY INVESTIGATION

- Soak cloth in onion juice / vanilla extract / clove oil.
- Cut the cloth into 2–3 pieces.
- Add Acid (lemon) to one piece and Base (baking soda) to another.
- Observe: Change in smell intensity
- Record: The observations in a table format.



OR

##### ANALYSIS QUESTION

Why do some substances change smell?

ACID (LEMON)

BASE (BAKING SODA)

##### ACTIVITY 2: CLASSIFICATION OF SUBSTANCES

- Visit your kitchen and collect 8–10 common substances (lemon, milk, soap solution, baking soda, etc.).
- Predict: Acid / Base / Neutral (before testing)
- Test using: Turmeric paper / flower extract / litmus (if available)
- Record the observations in a table format.



##### ANALYSIS QUESTIONS

- Were your predictions correct?
- Which indicator worked best and why?
- Which substances surprised you?

#### TASK 4 ENVIRONMENTAL AWARENESS & HEALTH

Observe and record daily weather conditions during hot weather for about 15 continuous days.

S. No.	Date	Temperature (°C)	Humidity (%)	Weather Condition (Sunny/Cloudy)	Wind (Low/Medium/High)
1.					
2.					
3.					
...					

##### ANALYSIS QUESTIONS

- Which day had the highest temperature?
- What was the average temperature?
- How does humidity affect how hot you feel?
- On which day did you feel most uncomfortable and why?
- List 3 causes of increasing temperature nowadays.
- What is a heat wave?
- What is Heat Stroke? Mention its Symptoms. Write some Preventive Measures or Safety tips to protect us from heat stroke.



#### TASK 5 LEARNER'S DIARY

Prepare Learner's Diary for 1st and 2nd chapters.



#### TASK 6 SCIENCE NOTEBOOK

Complete the Science notebook in all respect (notes and question-answers of all the completed chapters).



#### TASK 7 LEARN & REVISE

Learn question-answers of chapter 1 & 2.



#### IMPORTANT INSTRUCTIONS



All holiday homework must be done in a separate PAPER FILE.



Plastic files/ Folders are not allowed.



# SOCIAL SCIENCE

Let's learn about our past, understand our world and build a better future!

## CLASS 7 - SOCIAL SCIENCE

### SUMMER HOLIDAY HOMEWORK

MAY - JUNE 2026

Explore • Understand • Connect • Grow!



#### SECTION A - HISTORY

##### 1. Task 1: Timeline Activity

Create a timeline of important historical events.

- ☆ Ancient events
- ☆ Medieval events
- ☆ Modern events



##### 2. Task 2: Life in the Past

Write 10-12 lines on:

- ☆ Life in medieval times
- ☆ Role of kings and kingdoms



#### SECTION B - GEOGRAPHY

##### 3. Task 3: Our Environment

Draw and label:

- ☆ Components of environment
- ☆ Natural environment
- ☆ Human-made environment



##### 4. Task 4: Map Skills

Draw a map of India.

Show and label:

- ☆ States
- ☆ Neighbouring countries



#### SECTION C - CIVICS

##### 5. Task 5: Government System

Write:

- ☆ Types of government
- ☆ Importance of democracy



##### 6. Task 6: Equality & Rights

Write short notes on:

- ☆ Equality
- ☆ Rights and duties



#### SECTION D - THINKING SKILLS

##### 7. Task 7: Compare & Analyze

Write the difference between rural life and urban life.



##### 8. Task 8: Case Study

Identify a social issue around you.

Write:

- ☆ Problem
- ☆ Cause
- ☆ Solution



#### SECTION E - CREATIVE ACTIVITIES

##### 9. Task 9: Poster Making

Make a poster on:

- ☆ Save Environment
- ☆ Unity in Diversity



##### 10. Task 10: Model / Chart

Make a chart or model on:

- ☆ Types of resources
- ☆ Water cycle



#### SECTION F - PROJECT WORK

##### 11. Task 11: Scrapbook

Make a scrapbook including:

- ☆ Historical facts
- ☆ Maps
- ☆ Civic concepts



##### 12. Task 12: Daily Observation Diary

Write daily:

- ☆ Weather
- ☆ One new thing learned
- ☆ One good habit followed



#### SUBMISSION GUIDELINES

- ☑ Maintain a neat and well-organized file.
- ☑ Use diagrams, maps, and colours.
- ☑ Write clearly and neatly.
- ☑ Submit after holidays.

#### Remember!

- ♥ Be curious
- ♥ Be respectful
- ♥ Be responsible
- ♥ Be like change



#### WHY THIS HOMEWORK IS SPECIAL

- ☆ Helps you understand history, society and our environment.
- ☆ Develops observation and analytical skills.
- ☆ Encourages creativity and expression.
- ☆ Builds responsible and aware citizens.



## ACTIVITY-BASED QUESTIONS

1. Activity: Create a drawing using generative AI tools like Adobe Firefly or Canva on “Social media”.
2. Activity: Choose one application of NLP (such as a chatbot or virtual assistant) and create a presentation explaining how it works and what technologies are used.

# ART & CRAFT

Topic: Still Life with Shading Techniques

(Complete each task on a separate A4 white sheet.)

Question 1: Draw a group of 2–3 objects (like a glass, bowl, or stationery items).

- Focus on light source and shadows to give depth.
- Apply shading techniques to show depth and make your object look three-dimensional. Use pencils (HB, 2B or 4B) or crayons for shading.
- For example,

**Question 2: Draw any two summer fruits and colour it.**

- Draw any two summer fruits and colour it.
- Use colours (crayons, colour pencils, or water colours) to fill your drawing neatly and brightly.
- Make sure your composition is balanced and covers the page well.

### Additional Notes

- Complete unfinished classwork in your Art notebook. Write the page number clearly at the top of each page.
- Cover and decorate your Art file using art paper, stickers, or your own creative ideas. Write your name, class, section, and roll number on the cover.

Enjoy your holidays and let your artistic side shine! We look forward to seeing your beautiful work after the vacation.



# CLASS – VIII

## SANSKRIT

1. भू धातु के पांचों लकार में रूप लिखिए और याद करें। (लट्, लुट्, लोट्, लड्, विधि लिङ्ग)
2. दधि, वारि, मधु शब्दों के शब्द रूप रूप लिखिए और याद करें।
3. उपसर्ग की परिभाषा लिखते हुए उपसर्गों के नाम और तीन-तीन उदाहरण लिखिए।
4. उच्चारण स्थान याद करें तथा लिखिए ।
5. संख्यावाची शब्द (1-100) लिखिए और याद करें।
6. संस्कृत में प्रतिज्ञा लिखिए और याद कीजिए।

Note :- संस्कृत की नोट बुक में कार्य करें।

## HINDI

### लेखन कार्य

1. मेरा प्रिय शिक्षक (निबंध)
2. ग्रीष्मकालीन अवकाश कैसे बिताया
3. पर्यावरण संरक्षण
4. जल बचाओ
5. मेरा विद्यालय

👉 हर निबंध: 150–200 शब्द

### पठन एवं समझ

- \* रोज 1 अपठित गद्यांश पढ़ें और प्रश्नों के उत्तर लिखें
- \* 5 मुहावरे + 5 लोकोक्तियाँ रोज लिखें और उनके अर्थ लिखें

### : व्याकरण

1. संज्ञा – 10 उदाहरण
2. सर्वनाम – प्रकार और उदाहरण
3. विशेषण – 10 वाक्य
4. क्रिया – 10 उदाहरण
5. काल – वर्तमान, भूत, भविष्य (प्रत्येक के 05 वाक्य)
6. वचन – एकवचन/बहुवचन
7. लिंग – पुल्लिंग/स्त्रीलिंग
8. वाक्य शुद्धि – 10 वाक्य
9. पर्यायवाची शब्द – 10
10. विलोम शब्द – 10

- पाठ्यपुस्तक कार्य

# ENGLISH

1. MINI DICTIONARY: Create a mini dictionary of 50 words that you have not come across while reading earlier. Write the meaning of the words in English & Hindi. Design a creative cover for your dictionary.
2. STORY WRITING: Write a story for each of the following moral values.
  - a) Greed leads to unhappiness
  - b) Where there's a will, there's a way.
3. MOVIE REVIEW: Watch R.K. Narayan's "Malgudi Days: The Vendor of Sweets" (8 episodes). Describe the episodes by including the following:
  - Name of the episode
  - Characters in the episode
  - Theme
  - Experience of watching the episode
  - Your feelings and thoughts after watching the episode.
4. POSTER MAKING: CONSERVATION OF WILDLIFE.  
\*Use A4 sheets for completing your holiday homework.

# MATHS

1. \*Square Numbers\*: Learn the squares of numbers from 1 to 20.
2. \*Cube Numbers\*: Learn the cubes of numbers from 1 to 15.
3. \*Exponents\*: Simplify the expression:  $2^3 \times 2^2$
4. \*Powers of 10\*: Write the numbers 1000 and 10000 in exponential form.
5. \*Real-Life Applications\*: Find examples of exponents in real-life scenarios (e.g., scientific notation).
6. \*Square Roots\*: Find the square roots of perfect squares (e.g.,  $\sqrt{16}$ ,  $\sqrt{25}$ ).
7. \*Cube Roots\*: Find the cube roots of perfect cubes (e.g.,  $\sqrt[3]{8}$ ,  $\sqrt[3]{27}$ ).
8. \*Word Problems\*: Create and solve word problems involving squares and cubes.
9. \*Comparing Numbers\*: Compare the numbers  $2^5$  and  $5^2$
10. Write a short note on Mathematician Sri Nivasa Ramanujan.

## Subject Enrichment Activity

\*Math Project\*: Create a project that demonstrates the application of squares, cubes, and exponents in real-life scenarios. Choose a topic of your interest (e.g., architecture, science, finance) and present your findings in a report or presentation. This activity will help you develop problem-solving skills and appreciate the relevance of mathematics in everyday life.

## NOTE :

1. Do your homework in Maths notebook.
2. Do Subject Enrichment Activity and Short note on Sri Nivasa Ramanujan on A-4 size sheet.

# SCIENCE

Curiosity leads to Discovery!

## CLASS 8 - SCIENCE

### SUMMER HOLIDAY HOMEWORK

MAY - JUNE 2026

Observe • Explore • Experiment • Understand  
Science is Fun!



#### SECTION A - OBSERVATION & ANALYSIS

##### 1. Task 1: Science Around Me

Observe your surroundings and list:

- ☆ 8 natural things
- ☆ 8 man-made things



##### 2. Task 2: Daily Science Diary

Write daily:

- ☆ Weather conditions
- ☆ One scientific observation
- ☆ One question based on observation



#### SECTION B - LIVING WORLD

##### 3. Task 3: Plant Growth Study

Observe a plant for 10 days.

Record:

- ☆ Growth changes
- ☆ Leaf pattern
- ☆ Watering schedule



##### 4. Task 4: Microorganisms

Write short notes on:

- ☆ Useful microorganisms
- ☆ Harmful microorganisms



#### SECTION C - EXPERIMENTS

##### 5. Task 5: Home Experiments

Perform and record the experiments:

- ☆ Separation of substances
- ☆ Filtration / Evaporation



For each experiment write:

- ☆ Aim
- ☆ Materials Required
- ☆ Procedure
- ☆ Observation
- ☆ Conclusion



##### 6. Task 6: Force & Pressure

Observe and note examples of force and pressure from your daily life.



#### SECTION D - ENVIRONMENT

##### 7. Task 7: Conservation

Write ways to conserve:

- ☆ Water
- ☆ Electricity



##### 8. Task 8: Pollution Study

Identify different types of pollution.

Write:

- ☆ Causes
- ☆ Effects
- ☆ Solutions



#### SECTION E - SCIENCE IN DAILY LIFE

##### 9. Task 9: Uses of Science

Write uses of science in:

- ☆ Kitchen
- ☆ Transport
- ☆ Communication



##### 10. Task 10: Energy Sources

List:

- ☆ Renewable sources
- ☆ Non-renewable sources

Give examples and uses.



#### SECTION F - THINKING SKILLS

##### 11. Task 11: Reasoning Questions

Answer the following:

- ☆ Why do metals expand on heating?
- ☆ Why is air important for life?



Think  
Observe  
Reason  
Discover

##### 12. Task 12: Science Quiz

Prepare 12 interesting questions based on science concepts and daily life.



#### SECTION G - CREATIVE ACTIVITIES

##### 13. Task 13: Poster Making

Make a colourful poster on:

- ☆ Save Environment
- ☆ Save Energy



##### 14. Task 14: Model Making

Make a working / non-working model on:

- ☆ Water cycle
- ☆ Human digestive system



#### SECTION H - PROJECT WORK

##### 15. Task 15: Science Scrapbook

Make a scrapbook including:

- ☆ Diagrams
- ☆ Experiments
- ☆ Amazing facts
- ☆ Interesting information



##### 16. Task 16: Science Around Me

Observe and write:

- ☆ Science in kitchen
- ☆ Science in home appliances



#### SUBMISSION GUIDELINES

- ✍ Maintain a neat and well-organized file.
- ✍ Use diagrams, labels and colours.
- ✍ Write observations clearly.
- ✍ Submit after holidays.

#### Remember!

- Be curious
- Be creative
- Be consistent
- Enjoy learning Science!



#### WHY THIS HOMEWORK IS SPECIAL

- Helps you think scientifically
- Builds curiosity and confidence
- Connects science with real life
- Encourages learning by doing
- Makes learning meaningful and fun!



# SOCIAL SCIENCE

“Resources, Governance & Leadership in India”

## A. NATURAL RESOURCES AND THEIR USE

Name any 3 natural resources.

Write one use of each.

Write 2 ways to save resources.

Draw a Save Resources poster.

## B. RESHAPING INDIA’S POLITICAL MAP

On map, mark any 5 states formed after independence.

Why were states reorganised? (2–3 lines)

How many States and UTs are there in India?

## C. THE RISE OF THE MARATHA

Write 5 lines on Chhatrapati Shivaji Maharaj.

Write 2 qualities of a good leader.

Draw a Maratha fort.

## D. THINK & ANSWER

Why should we conserve resources? (2 lines)

How does division of states help people? (2 lines)

What makes a leader great? (2 lines)

## E. MDP CREATIVE FILE (COMPULSORY)

Same Theme for ALL Subjects

Make a small file (3–4 pages):

Social Science: Use of resources in daily life

Science: Importance of water/air

Maths: Estimate daily water use (numbers)

English: 5 lines on “My Role in Society”

Sanskrit:

Write 5 simple sentences in Sanskrit on:

जलम् (Water) / पर्यावरणम् (Environment)

Example: “जलम् आवश्यकम् अस्ति।”

Art: One poster (Save Earth / Leader)

## ACTIVITY-BASED QUESTIONS

1. Activity: Create a drawing using generative AI tools like Adobe Firefly or Canva on “Social media”.
2. Activity: Choose one application of NLP (such as a chatbot or virtual assistant) and create a presentation explaining how it works and what technologies are used.

# ART & CRAFT

## Question 1: Drawing Two Human Figures Performing Summer Activities

- Draw **two human figures** on A4-size drawing sheets, each performing a summer activity of your choice (for example: playing cricket, swimming, cycling, gardening, etc.).
- Focus on using **correct body proportions**, ensuring the hands, legs, torso, and head are drawn accurately.
- Apply **shading techniques** to show depth and make your figures look three-dimensional. Use pencils (HB, 2B or 4B) or crayons for shading.
- Each figure should be drawn on a separate sheet. Mention the chosen activity on each drawing.

## Question 2: Assigned Composition Drawing and Colouring

- Draw the assigned composition: -
- Use **colours** (crayons, colour pencils, or watercolors) to fill your drawing neatly and brightly.
- Make sure your composition is balanced and covers the page well. **Additional Notes**
- **Complete unfinished classwork** in your Art notebook. Write the page number clearly at the top of each page.
- **Cover and decorate your Art file** using art paper, stickers, or your own creative ideas. Write your name, class, section, and roll number on the cover.



# CLASS – IX

## SANSKRIT

1. पठ् धातु के पांचों लकार में रूप लिखिए और याद करें।  
(लट्, लृट्, लोट्, लङ्, विधि लिङ्ग)
2. ब्रह्मन्, गुणिन्, पथिन् शब्दों के शब्द रूप रूप लिखिए और याद करें।
3. संधि की परिभाषा, उनके भेद और प्रत्येक भेद के 10-10 उदाहरण लिखिए।
4. उच्चारण स्थान याद करें तथा लिखिए ।
5. संख्यावाची शब्द (1-100) लिखिए और याद करें।
6. संस्कृत में प्रतिज्ञा लिखिए और याद कीजिए।
7. संस्कृत भाषा का महत्व पर एक प्रोजेक्ट बनाइए।

Note :- संस्कृत की नोट बुक में कार्य करें।

## HINDI

1. निम्नलिखित विषयों में से किसी दो पर 150–200 शब्दों में निबंध लिखें:
    - पर्यावरण संरक्षण का महत्व
    - मोबाइल फोन: लाभ और हानि
    - मेरा सपना (मेरा लक्ष्य)
  2. पाठ्य-पुस्तक आधारित कार्य
    - कोई एक कहानी पढ़ें और उसका संक्षिप्त सार लिखें |
  3. पत्र लेखन
    - अपने मित्र को शीष्मावकाश कैसे बिताया - इस विषय पर पत्र लिखिए ।
  4. रचनात्मक कार्य
    - “स्वच्छ भारत अभियान” विषय पर एक पोस्टर बनाएं|
    - पोस्टर में स्लोगन (नारा) भी लिखें|
  5. कविता लेखन (Poem Writing)
    - “गर्मी की छुट्टियाँ” विषय पर 8–10 पंक्तियों की एक छोटी कविता लिखिए।
  6. मौखिक कार्य
    - कोई एक हिन्दी कविता याद करें और उसे कक्षा में सुनाने की तैयारी करें|
  7. व्याकरण कार्य:-
    1. उपसर्ग और प्रत्यय की परिभाषा बताते हुए उदाहरण द्वारा स्पष्ट कीजिए |
    2. वाक्य क्या है, अर्थ के आधार पर वाक्य भेद को सृजनात्मक लेखन द्वारा स्पष्ट कीजिए |
- \*अपना सारा गृहकार्य A 4 साइज पेपर पर ही करें।

# ENGLISH

1. Prepare a interdisciplinary project on India's major geographical features. For each feature, describe the region, explain its importance, the lives of the people living there and mention the language spoken in that region.( Do it in a separate file and use A4 size paper Q no.1 &2)
2. Pottery is practiced in many parts of our country and each region. Collect some pictures of indigenous pottery of our country and make a short note on it.
3. Write the definition of noun clause, adjective clause and adverb clause by giving examples.
4. What are determiners? Write the definition by giving the examples of determiners. Also solve the exercise given on page no 48.
5. Reflective writing encourages introspection and thoughtful exploration of personal experiences, skills and aspirations. Do a reflective writing on your own skill. You may take help from the exercise given on page no. 50.
6. Read the story 'Quality' given on page no52 and summarize it in your own words.

# MATHS

## Section A: Coordinate Geometry (15 Questions)

1. Plot the points A(2,3), B(-1,4), C(-3,-2) and D(4,-1) on a graph.
2. In which quadrant does the point (-5,6) lie?
3. Find the coordinates of a point on the x-axis at a distance of 4 units from origin.
4. Write the coordinates of the origin.
5. Find the distance of point (0,5) from the origin.
6. Identify the quadrant of the point (3,-7).
7. Plot the point (0,-3) and state where it lies.
8. Write the abscissa and ordinate of point (6,-2).
9. If a point lies on y-axis, what is its x-coordinate?
10. Find the coordinates of a point equidistant from both axes.
11. Plot points (2,2), (4,4), (6,6). What do you observe?
12. Find the distance between (0,0) and (3,4) from graph.
13. Plot (-2,-3) and (-4,-5). Which quadrant?
14. Write coordinates of a point lying on negative x-axis.
15. Draw a graph and locate (1,-1), (-1,1), (-1,-1), (1,1).

## Section B: Linear Polynomials (15 Questions)

16. Find the zero of the polynomial  $x + 2$ .
17. Find the zero of  $2x - 4$ .
18. Check whether  $x=3$  is a zero of  $2x+1$ .
19. Find the value of polynomial  $x-5$  at  $x=5$ .
20. Find zero of  $3x+6$ .
21. Find value of  $x$  for which  $5x-10=0$ .
22. Write linear polynomial with zero  $-3$ .
23. Check whether  $x=-2$  is zero of  $x+2$ .
24. Find zero of  $-x+7$ .
25. Find value of  $4x+1$  at  $x=2$ .
26. Write polynomial whose zero is  $5$ .
27. Find zero of  $x/2 - 1$ .
28. Check if  $x=0$  is zero of  $x+1$ .
29. Find zero of  $7x$ .
30. Write linear polynomial with zero  $0$ .

## Section C: Creative Questions (10 Questions)

31. Plot your home and school on a coordinate grid and describe their positions.
32. Create a design using at least 5 plotted points.
33. Write a real-life situation that can be represented using a linear polynomial.
34. Create your own polynomial and find its zero.
35. Draw a shape using coordinate points and name it.
36. Find coordinates of vertices of your classroom corners.
37. Explain how coordinate geometry is used in maps.
38. Create a puzzle using linear polynomials.
39. Plot points to form a letter of the alphabet.
40. Write a short paragraph on importance of graphs in daily life.

# CLASS 9 - SCIENCE

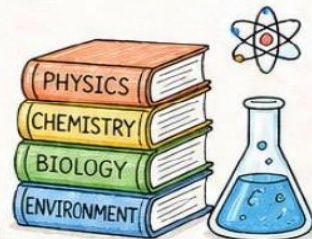
## SUMMER HOLIDAY HOMEWORK

MAY - JUNE 2026

♥ Explore • Understand • Experiment • Analyse • Apply ♥

### OBJECTIVES

- ★ Develop scientific inquiry and reasoning
- ★ Strengthen conceptual understanding
- ★ Promote experimental learning
- ★ Apply science in real-life situations



### SECTION A - PHYSICS (MOTION & FORCE)

#### 1. Task 1: Motion Observation Project

Observe movement of any object (cycle / car / person).

Record:

- Distance covered
- Time taken
- Calculate speed

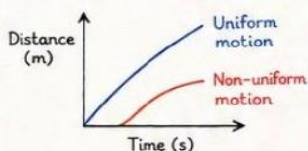


#### 2. Task 2: Graph Activity

Plot a distance-time graph.

Analyse:

- Uniform motion
- Non-uniform motion



### SECTION B - CHEMISTRY (MATTER IN OUR SURROUNDINGS)

#### 3. Task 3: States of Matter Experiment

Perform simple activity.

Observe:

- Melting (ice)
- Evaporation (water)

Write:

- Observation
- Conclusion



#### 4. Task 4: Case-Based Question

Explain:

Why do clothes dry faster in summer than winter?

(Answer in 120 - 150 words)

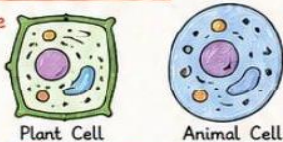


### SECTION C - BIOLOGY (CELL & TISSUES)

#### 5. Task 5: Diagram Practice

Draw and label:

- Plant cell
- Animal cell



#### 6. Task 6: Real-Life Connection

Write:

Why is cell called the basic unit of life?



### SECTION D - ENVIRONMENTAL SCIENCE

#### 7. Task 7: Natural Resources Study

Identify resources used at home.

Classify:

- Renewable Resources
- Non-renewable Resources



#### 8. Task 8: Climate Observation

Record weather for 10 days.

Analyse pattern and write conclusion.



### SECTION E - THINKING & ANALYSIS

#### 9. Task 9: Reasoning Questions

Answer:

- Why does ice float on water?
- Why do gases diffuse faster?



#### 10. Task 10: Case Study

Study a daily life situation.

Example: Pressure cooker / Refrigerator

Explain scientific principle.



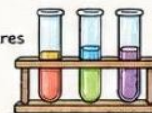
### SECTION F - EXPERIMENT & ACTIVITY

#### 11. Task 11: Home Experiment

Perform one experiment.

Examples:

- Separation of mixtures
- Density test



Write:

- ★ Aim
- ★ Materials Required
- ★ Procedure
- ★ Observation
- ★ Conclusion

### SECTION H - PROJECT WORK (MULTIDISCIPLINARY)

#### 14. Task 14: Science Scrapbook

Include:

- Diagrams
- Experiments
- Facts
- Daily life applications



#### 15. Task 15: Science Journal

Write daily:

- One observation
- One scientific fact
- One question



### TIPS

- ✓ Be curious
- ✓ Be creative
- ✓ Be regular
- ✓ Be neat
- ✓ Think scientifically

### SECTION G - CREATIVE & APPLICATION

#### 12. Task 12: Poster / Infographic

Make a poster / infographic on:

- Save Environment
- Scientific Innovations



#### 13. Task 13: Model Making

Make a model of:

- Atom structure / Cell / Water cycle



- #### SUBMISSION GUIDELINES
- ✓ Maintain a well-structured practical file.
  - ✓ Draw neat diagrams with labels.
  - ✓ Focus on understanding, not memorizing.
  - ✓ Submit after holidays.

#### WHY THIS HOMEWORK IS SPECIAL

- ♥ Helps you think scientifically.
- ♥ Learn by doing.
- ♥ Connects theory with real life.
- ♥ Builds strong conceptual foundation.



#### REMEMBER

- ★ Observe more
- ★ Question more
- ★ Experiment more
- ★ Learn more.
- ★ Grow more!



♥ SCIENCE IS NOT JUST A SUBJECT, IT IS A WAY OF THINKING! ♥

# SOCIAL SCIENCE

- Q.1 Map work (Label and locate states and union territories with their capitals on India Map and paste in your notebook)
- Q 2 Write about a local historical place nearby you.
- Q.3 Write and read about the Harappan civilization and locate Main sites on the map.
- Q.4 Read about Mesopotamia and Chinese civilization
- Q.5 Write a paragraph on World Environment Day (5 June).
- Q 6 “Democracy is considered better than other forms of government.” Justify the statement.
- Q 7 What is the difference between the parliamentary system and the Presidential system.
- Q.8 Explain the scope of Social Science by describing Geography, History, Political Science, and Economics, and show how they overlap in real life.
- Q .9 Write about the features of democracy.
- Q.10 Explain the major causes of floods in India and suggest effective flood management measures.
- Q.11 Describe the major seasons of India and explain the climatic conditions associated with each season.
- Q.12 What are the main functions of the Election Commission of India?
- Q.13 What are the challenges to free and fair elections in India?
- Q 14 Write the Fundamental Rights and Fundamental Duties of the Indian Constitution.
15. Write and learn the ‘Preamble’ of the Indian Constitution.

## AI

1. How can AI be used as a tool to transform the world into a better place?
2. Can you list down a few applications in your smartphone that widely make use of computer vision?
3. Draw out the difference between the three domains of AI with respect to the types of data they use.
4. Identify the features and the domain of AI used in them:

# ART & CRAFT

Question 1: Make a Collage painting with newspaper.

Question 2: Draw picture on any one of these folk art.

1. Madhubani painting

2. Warli Art

Additional Notes

- Cover and decorate your Art file using art paper, stickers, or your own creative ideas. Write your name, class, section, and roll number on the cover.

Enjoy your holidays and let your artistic side shine! We look forward to seeing your beautiful work after the vacation.



# CLASS – X

## HINDI

1- गोपियों ने स्वयं को अबला और भोली कहा है। आपकी दृष्टि से उनका ऐसा कहना कितना उपयुक्त है?

2- नेताजी का चश्मा' पाठ के माध्यम से लेखक ने क्या संदेश देने का प्रयास किया है?

3- बालगोबिन भगत ने महिलाओं की सामाजिक स्थिति सुधारने के लिए क्या किया?

4- रचना के आधार पर वाक्य तीन प्रकार के होते हैं।

सरल वाक्य, संयुक्त वाक्य और मिश्र वाक्य। तीनों प्रकार के वाक्यों की परिभाषा लिखते हुए प्रत्येक के पांच पांच उदाहरण लिखिए।

5- निम्न विषयों पर 100 से 120 शब्दों में अनुच्छेद लेखन कीजिए।

क - समय किसी के लिए नहीं रुकता

संत कबीर दास का दोहा-

"काल करै सो आज कर, आज करै सो अब।

पल में परलै होइगी, बहुरि करेगा कब।।"

ख - अभ्यास का महत्त्व

"करत-करत अभ्यास के, जड़मति होत सुजान।

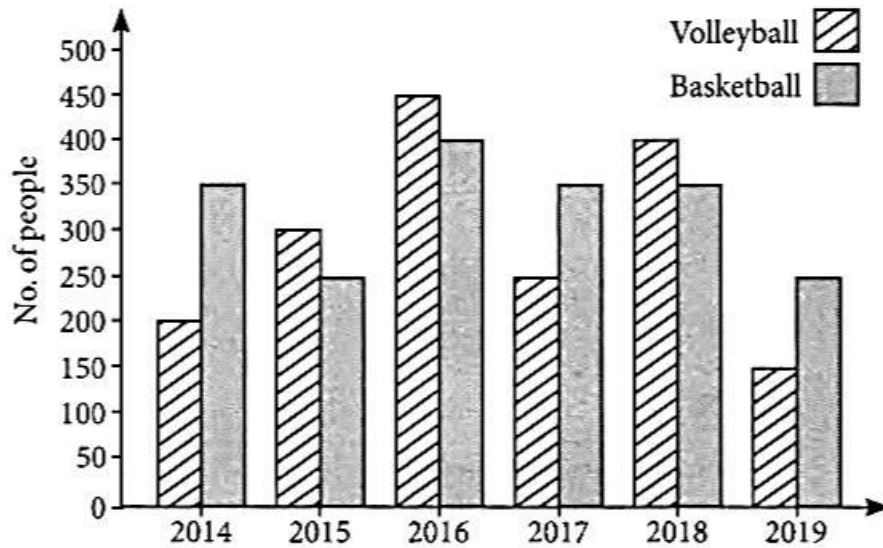
रसरि आवत जात तैं, सिल पर परत निसान।।"

स्वस्थ रहे खुश रहे

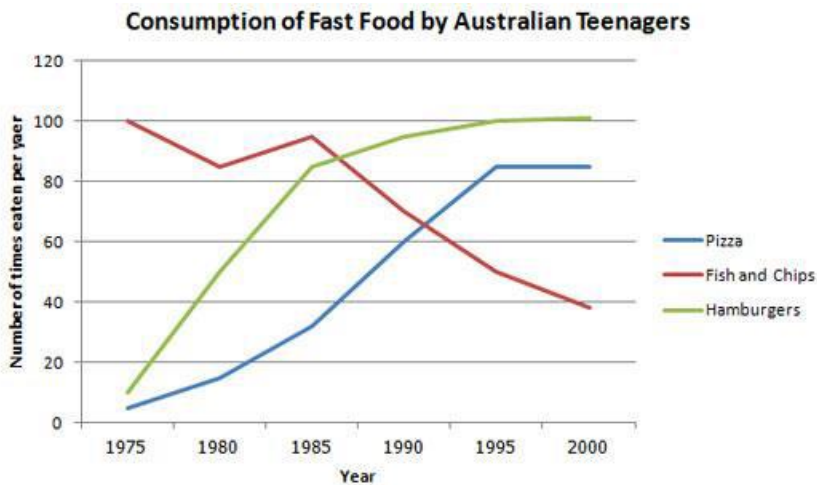
हिंदी अध्यापक

# ENGLISH

Q1 The given double bar graph shows the preferences of children in a school in playing different games over the span of six years. Write an analytical paragraph about the given information.



Q2 Study the graph below which depicts the consumption of fast food by Australian Teenagers during the year 1975 – 2000. Write an analytical paragraph for the graph given in around 150-200 words.



Q3 GAP FILLING:

Fill in the blanks choosing the correct options from the ones given below:

1. While these days Valentine's Day is celebrated by giving chocolates, flowers, or special romantic cards known as "valentines" to your loved one, its roots (i) \_\_\_\_\_ back to the Feast of Saint Valentine in the 4th century AD. However, it wasn't until the 14th century that the day (ii) \_\_\_\_\_ associated with romance!

(i) (a) goes (b) go (c) went (d) gone

(ii) (a) had become (b) become (c) became (d) have become

2. Pteronophobia is the fear of feathers (i) \_\_\_\_\_ you. In extreme cases, it (ii) \_\_\_\_\_ involve the fear of feathers in general. Pteronophobia is made up of the Greek word ptero, meaning “feather,” and phobia, meaning “fear.”

(i) (a) tickle (b) tickles (c) tickled (d) tickling

(ii) (a) can (b) ought to (c) should (d) must

3. Many animals are able to predict earthquakes to varying levels of success. Yet, snakes are the most reliable, sensing earthquakes from as far as 75 miles away (121 km). What’s more impressive is that they (i) \_\_\_\_\_ sense an earthquake as many as five days before it actually occurs! When snakes sense an earthquake, they often (ii) \_\_\_\_\_ their nests, even if the temperature is too cold.

(i) (a) might (b) can (c) should (d) ought to

(ii) (a) leaves (b) leaving (c) are leaving (d) leave

4. People in the 1900s didn’t have refrigerators and instead (i) \_\_\_\_\_ a piece of cloth in their larders. It was believed that doing so (ii) \_\_\_\_\_ luck, peace, and prosperity to the household. The tradition adapted over time to fit the modern kitchen. Nowadays, families worldwide place a pillow on top of their fridge every year on May 29th.

(i) (a) will hang (b) would hang (c) would hang (d) will hung

(ii) (a) bringing (b) brings (c) bring (d) brought

Q4 ANSWER THESE QUESTIONS:

1 Why does Mandela say that freedom is indivisible? How are the oppressed and the oppressor alike are robbed of their humanity?

2 There are two kinds of conflict in the story: between humans and nature, and between humans themselves. How are these conflicts illustrated? (A LETTER TO GOD)

3 In today’s world people fight over various issues and seems to have no end to it. In this context interpret the poem ‘Fire and Ice’.

4 Simple moment proves to be very significant and saves rest of the day of poet from being wasted. Explain on the basis of the poem ‘Dust of Snow’.

This work has to be completed only in Fair notebook of English.

Portfolio has to be prepared separately in file papers with proper format and cover page.

# MATHS

Click on the Link –

[https://docs.google.com/document/d/1c8\\_RhatjpHJ5VgD7yBFLmXW5GtUm\\_mM-/edit?usp=sharing&oid=108070922791129562154&rtpof=true&sd=true](https://docs.google.com/document/d/1c8_RhatjpHJ5VgD7yBFLmXW5GtUm_mM-/edit?usp=sharing&oid=108070922791129562154&rtpof=true&sd=true)

- 1) This is a Question Bank of First Five Chapters containing all important questions with solutions and mind map of the chapter. Learn and do all these questions in your notebook.
- 2) Monthly Test will be conducted from these questions after the reopening of the school.

## Chapter 1 Real Numbers

- **Fundamental theorem of Arithmetic**  
Every composite number can be expressed as a product of primes, and this expression is unique, apart from the order in which they appear.
- For any two positive integers a and b,  $HCF(a, b) \times LCM(a, b) = a \times b$
- **Algorithm to locate HCF and LCM of two or more positive integers:**

### Step I:

Factorize each of the given positive integers and express them as a product of powers of primes in ascending order of magnitude of primes.

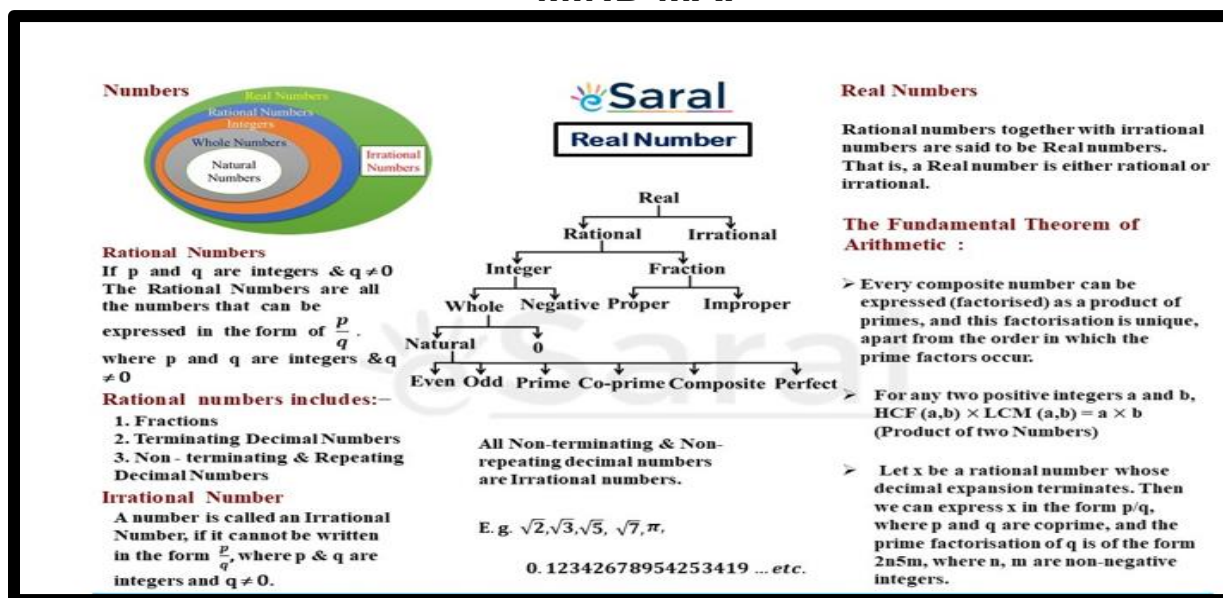
### Step II:

To find HCF, identify common prime factor and find the least powers and multiply them to get HCF.

### Step III:

To find LCM, find the greatest exponent and then multiply them to get the LCM.

## MIND MAP



1) Find HCF and LCM of 404 and 96 and verify that  $\text{HCF} \times \text{LCM} = \text{Product of the two given numbers}$ .

**Solution**

$$404 = 2 \times 2 \times 101$$

$$= 2^2 \times 101$$

$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

$$= 2^5 \times 3$$

$$\text{HCF}(404, 96) = 2 \times 2 = 4$$

$$\text{LCM}(404, 96) = 101 \times 2^5 \times 3 = 9696$$

$$\text{HCF} \times \text{LCM} = 4 \times 9696 = 38784$$

$$\text{Also, } 404 \times 96 = 38784$$

Hence,  $\text{HCF} \times \text{LCM} = \text{Product of 404 and 96}$

2) Find the LCM of 96 and 360 by using fundamental theorem of arithmetic.

**Solution**

$$96 = 2^5 \times 3$$

$$360 = 2^3 \times 3^2 \times 5$$

$$\text{LCM} = 2^5 \times 3^2 \times 5 = 32 \times 9 \times 5 = 1440$$

2	96	2	360
2	48	2	180
2	24	2	90
2	12	3	45
2	6	3	15
3	3	5	5

3) Given that  $\text{HCF}(306, 1314) = 18$ . Find  $\text{LCM}(306, 1314)$

**Solution**

$$\text{HCF}(306, 1314) = 18$$

$$\text{LCM}(306, 1314) = ?$$

Let  $a = 306$  and  $b = 1314$ , then we have

$$\text{LCM}(a, b) \times \text{HCF}(a, b) = a \times b$$

Substituting values we have,

$$\text{LCM}(a, b) \times 18 = 306 \times 1314$$

$$\text{LCM}(306, 1314) = 22,338$$

4) Check whether  $4^n$  can end with the digit 0 for any natural number  $n$ .

**Solution**

If the number  $4^n$  for any  $n$ , were to end with the digit zero, then it would be divisible by 5 and 2. That is, the prime factorization of  $4^n$  would contain the prime 5 and 2. This is not possible because the only prime in the factorization of  $4^n = 2^{2n}$  is 2. So, the uniqueness of the Fundamental Theorem of Arithmetic guarantees that there are no other primes in the factorization of  $4^n$ . So, there is no natural number  $n$  for which  $4^n$  ends with the digit zero. Hence  $4^n$  cannot end with the digit zero.

5) Explain why  $(17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11)$  is a composite number?

**Solution**

$$\begin{aligned} &17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11 \dots(i) \\ &= 2 \times 11 \times (17 \times 5 \times 3 + 1) \\ &= 2 \times 11 \times (255 + 1) \\ &= 2 \times 11 \times 256 \end{aligned}$$

Number (i) is divisible by 2, 11 and 256, it has more than 2 prime factors. Therefore  $(17 \times 5 \times 11 \times 3 \times 2 + 2 \times 11)$  is a composite number.

6) Prove that  $3 + 2\sqrt{3}$  is an irrational number.

**Solution**

Let us assume to the contrary, that  $3 + 2\sqrt{3}$  is rational.

So that we can find integers  $a$  and  $b$  ( $b \neq 0$ ).

Such that  $3 + 2\sqrt{3} = a/b$ , where  $a$  and  $b$  are coprime.

Rearranging the equations, we get

$$\begin{aligned} 2\sqrt{3} &= \frac{a}{b} - 3 = \frac{a - 3b}{b} \\ \sqrt{3} &= \frac{a - 3b}{2b} = \frac{a}{2b} - \frac{3b}{2b} \\ \sqrt{3} &= \frac{a}{2b} - \frac{3}{2} \end{aligned}$$

Since,  $a$  and  $b$  are integers, we get  $a/2b - 3/2$  is rational and so  $\sqrt{3}$  is rational.

But this contradicts the fact that  $\sqrt{3}$  is irrational.

So we conclude that  $3 + 2\sqrt{3}$  is irrational.

**7) Prove that  $\sqrt{5}$  is an irrational number.**

**Solution**

Assume that  $\sqrt{5}$  be a rational number then we have

$$\sqrt{5} = a/b$$

where a and b are co-primes and  $b \neq 0$ .

$$a = b\sqrt{5}$$

Squaring both the sides, we have

$$a^2 = 5b^2$$

Thus 5 is a factor of  $a^2$  and in result 5 is also a factor of a.

Let  $a = 5c$  where c is some integer, then we have

$$a^2 = 25c^2$$

Substituting  $a^2 = 5b^2$  we have,

$$5b^2 = 25c^2$$

$$\Rightarrow b^2 = 5c^2$$

Thus 5 is a factor of  $b^2$  and in result 5 is also a factor of b.

Thus  $\sqrt{5}$  is a common factor of a and b. But this contradicts the fact that a and b are co-primes.

Thus, our assumption that  $\sqrt{5}$  is rational number is wrong.

Hence,  $\sqrt{5}$  is irrational.

**8) Two tankers contain 850 litres and 680 litres of petrol. Find the maximum capacity of a container which can measure the petrol of each tanker in the exact number of times.**

**Solution**

To find the maximum capacity of a container which can measure the petrol of each tanker in the exact number of times, we find the HCF of 850 and 680.

$$850 = 2 \times 5^2 \times 17$$

$$680 = 2^3 \times 5 \times 17$$

$$\text{HCF} = 2 \times 5 \times 17 = 170$$

Maximum capacity of the container = 170 litres.

**9) Three bells toll at intervals of 9, 12, 15 minutes respectively. If they start tolling together, after what time will they next toll together?**

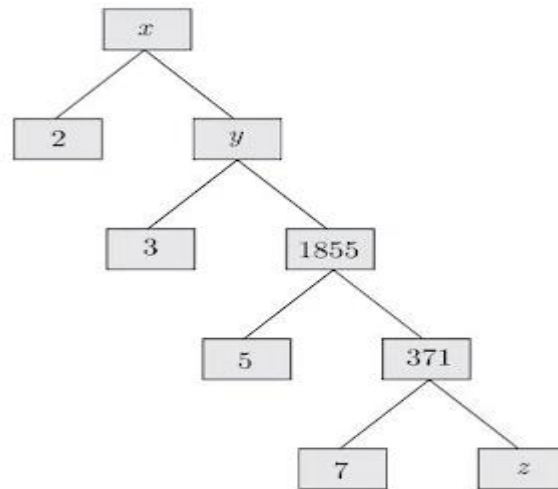
**Solution**

$$9 = 3^2, 12 = 2^2 \times 3, 15 = 3 \times 5$$

$$\text{LCM} = 2^2 \times 3^2 \times 5 = 4 \times 9 \times 5 = 180 \text{ minutes or 3 hours}$$

They will next toll together after 3 hours.

10) Complete the following factor tree and find the composite number  $x$ .



**Solution**

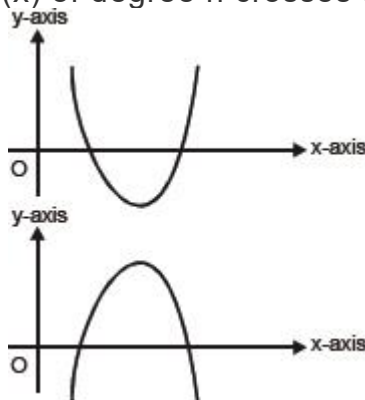
$$z = 371/7 = 53$$

$$y = 1855 \times 3 = 5565$$

$$x = 2 \times y = 2 \times 5565 = 11130$$

**Chapter 2 Polynomials**

- Zeroes of a polynomial.  $k$  is said to be zero of a polynomial  $p(x)$  if  $p(k) = 0$
- Graph of polynomial.
  - (i) Graph of a linear polynomial  $ax + b$  is a straight line.
  - (ii) Graph of a quadratic polynomial  $p(x) = ax^2 + bx + c$  is a parabola open upwards like  $\cup$ , if  $a > 0$ .
  - (iii) Graph of a quadratic polynomial  $p(x) = ax^2 + bx + c$  is a parabola open downwards like  $\cap$ , if  $a < 0$ .
  - (iv) In general, a polynomial  $p(x)$  of degree  $n$  crosses the  $x$ -axis at at most  $n$  points.

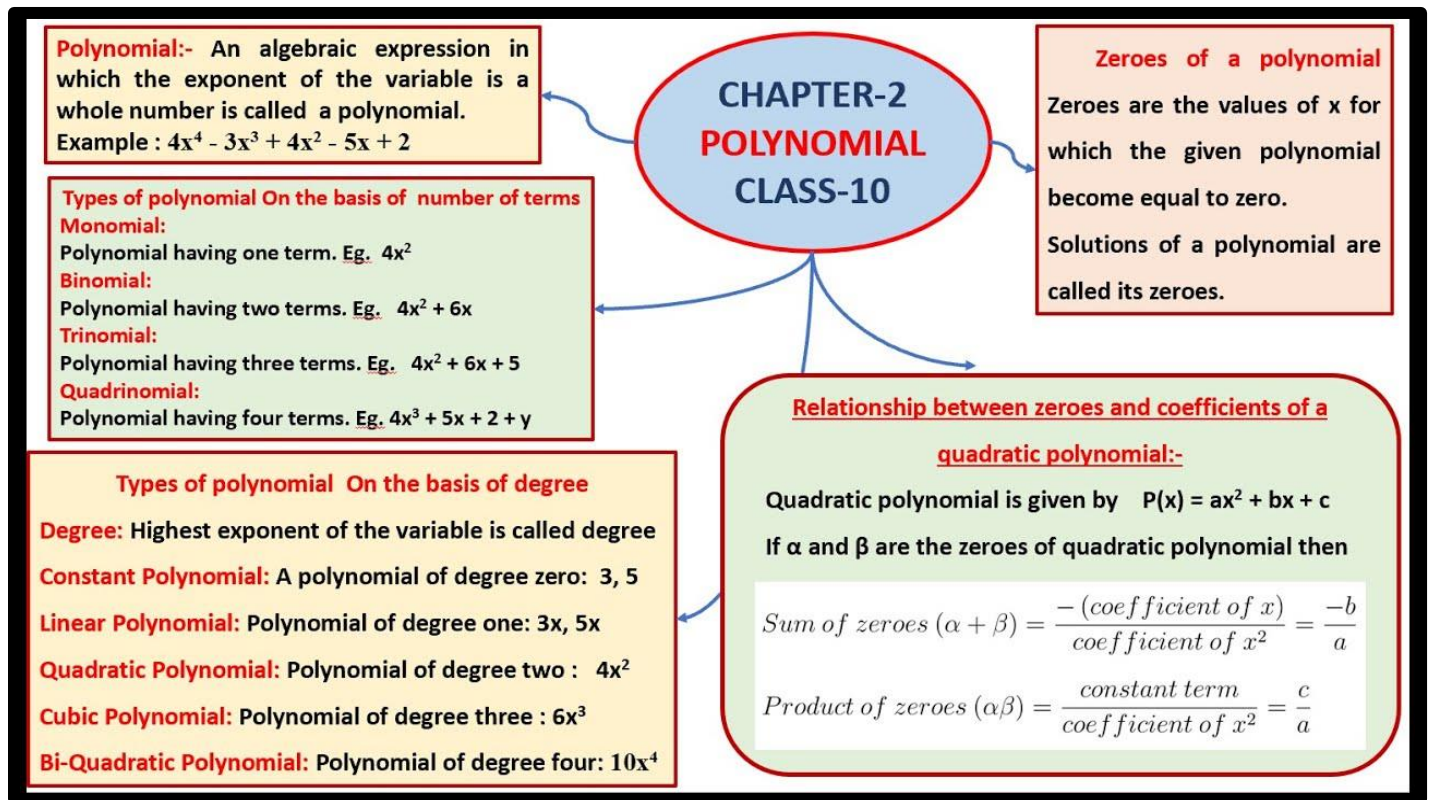


- Relationship between the zeroes and the coefficients of a Polynomial.
- (i) If  $\alpha, \beta$  are zeroes / roots of  $p(x) = ax^2 + bx + c$ , then

$$\text{Sum of roots } \alpha + \beta = \frac{-b}{a} \Rightarrow \alpha + \beta = \frac{-(\text{coefficient of } x)}{\text{coefficient of } x^2}$$

$$\text{Product of roots } = \alpha\beta = \frac{c}{a} \Rightarrow \alpha\beta = \frac{\text{constant term}}{\text{coefficient of } x^2}$$

- (ii) If  $\alpha, \beta$  are roots of a quadratic polynomial  $p(x)$ ,  
 then  $p(x) = x^2 - (\alpha + \beta)x + \alpha\beta$   
 $\Rightarrow p(x) = x^2 - (\text{sum of roots})x + \text{product of roots}$



- 1) Find a quadratic polynomial, the sum and product of whose zeroes are 0 and  $-\sqrt{2}$  respectively.

### Solution

Quadratic polynomial is

$$x^2 - (\text{Sum of zeroes})x + (\text{Product of zeroes})$$

$$= x^2 - (0)x + (-\sqrt{2})$$

$$= x^2 - \sqrt{2}$$

2) Find a quadratic polynomial, the sum and product of whose zeroes are -8 and 12 respectively. Hence find the zeroes.

**Solution**

Let Sum of zeroes ( $\alpha + \beta$ ) = S = -8 [Given]

Product of zeroes ( $\alpha\beta$ ) = P = 12 [Given]

Quadratic polynomial is  $x^2 - Sx + P$

$$= x^2 - (-8)x + 12$$

$$= x^2 + 8x + 12$$

$$= x^2 + 6x + 2x + 12$$

$$= x(x + 6) + 2(x + 6)$$

$$= (x + 2)(x + 6)$$

Zeroes are:

$$x + 2 = 0 \text{ or } x + 6 = 0$$

$$x = -2 \text{ or } x = -6$$

3) Find the zeroes of the quadratic polynomial  $5x^2 + 8x - 4$  and verify the relationship between the zeroes and the coefficients of the polynomial.

**Solution**

We have,

$$p(x) = 5x^2 + 8x - 4 = 0$$

$$= 5x^2 + 10x - 2x - 4 = 0$$

$$= 5x(x+2) - 2(x+2) = 0$$

$$= (x+2) (5x-2)$$

Substituting  $p(x) = 0$  we get zeroes as 2 - and 2/5.

**Verification :**

$$\text{Sum of zeroes} = -2 + \frac{2}{5} = \frac{-8}{5}$$

$$\text{Product of zeroes} = (-2) \times \left(\frac{2}{5}\right) = \frac{-4}{5}$$

Now from polynomial we have

$$\text{Sum of zeroes} \quad -\frac{b}{a} = -\frac{\text{Coefficient of } x}{\text{Coefficient of } x^2} = \frac{-8}{5}$$

$$\text{Product of zeroes} \quad \frac{c}{a} = \frac{\text{Constan term}}{\text{Coefficient of } x^2} = \frac{-4}{5}$$

- 4) Find the zeroes of  $p(x) = 2x^2 - x - 6$  and verify the relationship of zeroes with these coefficients.

**Solution**

$$p(x) = 2x^2 - x - 6 \text{ [Given]}$$

$$= 2x^2 - 4x + 3x - 6$$

$$= 2x(x - 2) + 3(x - 2)$$

$$= (x - 2)(2x + 3)$$

Zeroes are:

$$x - 2 = 0 \text{ or } 2x + 3 = 0$$

$$x = 2 \text{ or } x = -\frac{3}{2}$$

Verification:

Here  $a = 2$ ,  $b = -1$ ,  $c = -6$

$$\begin{aligned} \text{Sum of zeroes} &= 2 + \left(\frac{-3}{2}\right) = \frac{4 - 3}{2} = \frac{1}{2} \\ &= \frac{1}{2} = \frac{-\text{Coefficient of } x}{\text{Coefficient of } x^2} = \frac{-b}{a} \\ \text{Product of zeroes} &= 2 \times \left(\frac{-3}{2}\right) = \frac{-6}{2} \\ &= \frac{-6}{2} = \frac{\text{Constant term}}{\text{Coefficient of } x^2} = \frac{c}{a} \\ \therefore \text{Relationship holds.} \end{aligned}$$

- 5) If  $-1$  is a zero of quadratic polynomial,  $p(x) = kx^2 - 5x - 4$ , then find the value of  $k$ .

Answer:

$$\text{Here } p(x) = kx^2 - 5x - 4$$

Since  $-1$  is a zero of  $p(x)$

$$\therefore P(-1) = 0$$

$$\Rightarrow k(-1)^2 - 5(-1) - 4 = 0$$

$$\Rightarrow k + 5 - 4 = 0$$

$$\Rightarrow k = -1$$

**Find the sum and product of the zeroes of the polynomial  $x^2 - 6x + 5$ ;**

**Solution:**

$$x^2 - 6x + 5$$

$$\text{Sum of the zeroes of the polynomial} = \frac{-b}{a} = \frac{-(-6)}{1} = 6$$

$$\text{Product of the zeroes of the polynomial} = \frac{c}{a} = \frac{5}{1} = 5$$

6)

**Form the polynomial whose zeroes are 5, 6.**

**Solution:**

The roots are 5 and 6.  $\therefore$  Sum of the zeroes =  $5 + 6 = 11$

$\therefore$  Product of the zeroes =  $5 \times 6 = 30$

The required polynomial is  $x^2 - (\text{sum of the roots})x + \text{Product of the zeroes}$   
 $\Rightarrow x^2 - 11x + 30$  is the required polynomial.

7) What are the zeroes of the Polynomial  $p(x) = 6x^2 - 7x - 3$

Solution

$$6x^2 - 9x + 2x - 3 = 3x(2x - 3) + 1(2x - 3) = (3x + 1)(2x - 3)$$

So roots are  $(3/2)$ ,  $(-1/3)$

### Chapter 3 Pair of Linear Equations in Two Variables

#### Basic Concepts with Examples

- **Linear Equation in Two Variables**

An equation which can be put in the form

$$ax + by + c = 0$$

where  $a$ ,  $b$  and  $c$  are real numbers ( $a, b \neq 0$ ) is called a **linear equation** in two variables 'x' and 'y'

- **General Form of a Pair of Linear Equations in Two Variables**

General form of a linear pair of equations in two variables is:

$$a_1x + b_1y + c_1 = 0 \text{ and}$$

$$a_2x + b_2y + c_2 = 0$$

where  $a_1, b_1, c_1, a_2, b_2, c_2$  are real numbers such that

$$a_1^2 + b_1^2 \neq 0 \text{ and } a_2^2 + b_2^2 \neq 0$$

- **Solution of a Pair of Linear Equations in Two Variables**

The solution of a linear equation in two variables 'x' and 'y' is a pair of values (one for 'x' and other for 'y')

which makes the two sides of the equation equal.

There are two methods to solve a pair of linear equations:

- (i) algebraic method
- (ii) graphical method.

### • Algebraic Method

We have already studied (i) Substitution method and (ii) Elimination method. Here, we will study cross-multiplication method also.

$$\begin{aligned} a_1 x + b_1 y + c_1 &= 0 \\ a_2 x + b_2 y + c_2 &= 0 \end{aligned}$$

form a pair of linear equations, then the following three situations can arise:

- (i) If  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ , then the system is **consistent**.
- (ii) If  $\frac{a_1}{a_2} = \frac{b_1}{b_2}$ , then the system is **inconsistent**.
- (iii) If  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ , then the system is **dependent and consistent**.


### • Graphical Method of Solution of a Pair of Linear Equations

- (i) If the graphs of two equations of a system intersect at a point, the system is said to have a **unique solution**, i.e., the system is **consistent**.
- (ii) If the graphs of two equations of a system are two parallel lines, the system is said to have **no solution**, i.e., the system is **inconsistent**.
- (iii) When the graphs of two equations of a system are two coincident lines, the system is said to have **infinitely many solutions**, i.e., the system is **consistent and dependent**.

**Linear Equation in Two Variables**

2 Variables Degree : 1

$$a.x + b.y = c$$



**Pair of Linear Equation in Two Variables**

**Pair of Linear Equation in Two Variables**

Two linear equations in the same two variables are called a pair of linear equations in two variables.

The most general form of a pair of linear equations is

$$\begin{aligned} a_1 x + b_1 y + c_1 &= 0 \\ a_2 x + b_2 y + c_2 &= 0 \end{aligned}$$

where  $a_1, a_2, b_1, b_2, c_1, c_2$  are real numbers, such that  $a_1^2 + b_1^2 \neq 0, a_2^2 + b_2^2 \neq 0$ .

(i) intersecting, then  $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$

(ii) coincident, then  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$

(iii) parallel, then  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

A pair of linear equations in two variables can be represented, and solved, by the:

- (1) graphical method
- (2) algebraic method

**1. Graphical Method of solution of a Pair of Linear Equations**

Compare the ratios	Graphical representation	Algebraic interpretation
$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$	Intersecting lines	Exactly one solution (unique) Consistent
$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$	Coincident lines	Infinitely many solutions Consistent
$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$	Parallel lines	No solutions Inconsistent

**2. Algebraic Method of solving pair of LE**

- > Substitution Method
- > Elimination method
- > Cross Multiplication

Case-1 If  $a_1 b_2 - a_2 b_1 \neq 0$   
 $x$  and  $y$  have some finite values, with unique solution for the system of equations.

Case-2 If  $a_1 b_2 - a_2 b_1 = 0$

(a) if  $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2} = \lambda (\lambda \neq 0)$  Infinite no. of sol.

(b)  $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$  So system of equations is inconsistent.

$$\Rightarrow x = \frac{b_1 c_2 - b_2 c_1}{a_1 b_2 - a_2 b_1} \Rightarrow y = \frac{c_1 a_2 - c_2 a_1}{a_1 b_2 - a_2 b_1}$$

**1) Solve by elimination:**

$$3x - y = 7$$

$$2x + 5y + 1 = 0$$

**Solution**

$$3x - y = 7 \dots(i)$$

$$2x + 5y = -1 \dots(ii)$$

Multiplying equation (i) by 5 & (ii) by 1,

$$\begin{array}{r} 15x - 5y = 35 \\ 2x + 5y = -1 \\ \hline 17x = 34 \end{array}$$

$$\Rightarrow x = 2$$

Putting the value of x in (i), we have

$$3(2) - y = 7$$

$$\Rightarrow 6 - 7 = y$$

$$\therefore y = -1 \therefore x = 2, y = -1$$

**2) Find the value(s) of k so that the pair of equations  $x + 2y = 5$  and  $3x + ky + 15 = 0$  has a unique solution.**

**Solution**

We have,

$$x + 2y - 5 = 0 \dots(1)$$

$$\text{and } 3x + ky + 15 = 0 \dots(2)$$

Comparing equation (1) with  $a_1x + b_1y + c_1 = 0$  and equation (2) with  $a_2x + b_2y + c_2 = 0$ , we get  $a_1 = 1, a_2 = 3, b_1 = 2, b_2 = k, c_1 = -5, c_2 = 15$

Since, given equations have unique solution, So

$$\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$$

$$\frac{1}{3} \neq \frac{2}{k}$$

$$k \neq 6$$

Hence, for all values of k except 6, the given pair of equations have unique solution.

3) Find whether the following pair of linear equations is consistent or inconsistent:

$$3x + 2y = 8$$

$$6x - 4y = 9$$

**Solution**

$$\text{Here, } \frac{a_1}{a_2} = \frac{3}{6} = \frac{1}{2}, \frac{b_1}{b_2} = \frac{2}{-4} = \frac{-1}{2}$$

$$\text{Here, } \frac{1}{2} \neq \frac{-1}{2} \quad \therefore \quad \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \text{ (unique solution)}$$

Therefore, given pair of linear equations is consistent.

4) Find whether the lines represented by  $2x + y = 3$  and  $4x + 2y = 6$  are parallel, coincident or intersecting.

**Solution**

Here,

$$a_1 = 2, b_1 = 1, c_1 = -3 \text{ and } a_2 = 4, b_2 = 2, c_2 = -6$$

$$\text{If } \frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

then the lines are parallel.

$$\text{Clearly } \frac{2}{4} = \frac{1}{2} = \frac{3}{6}$$

Hence lines are coincident.

5) Solve for x and y:

$$27x + 31y = 85;$$

$$31x + 27y = 89$$

**Solution**

	$27x + 31y = 85$	
	$31x + 27y = 89$	
	<hr style="width: 100%;"/>	
	$58x + 58y = 174$	...[adding
$\Rightarrow x + y = 3$		...(i) [+ by 58
Again	$27x + 31y = 85$	
	$-31x + 27y = -89$	
	<hr style="width: 100%;"/>	
	$-4x + 4y = -4$	...[subtracting
$\Rightarrow x - y = 1$		...(ii) [+ by 4
Adding (i) and (ii), we have		
	$x + y = 3$	
	$x - y = 1$	
	<hr style="width: 100%;"/>	
$\Rightarrow$	$2x = 4$	$\Rightarrow x = 2$
Putting the value of 'x' in (i), we get		
$2 + y = 3$		
$\Rightarrow y = 3 - 2 = 1$		
$\therefore x = 2, y = 1$		

- 6) For what value of  $k$ , the pair of equations  $4x - 3y = 9$ ,  $2x + ky = 11$  has no solution?  
(2017D)

Solution:

We have,  $4x - 3y = 9$  and  $2x + ky = 11$

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2} \quad (\text{No solution})$$

$$\frac{4}{2} \neq \frac{-3}{k} \neq \frac{9}{11} \quad \Rightarrow \quad 2 = \frac{-3}{k}$$

$$2k = -3 \quad \therefore \quad k = \frac{-3}{2}$$

- 7) Solve the following pair of linear equations by the substitution method.

$$x + y = 14$$

$$x - y = 4$$

Given,

$x + y = 14$  and  $x - y = 4$  are the two equations.

From 1st equation, we get,

$$x = 14 - y$$

Now, put the value of  $x$  in second equation to get,

$$(14 - y) - y = 4$$

$$14 - 2y = 4$$

$$2y = 10$$

$$\text{Or } y = 5$$

By the value of  $y$ , we can now find the value of  $x$ ;

$$\therefore x = 14 - y$$

$$\therefore x = 14 - 5 \quad \text{Or } x = 9 \quad \text{Hence, } x = 9 \text{ and } y = 5.$$

- 8) Draw the graphs of following equations:

$$2x - y = 1; \quad x + 2y = 13$$

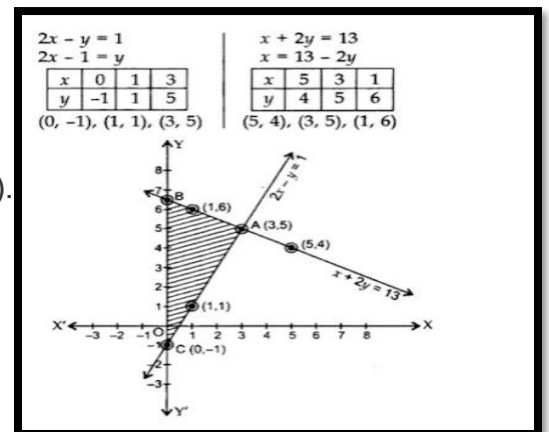
Find the solution of the equations from the graph and shade the triangular region formed by the lines and the  $y$ -axis.

**Solution**

By plotting the points and joining them, the lines intersect at  $A(3,5)$ .

$$\therefore x = 3, y = 5$$

Here  $\triangle ABC$  is the required triangle.



9) For what value of k, which the following pair of linear equations have infinitely many solutions:

$$2x + 3y = 7 \text{ and } (k+1)x + (2k-1)y = 4k + 1$$

$$\text{Here } \frac{a_1}{a_2} = \frac{2}{k+1}, \frac{b_1}{b_2} = \frac{3}{2k-1}$$

$$\text{and } \frac{c_1}{c_2} = \frac{-7}{-(4k+1)} = \frac{7}{4k+1}$$

For infinite many solutions

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

For  $\frac{a_1}{a_2} = \frac{c_1}{c_2}$  we have

$$\frac{2}{k+1} = \frac{7}{4k+1}$$

$$2(4k+1) = 7(k+1)$$

$$8k+2 = 7k+7$$

$$k = 5$$

Hence, the value of k is 5, for which the given equation have infinitely many solutions.

10) A fraction becomes  $\frac{1}{3}$  when 2 is subtracted from the numerator and it becomes  $\frac{1}{2}$  when 1 is subtracted from the denominator. Find the fraction.

**Solution**

Let the fraction be  $\frac{x}{y}$ . According to the first condition,

$$\frac{x-2}{y} = \frac{1}{3}$$

$$3x-6 = y$$

$$y = 3x-6$$

According to the second condition,

$$\frac{x}{y-1} = \frac{1}{2}$$

$$2x = y - 1$$

$$\Rightarrow y = 2x + 1 \dots(2)$$

From equation (1) and (2), we have

$$3x - 6 = 2x + 1$$

$$\Rightarrow x = 7$$

Substitute value of x in equation (1), we get

$$y = 3(7) - 6$$

$$= 21 - 6$$

$$= 15$$

Hence, fraction is 7/15

## Quadratic Equations

A Polynomial of the form  $p(x) = ax^2 + bx + c$ , where  $a \neq 0$  and  $a, b, c$  are real numbers and  $x$  is a real variable is called a **quadratic polynomial**.

An equation  $p(x) = 0$ , where  $p(x)$  is a quadratic polynomial is called a quadratic equation i.e.  $ax^2 + bx + c = 0, a \neq 0$

### Zeros of Quadratic Equations

Those values of  $x$  for which  $ax^2 + bx + c = 0$  is satisfied are called zeros of quadratic equation.

### Roots of Quadratic Equations

If  $\alpha, \beta$  are the zeros of the polynomial  $ax^2 + bx + c$ . Then  $\alpha, \beta$  are called roots of corresponding equation

$$ax^2 + bx + c = 0$$

$$\Rightarrow p(\alpha) = p(\beta) = 0$$

$$\text{i.e. } a\alpha^2 + b\alpha + c = 0$$

$$\text{and } a\beta^2 + b\beta + c = 0$$

Quadratic equation can be solved by any one of the following method:

- By splitting middle term
- By using Quadratic Formula

$D = b^2 - 4ac$ , is called the discriminant which decides the nature of roots.

- If  $D > 0$ , Roots are real and unequal.
- If  $D = 0$ , Roots are real and equal.
- If  $D < 0$ , No Real roots are possible.

The quadratic formula or Sridharacharya's formula to find the roots of  $ax^2 + bx + c = 0$  is

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

**Quadratic Equation**

General Form of quadratic equation:  
 $ax^2 + bx + c = 0$

Where  $a, b, c$  are real numbers and  $a \neq 0$

**Roots of the Quadratic Equation**


A real number  $\alpha$  is said to be a root of the quadratic equation  $ax^2 + bx + c = 0$ , if  $a\alpha^2 + b\alpha + c = 0$ . The zeroes of the quadratic polynomial  $ax^2 + bx + c$  and the roots of the quadratic equation  $ax^2 + bx + c = 0$  are the same.

**Quadratic formula:**  
For  $ax^2 + bx + c = 0, a \neq 0$ ; then

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-b + \sqrt{D}}{2a} \text{ OR } x = \frac{-b - \sqrt{D}}{2a}$$


where,  $D = b^2 - 4ac$ , known as its discriminant & is denoted by  $D$  or  $\Delta$ .



**Quadratic Equation**

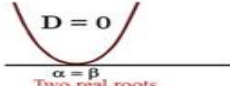
**Nature of Roots**

1. Two distinct real roots,  
> If  $D > 0$  & is a perfect square the roots will be rational and unequal.  
> If  $D > 0$  & is not a perfect square The roots will be irrational and occur in a pair of conjugate surds



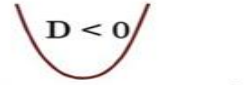
$D > 0$   
Two equal roots Roots are Real and Distinct

2. Two equal roots (i.e., coincident roots), if  $b^2 - 4ac = 0$ ,



$D = 0$   
Two real roots Roots are Real and Equal

3. no real roots, if  $b^2 - 4ac < 0$ .



$D < 0$   
No real roots

**Solution of a Quadratic Equation by Factorisation**

If we can factorise  $ax^2 + bx + c, a \neq 0$ , into a product of two linear factors, then the roots of the quadratic equation  $ax^2 + bx + c = 0$  can be found by equating each factor to zero.

**Solution of a Quadratic Equation by completing the Square**

A quadratic equation can also be solved by the method of completing the square.

**1) Find the roots of equation  $9x^2 - 3x - 2 = 0$  by factorisation.**

**Solution:**

Given,

$$9x^2 - 3x - 2 = 0.$$

$$\Rightarrow 9x^2 - 3x - 2 = 0.$$

$$\Rightarrow 9x^2 - 6x + 3x - 2 = 0$$

$$\Rightarrow 3x(3x - 2) + 1(3x - 2) = 0$$

$$\Rightarrow (3x - 2)(3x + 1) = 0$$

Now, either  $3x - 2 = 0 \Rightarrow x = 2/3$

Or,  $3x + 1 = 0 \Rightarrow x = -1/3$

Thus, the roots of the given quadratic equation are  $x = 2/3$  and  $x = -1/3$ , respectively

**2) Write the discriminant of the following quadratic equations**

(i)  $2x^2 - 5x + 3 = 0$

**Solution:**

Given equation,

$$2x^2 - 5x + 3 = 0$$

It is in the form of  $ax^2 + bx + c = 0$

Where,  $a = 2$ ,  $b = -5$  and  $c = 3$

So, the discriminant is given by  $D = b^2 - 4ac$

$$D = (-5)^2 - 4 \times 2 \times 3$$

$$D = 25 - 24 = 1$$

Hence, the discriminant of the given quadratic equation is 1.

(ii)  $x^2 + 2x + 4 = 0$

**Solution:**

Given equation,

$$x^2 + 2x + 4 = 0$$

It is in the form of  $ax^2 + bx + c = 0$

Where,  $a = 1$ ,  $b = 2$  and  $c = 4$

So, the discriminant is given by  $D = b^2 - 4ac$

$$D = (2)^2 - 4 \times 1 \times 4$$

$$D = 4 - 16 = -12$$

Hence, the discriminant of the given quadratic equation is  $-12$ .

**3) Determine the nature of the roots of the following quadratic equations:**

(i)  $2x^2 - 3x + 5 = 0$

**Solution:**

Here,  $a = 2$ ,  $b = -3$ ,  $c = 5$

$$D = b^2 - 4ac$$

$$= (-3)^2 - 4(2)(5)$$

$$= 9 - 40$$

$$= -31 < 0$$

It's seen that  $D < 0$ , and hence, the given equation does not have any real roots.

**(ii)  $2x^2 - 6x + 3 = 0$**

**Solution:**

Here,  $a = 2$ ,  $b = -6$ ,  $c = 3$

$$D = (-6)^2 - 4(2)(3)$$

$$= 36 - 24$$

$$= 12 > 0$$

It's seen that  $D > 0$ , and hence, the given equation has real and distinct roots.

**(iii)  $3x^2 - 2\sqrt{6}x + 2 = 0$**

**Solution:**

Here,  $a = 3$ ,  $b = -2\sqrt{6}$ ,  $c = 2$

$$D = (-2\sqrt{6})^2 - 4(3)(2)$$

$$= 24 - 24$$

$$= 0$$

It's seen that  $D = 0$ , and hence, the given equation has real and equal root.

**4) Find the values of k for which the roots are real and equal in each of the following equations:**

**(i)  $kx^2 + 4x + 1 = 0$**

**Solution:**

The given equation  $kx^2 + 4x + 1 = 0$  is in the form of  $ax^2 + bx + c = 0$

Where  $a = k$ ,  $b = 4$ ,  $c = 1$

For the equation to have real and equal roots, the condition is

$$D = b^2 - 4ac = 0$$

$$\Rightarrow 4^2 - 4(k)(1) = 0$$

$$\Rightarrow 16 - 4k = 0$$

$$\Rightarrow k = 4$$

The value of k is 4.

**(ii)  $kx^2 - 2\sqrt{5}x + 4 = 0$**

**Solution:**

The given equation  $kx^2 - 2\sqrt{5}x + 4 = 0$  is in the form of  $ax^2 + bx + c = 0$

Where  $a = k$ ,  $b = -2\sqrt{5}$ ,  $c = 4$

For the equation to have real and equal roots, the condition is

$$D = b^2 - 4ac = 0$$

$$\Rightarrow (-2\sqrt{5})^2 - 4(k)(4) = 0$$

$$\Rightarrow 20 - 16k = 0$$

$$\Rightarrow k = 5/4$$

The value of k is 5/4.

**(iii)  $3x^2 - 5x + 2k = 0$**

**Solution:**

The given equation  $3x^2 - 5x + 2k = 0$  is in the form of  $ax^2 + bx + c = 0$

Where  $a = 3$ ,  $b = -5$ ,  $c = 2k$

For the equation to have real and equal roots, the condition is

$$D = b^2 - 4ac = 0$$

$$\Rightarrow (-5)^2 - 4(3)(2k) = 0$$

$$\Rightarrow 25 - 24k = 0$$

$$\Rightarrow k = 25/24$$

The value of k is 25/24.

**5) Find two consecutive natural numbers whose product is 20.**

**Solution:**

Let the two consecutive natural numbers be  $x$  and  $x + 1$ , respectively.

Given that their product is 20.

Which means,  $x(x + 1) = 20$

$$\Rightarrow x^2 + x - 20 = 0$$

Solving for  $x$  by factorisation method, we have

$$\Rightarrow x^2 + 5x - 4x - 20 = 0$$

$$\Rightarrow x(x + 5) - 4(x + 5) = 0$$

$$\Rightarrow (x + 5)(x - 4) = 0$$

Now, either  $x + 5 = 0 \Rightarrow x = -5$

Or,  $x - 4 = 0 \Rightarrow x = 4$

Considering only the positive value of  $x$  since it is a natural number. i.e,  $x = 4$

Thus, the two consecutive natural numbers are 4 and 5, respectively.

**6) A passenger train takes one hour less for a journey of 150 km if its speed is increased 5 km/hr from its usual speed. Find the usual speed of the train.**

**Solution:**

Let's assume the usual speed of the train as  $x$  km/hr.

Then, the increased speed of the train =  $(x + 5)$  km/hr

Using, speed = distance/ time

Time taken by the train under usual speed to cover 150 km =  $150/x$  hr

Time taken by the train under increased speed to cover 150 km =  $150/(x + 5)$ hr

Given, that the difference in the times is 1 hour.

This can be expressed as below:

$$\text{So, } \frac{150}{x} - \frac{150}{(x+5)} = 1$$

$$\frac{150(x+5) - 150x}{x(x+5)} = 1$$

$$\frac{150x + 750 - 150x}{x^2 + 5x} = 1$$

$$750 = x^2 + 5x$$

$$x^2 + 5x - 750 = 0$$

$$x^2 - 25x + 30x - 750 = 0 \text{ [by factorisation method]}$$

$$x(x - 25) + 30(x - 25) = 0$$

$$(x - 25)(x + 30) = 0$$

$x = 25$  or  $x = -30$  (neglected as the speed of the train can never be negative)

Hence, the usual speed of the train is  $x = 25$  km/hr

7) Using the quadratic formula, find the roots of the equation  $2x^2 - 7x + 6 = 0$ .

1. The equation is already in the form  $ax^2 + bx + c = 0$ . Here,  $a = 2$ ,  $b = -7$ ,  $c = 6$ .

2. Calculate the discriminant:

$$D = (-7)^2 - 4(2)(6) = 49 - 48 = 1$$

3. Use the quadratic formula:

$$x = \frac{-b \pm \sqrt{D}}{2a}$$

$$x = \frac{-(-7) \pm \sqrt{1}}{2 \times 2}$$

$$x = \frac{7 \pm 1}{4}$$

4. Find the two roots:

$$\text{First root: } x_1 = \frac{7+1}{4} = \frac{8}{4} = 2$$

$$\text{Second root: } x_2 = \frac{7-1}{4} = \frac{6}{4} = \frac{3}{2}$$

**Final Answer:** The roots are **2** and **3/2**.

8) Find the roots of  $x^2 + 4x + 5 = 0$ , if any exist, using quadratic formula.

Solution: To check whether there are real roots available for the quadratic equation, we need the find the discriminant value.

$$D = b^2 - 4ac = 4^2 - 4(1)(5) = 16 - 20 = -4$$

Since the square root of  $-4$  will not give a real number. Hence there is no real roots for the given equation.

9) Using the quadratic formula, find the roots of the quadratic equation  $2x^2 - 7x + 6 = 0$ .

**Solution:**

Given,

$$2x^2 - 7x + 6 = 0$$

When compared with the standard form, we have;

$$a = 2, b = -7 \text{ and } c = 6$$

$$D = b^2 - 4ac$$

$$= (-7)^2 - 4(2)(6)$$

$$= 49 - 48$$

$$= 1 > 0$$

That means the roots are real and unequal.

Using the quadratic formula,

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-(-7) \pm \sqrt{1}}{2(2)}$$

$$= \frac{(7 \pm 1)}{4}$$

$$x = \frac{(7 + 1)}{4}, x = \frac{(7 - 1)}{4}$$

$$x = \frac{8}{4}, x = \frac{6}{4}$$

$$x = 2, x = \frac{3}{2}$$

Therefore, 2 and  $\frac{3}{2}$  are the roots of the given equation.

### Arithmetic Progressions

- A group of numbers connected by a definite law is known as sequence.
- A Sequence in which each term is obtained from the preceding term by adding a constant quantity to it.

- **nth term of an Arithmetic Progression**

$$a_n = a + (n - 1)d = l$$

where  $a$  is first term and  $d$  is common difference  $l$  is last term.

- The condition for three terms to be in an Arithmetic Progression is that common difference between them must be same.

$$\Rightarrow a_3 - a_2 = a_2 - a_1$$

- Sum of  $n$  terms of an A.P.  $S_n = \frac{n}{2}[2a + (n - 1)d]$  or  $= \frac{n}{2}[a + l]$

$l$  is the last term

$a$  is the first term

$d$  is the common difference

- $n$ th term from the end is  $l - (n - 1)d$ .

where  $l$  is last term,  $d$  is common difference.

- The Standard form of an Arithmetic Progression is

$$a + (a + d) + (a + 2d) + \dots + (l - d) + l$$

$a$  is first term,  $l$  is last term,  $d$  is common difference

### SEQUENCE

A systematic arrangement of numbers according to a given rule is called a sequence. The numbers in a sequence are called its terms. We refer the first term of a sequence as  $T_1$ , second term as  $T_2$  and so on. The  $n$ th term of a sequence is denoted by  $T_n$ , which may also be referred to as the general term of the sequence.

### PROGRESSION

Sequences of numbers which follow specific patterns are called progressions

It is a special case of sequence in which it is possible to express its  $n^{\text{th}}$  term in terms of  $n$ , mathematically.

$$a_1, a_2, a_3, \dots, a_n \text{ or}$$

$$\text{by } T_1, T_2, T_3, \dots, T_n$$

$T_n$  = Term at the  $n^{\text{th}}$  place of a progression

= General term or  $n^{\text{th}}$  - term

### SERIES

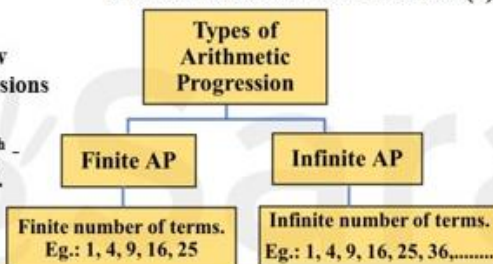
If the terms of sequence are connected by sign of addition or subtraction, then it is called as Series.

If  $a_1, a_2, a_3, \dots, a_n$  is a sequence, then the expression  $a_1 + a_2 + a_3 + \dots + a_n$  is a series.

## Arithmetic Progression

### Arithmetic Progression (A.P.)

If difference between two consecutive terms is constant throughout the sequence, then it is known as Arithmetic Progression and this constant difference is known as its Common Difference ( $d$ ).



- General Form of an A.P.  
If ' $a$ ' is the first term and ' $d$ ' is the common difference, then the standard appearance of an A.P. is



- General Term of an A.P.  
 $T_n = l = n^{\text{th}}$  term or last term  
 $T_n = a + (n - 1)d$

### Summation of $n$ terms of an A.P.

$$S_n = \frac{n}{2} [2a + (n - 1)d]$$

$$S_n = \frac{n}{2} [a + l] \text{ where, } l \text{ (last term)} = a + (n - 1)d$$

Frequently used summations

(1) Sum of first ' $n$ ' natural numbers :

$$1 + 2 + 3 + \dots + n = \frac{n(n + 1)}{2}$$

(2) Sum of first ' $n$ ' odd natural numbers :

$$1 + 3 + 5 + \dots + (2n - 1)$$

$$= \frac{n(1 + 2n - 1)}{2} = n^2$$

(3) Sum of first ' $n$ ' even natural numbers :

$$2 + 4 + 6 + \dots + 2n = \frac{n(2 + 2n)}{2}$$

$$= n(n + 1)$$

### Arithmetic Mean

If  $a, b, c$  are in AP, then

$$\Rightarrow b - a = c - b$$

$$\Rightarrow 2b = a + c$$

$$\text{A. M.} \Rightarrow b = \frac{a + c}{2}$$

4) Thus, the 9th term from the end is  
 $= 185 - (9 - 1)4 = 185 - 32 = 153$

5) In an A.P., if the common difference ( $d$ ) =  $-4$  and the seventh term ( $a_7$ ) is 4, then find the first term.

Answer:

$$a_n = a + (n - 1)d$$

$$\therefore a_7 = a + 6d$$

$$\Rightarrow 4 = a + 6(-4)$$

$$\Rightarrow a = 4 + 24 = 28$$

6) Find the sum given below:

$$7 + 10 + 13 + \dots + 46$$

Given series is an A.P. with  $a = 7, d = 10 - 7 = 3$

Let,  $a_n = 46$

$$\Rightarrow a + (n - 1)d = 46$$

$$\Rightarrow 7 + (n - 1)3 = 46$$

$$\Rightarrow 3n + 4 = 46$$

$$\Rightarrow 3n = 46 - 4$$

$$\Rightarrow 3n = 42$$

$$\Rightarrow n = 14$$

$$\text{Required sum } S_{14} = \frac{14}{2} [7 + 46]$$

$$\text{Using } S_n = \frac{n}{2}(a + l)$$

$$= 7 \times 53 = 371$$

7) Find the sum of first 20 terms of the AP 1, 4, 7, 10 ....

**Solution**

Given AP is 1, 4, 7, 10 ...

Here,  $a = 1$ ,  $d = 4 - 1 = 3$  and  $n = 20$

$$S_{20} = \frac{n}{2}[2a + (n - 1)d]$$

$$= \frac{20}{2}[2 \times 1 + (20 - 1)3]$$

$$= 10(2+57) = 10 \times 59 = 590$$

8) Which of the term of AP 5, 2, ,..... 1 is -49?

**Solution**

Let the first term of an AP be  $a$  and common difference  $d$ .

We have,

$$a = 5, d = -3$$

Now,

$$a_n = a + (n - 1)d$$

Substituting all values we have

$$-49 = 5 + (n-1)(-3)$$

$$\Rightarrow -49 = 5 - 3n + 3$$

$$\Rightarrow 3n = 49 + 5 + 3$$

$$\Rightarrow n = 57/3 = 19\text{th term}$$

9) The fifth term of an AP is 26 and its 10th term is 51. Find the AP

**Solution**

Let the first term be  $a$ , common difference be  $d$  and  $n$ th term be  $a_n$ .

$$a_5 = a + 4d = 26 \dots(1)$$

$$a_{10} = a + 9d = 51 \dots(2)$$

Subtracting (1) from (2) we have

$$5d = 25$$

$$\Rightarrow d = 5$$

Substituting this value of  $d$  in equation (1) we get

$$a = 6$$

Hence, the AP is 6, 11, 16, ....

**10) Find: 10<sup>th</sup> term of the AP 1, 4, 7, 10....**

Given A.P. is 1, 4, 7, 10, .....

First term (a) = 1

Common difference (d) = Second term – First term  
= 4 – 1 = 3.

We know that,  $n^{\text{th}}$  term in an A.P =  $a + (n - 1)d$

Then,  $10^{\text{th}}$  term in the A.P is  $1 + (10 - 1)3$

$$= 1 + 9 \times 3$$

$$= 1 + 27$$

$$= 28$$

$\therefore$   $10^{\text{th}}$  term of A. P. is 28

**11) Which term of the AP 3, 8, 13, .... is 248?**

Given A.P. is 3, 8, 13, .....

First term (a) = 3

Common difference (d) = Second term – first term  
= 8 – 3

$$= 5$$

We know that, the  $n^{\text{th}}$  term ( $a_n$ ) =  $a + (n - 1)d$

And, given the  $n^{\text{th}}$  term  $a_n = 248$

$$248 = 3 + (n - 1)5$$

$$248 = -2 + 5n$$

$$5n = 250$$

$$n = 250/5 = 50$$

$\therefore$  the  $50^{\text{th}}$  term in the A.P. is 248.

**12) How many terms are there in the A.P.?**

**7, 10, 13, ....., 43**

Given, A.P. 7, 10, 13, ....., 43

Here,  $a = 7$  and  $d = a_2 - a_1 = 10 - 7 = 3$

We know that, the  $n^{\text{th}}$  term  $a_n = a + (n - 1)d$

And, given the  $n^{\text{th}}$  term  $a_n = 43$

$$a + (n - 1)d = 43$$

$$7 + (n - 1)(3) = 43$$

$$7 + 3n - 3 = 43$$

$$3n = 43 - 4$$

$$3n = 39$$

$$\Rightarrow n = 13$$

Therefore, there are 13 terms in the given A.P.

**13) Find the sum of the following arithmetic progressions.**

**50, 46, 42, ... to 10 terms**

Given A.P. is 50, 46, 42 to 10 term.

First term (a) = 50



# SCIENCE

## Class 10 Summer Holiday Homework Science (2026-2027)

1. Translate the following statements into chemical equations and balance them. Classify each equation on the basis of types of reactions.

- (a) Hydrogen gas combines with nitrogen to form ammonia.
- (b) Hydrogen sulphide gas burns in the air to give water and sulphur dioxide.
- (c) Barium chloride reacts with aluminium sulphate to give Aluminium chloride and a precipitate of barium sulphate.
- (d) Potassium metal reacts with water to give potassium hydroxide and Hydrogen gas.
- (e) Thermite reaction, iron (III) oxide reacts with aluminium and gives molten iron and aluminium oxide.
- (f) Magnesium ribbon is burnt in an atmosphere of nitrogen gas to form solid magnesium nitride.
- (g) Chlorine gas is passed in an aqueous potassium iodide solution to form potassium chloride solution and solid iodine.
- (h) Ethanol is burnt in air to form carbon dioxide, water and releases heat.

2. Balance the following equations.

- (a)  $\text{HNO}_3 + \text{Ca(OH)}_2 \rightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$
- (b)  $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- (c)  $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
- (d)  $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$

3. Name the following

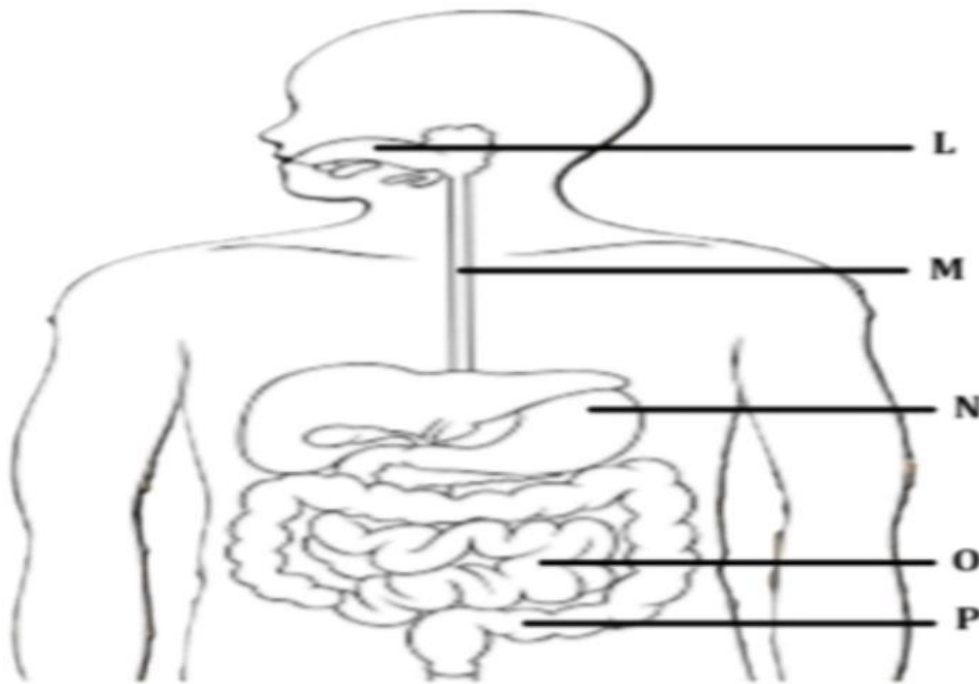
- (a) The process in plants that links light energy with chemical energy
- (b) Organisms that can prepare their own food
- (c) The cell organelle where photosynthesis occurs
- (d) Cells that surround a stomatal pore
- (e) Organisms that cannot prepare their own food
- (f) An enzyme secreted from gastric glands in stomach that acts on proteins.

4. A. How many chambers are there in the heart of the following organisms? How is mixing of oxygenated and deoxygenated blood prevented in their body? (i) Fishes (ii) Humans

5. Neha consumed boiled sweet potatoes and boiled eggs for breakfast. Help her to understand some steps in the process of digestion of the food taken by her by answering the questions given below.

A. Which of these food items is rich in proteins? In which part of the alimentary canal is the digestion of this component initiated? Name the enzymes, conditions required and the glands associated with the digestion here.

B. Which of these food items contains fats? How is it digested? C. Which of these food items is rich in starch? How is its digestion initiated? D. The figure given below represents parts of the human alimentary canal. Label all the parts. Which of these parts will have the maximum amount of digested food as soon as the process of digestion is completed?



5. Amrita set up an electrolysis experiment using distilled water with two electrodes connected to a battery and a bulb. She expected gases at both electrodes, but the bulb did not glow. She then added a substance to the water, after which the bulb glowed and electrolysis occurred. Answer the following questions:

A. Which gas was she expecting to be formed at the anode and which one at the cathode respectively?

B. Why did the bulb not glow when Amrita passed electricity through distilled water?

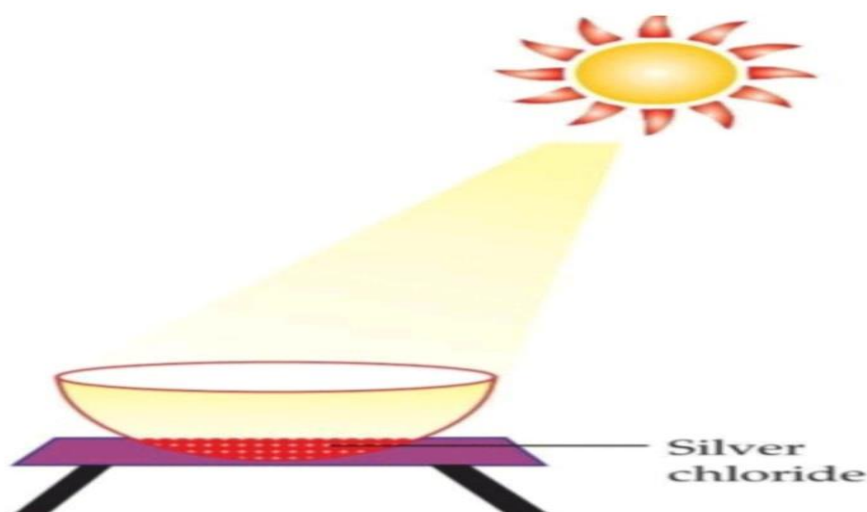
C. Which substance was added by Amrita to distilled water to get the expected result?

7.A. List the steps for the synthesis of glucose by the plants. What special feature is found in desert plants related to this process?

B. Explain the role of the following enzymes in the process of digestion of food in humans: (i) Salivary amylase (ii) Pepsin (iii) Trypsin (iv) Lipase

8. Dil. HCl is added to Zn granules." How will you prove that chemical change has taken place here?

9.. The following diagram displays a chemical reaction. Observe carefully and answer the following questions:



- (a) Identify the type of chemical reaction that will take place and define it. How will the colour of the salt change?
- (b) Write the chemical equation of the reaction that takes place.
- (c) Mention one commercial use of this salt.

10. (a) What type of reaction is between  $\text{MnO}_2$  and conc.  $\text{HCl}$ ?

(b) Which compound reacts with  $\text{Cl}_2$  to form bleaching powder?

(c) Identify oxidising agent, reducing agent, substance oxidised and substance reduced in reaction of  $\text{MnO}_2$  and  $\text{HCl}$ .

(d) What will happen if we take dry  $\text{HCl}$  instead of aqueous  $\text{HCl}$ ? What is colour of  $\text{MnO}_2$ ?

11.(a) (i) Name the filtering units present in the human kidneys.

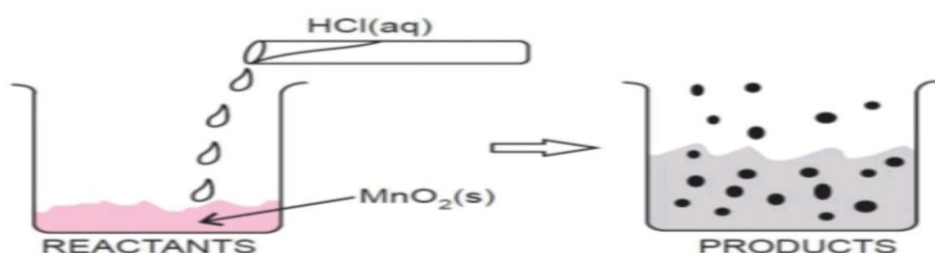
(ii) Name the main excreting waste removed by kidneys from blood?

(b) What are the two main functions of kidneys?

(C) What are the major factors on which the amount of water reabsorbed in the part of nephron depends?

D) (a) Draw a sectional view of the human heart and label on it – Aorta, Right ventricle and Pulmonary veins.(b) State the functions of the following components of transport system: (i) Blood (ii) Lymph (iii) platelets (c) Describe double circulation in human beings.

(d)Name the group of animal with double circulation? How is it important for them?



12. How guard cells control opening and closing of stomata .Draw diagram of open and close stomata .

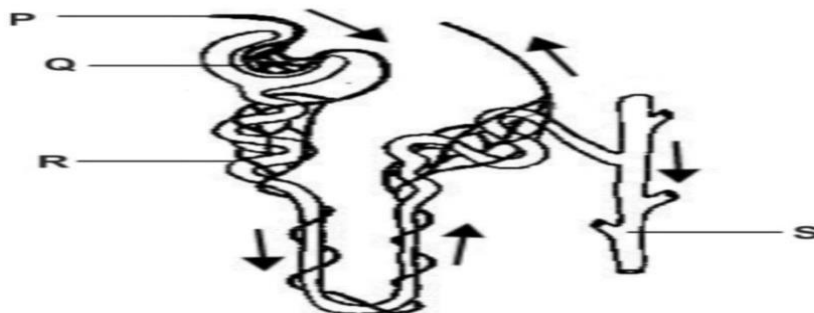
13.Assertion: Silver bromide decomposition is used in black and white photography.

Reason: Light provides energy for this exothermic reaction.

b)Assertion: Amphibians can tolerate mixing of oxygenated and deoxygenated blood.

Reason: Amphibians are animals with two chambered heart

14.a) Name the following parts of nephron and explain why nephron is necessary?



b) Explain

the five ways in which plants excrete .

c) Describe the process of urine formation in humans.

15. Explain the different ways in which glucose is oxidised to produce energy . Write a balanced equation for Respiration.

15.A substance X, which is an oxide of a group 2 element, is used intensively in the cement industry. This element is present in bones also. On treatment with water it forms a solution which turns red litmus blue. Identify X and also write the chemical reactions involved.

16.On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.

(a) Write a balanced chemical equation of the reaction involved

(b) What other name can be given to this precipitation reaction?

(c) On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?

17. Read the chapter Our Environment 2-3 times and try to answer the following basic questions

A) What is an ecosystem ? Write its two main components.

B) Write about three main groups in which all organisms can be divided with example.(Hint producers ,consumers ,decomposers)

C) What is the food chain? Show different tropic levels in a three step, four step and five step food chain.(Refer page 259 ,figure15.1

18. Prepare a brief report on ozone layer and its depletion (use following points - ozone formation,its importance, causes of its depletion and how to prevent its depletion)

# SOCIAL SCIENCE

## Holiday Home Work Class 10th CBSE

Project Work ( 5 Marks): Choose one topic—Consumer Rights, Sustainable Development, or Social Issues—and create a handwritten project file (20-25 A4 sheets) with a cover page, acknowledgments, content, analysis, and bibliography

Creative Activity: Create 10 MCQs from completed chapters and maintain a portfolio of research on sustainable development.

Map Practice: Label and locate major soil types, dams, nuclear power plants, and states with capitals on a political map of India. As per the CBSE Syllabus

### CLASS X (2025-26) MAP WORK

Subject	Name of the Chapter	List of areas to be located/ labeled/ identified on the map			
History	Nationalism in India	<b>I. Congress sessions:</b> <ul style="list-style-type: none"> <li>1920 Calcutta</li> <li>1920 Nagpur</li> <li>1927 Madras session</li> </ul> <b>II. 3 Satyagraha movements:</b> <ul style="list-style-type: none"> <li>Kheda</li> <li>Champaran</li> <li>Ahmedabad mill workers</li> </ul> <b>III. Jallianwala Bagh</b> <b>IV. Dandi March</b>			
Geography	Resources and Development	Identify Major Soil Types			
	Water Resources	<b>Locating and Labeling:</b> <table border="1"> <tr> <td> <ul style="list-style-type: none"> <li>Salal</li> <li>Bhakra Nangal</li> <li>Tehri</li> <li>Rana Pratap Sagar</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Sardar Sarovar</li> <li>Hirakund</li> <li>Nagarjun Sagar</li> <li>Tungabhadra</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>Salal</li> <li>Bhakra Nangal</li> <li>Tehri</li> <li>Rana Pratap Sagar</li> </ul>	<ul style="list-style-type: none"> <li>Sardar Sarovar</li> <li>Hirakund</li> <li>Nagarjun Sagar</li> <li>Tungabhadra</li> </ul>	
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	Agriculture	<b>Identify:</b> <ul style="list-style-type: none"> <li>Major areas of Rice and Wheat</li> <li>Largest/Major producer states of Sugarcane, Tea, Coffee,</li> <li>Rubber, Cotton and Jute</li> </ul>			
	Minerals and Energy Resources	<b>Identify:</b> <table border="1"> <tr> <td> <b>Iron Ore Mines</b>                      Mayurbhanj                      Durg                      Bailadila                      Bellary                      Kudremukh                 </td> <td> <b>Coal Mines</b>                      Raniganj                      Bokaro                      Talcher                      Neyveli                 </td> <td> <b>Oil Fields</b>                      Digboi                      Naharkatia                      Mumbai High                      Bassien                      Kalol                      Ankaleshwar                 </td> </tr> </table>	<b>Iron Ore Mines</b> Mayurbhanj Durg Bailadila Bellary Kudremukh	<b>Coal Mines</b> Raniganj Bokaro Talcher Neyveli	<b>Oil Fields</b> Digboi Naharkatia Mumbai High Bassien Kalol Ankaleshwar
<b>Iron Ore Mines</b> Mayurbhanj Durg Bailadila Bellary Kudremukh	<b>Coal Mines</b> Raniganj Bokaro Talcher Neyveli	<b>Oil Fields</b> Digboi Naharkatia Mumbai High Bassien Kalol Ankaleshwar			
		<b>Locate and label: Power Plants</b> <table border="1"> <tr> <td> <b>Thermal</b> <ul style="list-style-type: none"> <li>Namrup</li> <li>Singrauli</li> <li>Ramagundam</li> </ul> </td> <td> <b>Nuclear</b> <ul style="list-style-type: none"> <li>Narora</li> <li>Kakrapara</li> <li>Tarapur</li> <li>Kalpakkam</li> </ul> </td> </tr> </table>	<b>Thermal</b> <ul style="list-style-type: none"> <li>Namrup</li> <li>Singrauli</li> <li>Ramagundam</li> </ul>	<b>Nuclear</b> <ul style="list-style-type: none"> <li>Narora</li> <li>Kakrapara</li> <li>Tarapur</li> <li>Kalpakkam</li> </ul>	
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18

	Manufacturing Industries	<ul style="list-style-type: none"> <li>Manufacturing Industries (Locating and labeling only)</li> <li>Cotton textile Industries: a. Mumbai, b. Indore, c. Surat, d. Kanpur, e. Coimbatore</li> <li>Iron and Steel Plants: a. Durgapur, b. Bokaro, c. Jamshedpur, d. Bhilai, e. Vijayanagar, f. Salem</li> <li>Software technology Parks: a. Noida, b. Gandhinagar, c. Mumbai, d. Pune, e. Hyderabad, f. Bengaluru, g. Chennai, h. Thiruvananthapuram</li> </ul>		
	Lifelines of National Economy	Locating and Labeling <b>a. Major Sea Ports</b> <table border="1"> <tr> <td> <ul style="list-style-type: none"> <li>Kandla</li> <li>Mumbai</li> <li>Marmagao</li> <li>New Mangalore</li> <li>Kochi</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Tuticorin</li> <li>Chennai</li> <li>Visakhapatnam</li> <li>Paradip</li> <li>Haldia</li> </ul> </td> </tr> </table> <b>b. International Airports</b> <ul style="list-style-type: none"> <li>Amritsar (Raja Sansi-Sri Guru Ram Das ji)</li> <li>Delhi (Indira Gandhi)</li> <li>Mumbai (Chhatrapati Shivaji)</li> <li>Chennai (Meenambakkam)</li> <li>Kolkata (Netaji Subhash Chandra Bose)</li> <li>Hyderabad (Rajiv Gandhi)</li> </ul>	<ul style="list-style-type: none"> <li>Kandla</li> <li>Mumbai</li> <li>Marmagao</li> <li>New Mangalore</li> <li>Kochi</li> </ul>	<ul style="list-style-type: none"> <li>Tuticorin</li> <li>Chennai</li> <li>Visakhapatnam</li> <li>Paradip</li> <li>Haldia</li> </ul>
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#### Note

- Items of Locating and Labelling may also be given for Identification.
- The Maps available in the website of Govt. of India may be used.

S.No -Practical Task

- 1 Display the message “Welcome to Python”
- 2 Print your School Address
- 3 Sum of 2 numbers
- 4 Sum and Average of 3 numbers
- 5 Area and perimeter of a circle
- 6 Square and Cube of a Number
- 7 Area and perimeter of a Rectangle
- 8 Calculate Percentage after inputting 5 marks
- 9 Area of a triangle
- 10 Arithmetic Operations (+, -, \*, /, ?)
- 11 Calculate Simple Interest

## ART & CRAFT

Question 1: Make a Collage painting with newspaper.

Question 2: Draw picture on any one of these folk art.

1. Madhubani painting
2. Warli Art
3. Gond Art

Additional Notes

- Cover and decorate your Art file using art paper, stickers, or your own creative ideas. Write your name, class, section, and roll number on the cover.

Enjoy your holidays and let your artistic side shine! We look forward to seeing your beautiful work after the vacation.



# CLASS – XII

## HINDI

अभी तक पढ़ाए गए पाठ्यक्रम का सारा काम पूरा होना सुनिश्चित करें।

2. भक्तिन पाठ का मुख्य पात्र कौन है? उसकी किन विशेषताओं ने आपको सबसे अधिक प्रभावित किया?
3. आत्मपरिचय कविता पढ़कर ऐसा लगता है कि इसमें कवि ने अपने परस्पर विरोधी भावनाओं को व्यक्त किया है। इसका क्या कारण है?
4. दिन जल्दी ढलता है कविता के माध्यम से कवि लोगों को क्या संदेश देना चाहते हैं?
5. आपने ग्रीष्मकालीन अवकाश का सदुपयोग कैसे किया? इसका क्रमबद्ध उल्लेख करें।
6. कोई कहानी, कविता या लेख लिखिए जो मौलिक हो।
7. कोई एक पुस्तक पढ़ें और उसकी पुस्तक समीक्षा लिखिए।

## ENGLISH

[https://drive.google.com/file/d/1R\\_MzLMF-wBG6JAyIvQzX\\_LTFG9hYp0co/view?usp=sharing](https://drive.google.com/file/d/1R_MzLMF-wBG6JAyIvQzX_LTFG9hYp0co/view?usp=sharing)

Choose the topic of your Project

- Collect research material
- Organize material
- Present material
- Analyze material data
- Draw a relevant conclusion
- Presentation for project as VIVA of 20 Marks

..Project-Portfo-01 P1project Re1port

The Project-Portfolio/Project Report is a compilation of the work that the students produce during the process of working on their ALS Project

The Project-Portfolio may include the following:

- 1Cover page, with the title of the project, school details/details of students
- Statement of purpose/objectives, /goals
- 1Certificate of completion under the guidance of the teacher
- Action plan for the completion of assigned tasks
- Materials. Such as Scripts (pass for the theatre/role play, questionnaires for interviews, written assignments, essays, survey reports, and other material evidence of learning progress and academic accomplishment)
- The 800-1000 words essay/Script/Report
- Student/group reflections
- If possible, photographs that capture the positive learning experiences of the student(s).
- Lists of resources, /bibliography.

Cover Page (1 Page)

Assessment of Listening and Speaking Skills

Project Portfolio

- ☐ Interview Based Research on (Title)
- ☐ Podcasts/interviews/radio/TV Documentary (Title) one of these
- ☐ Creation of Video /Audio on (Title)
- ☐ Theatrical production/One Act Play (Title)
- ☐ Theme from text/ age-appropriate theme

INDEX (1 Page)

2. Objectives/Purpose/Goal (1 Page)
3. CERTIFICATE OF COMPLETION (1 Page)

This Interview Based/ Podcast/interviews/radio/TV Documentary based

/Creation of Video/Audio Theatrical production/One Act Play/Theme based Assessment of Listening and Speaking Skills Project Portfolio on the topic/title has been prepared by of Class as a part of the ALS Project,

English Core (301), CBSE under the guidance and mentorship of Mrs Wilma B Kumar/ Ms Divya Kapoor/ Mrs Sandeepa--PGT English, PM Shri Kendriya Vidyalaya No.2, Delhi Cantt.-110010

Signature of Teacher/Guide:

Name of Teacher :

4. ACTION PLAN (1 or 2 Pages)

- Research And Reading of existing literature
- Analyze data– make comparisons
- To Prepare Questionnaires
- Watch Videos Available to enhance knowledge
- To take Interviews
- To carry out a survey
- To have a group discussion

5. MATERIAL EVIDENCE (3/4 Pages)

- Questionnaire
- interview
- Report/Essay
- links of recorded interview
- Script for Role Play/one act play
- Survey results
- Compilation as a graph
- photographs of learning experiences taken during interview/group discussion

6. 800-1000 words Essay/Report/Script (7-8 Pages)

- What Did I/we Do
- What Did I/we Learn through the project
- The skills I developed
- Inference
- Conclusion

7. Bibliography (1 Page)

THANKS

Review and comments

Marks/10

Name of the Examiner

Signature of the Examiner

# PHYSICS

## Multiple Choice Questions:-

- The ratio of the forces between two small spheres with constant charge in air and in a medium of dielectric constant  $K$  is  
(a)  $1:K$       (b)  $K:1$       (c)  $1:K^2$       (d)  $K^2:1$
- Two large metal sheets having surface charge density  $+\sigma$  and  $-\sigma$  are kept parallel to each other at a small separation distance  $d$ . The electric field at any point in the region between the plates is  
(a)  $\sigma/\epsilon_0$       (b)  $\sigma/2\epsilon_0$       (c)  $2\sigma/\epsilon_0$       (d)  $\sigma/4\epsilon_0$
- Twelve charges of charge  $q$  are situated at the corners of the 12 sided polygon of side  $a$ . What is the net force on the charge  $Q$  at the centre  
(a) Zero      (b)  $3qQ/\pi\epsilon_0 a^2$       (c)  $qQ/\pi\epsilon_0 a^2$       (d) None of the above
- A metallic solid sphere of radius  $R$  is given the charge  $Q$ . Which of the following statement is true then  
(a) Electric field at points  $0 < r < R$  is zero  
(b) Charge  $Q$  is on the outer surface of the sphere  
(c) Electric field at  $r > R$  is given by  $Q/4\pi\epsilon_0 r^2$   
(d) Electric field is perpendicular to the surface of the sphere
- Pick the true statements about electric field lines  
(a) It provides information about the direction of the electric field  
(b) Electric field lines provide information about the type of charge  
(c) Electric field lines provide information about the field strength  
(d) All of the above
- A point charge ( $Q$ ) is located at the corner of a cube of edge length  $a$ , find the final electric flux through the cube  
a.  $Q/\epsilon_0$       b.  $Q/8\epsilon_0$       c.  $6Q/\epsilon_0$       d. none of the above
- Three point charges ( $q + Q$ ),  $q$ , ( $q - Q$ ) are enclosed by the surface  $S$ . What the net flux crosses  $S$   
a.  $3q$       b.  $2q$       c.  $3q - Q$   
d. can not be determine based on the data given in question
- Two uniform infinite sheets of charge density  $+\sigma$  and  $-\sigma$  intersect at right angles. Electric field due to this configuration at any point in space is  
(a)  $\sigma/2\epsilon_0$   
(b)  $\sigma/2\sqrt{2}\epsilon_0$   
(c)  $2\sqrt{2}\sigma/\epsilon_0$   
(d)  $\sqrt{2}\sigma/2\epsilon_0$

9. Two parallel plate air capacitors A and B have plate separation in ratio 1:3 and plate area in ratio 2:3. Ratio of their capacitances  
 (a) 1:2                      (b) 1:3                      (c) 2:1                      (d) 3:1
10. At a point on the axis of an electric dipole  
 (a) Electric field is zero  
 (b) Electric potential is zero  
 (c) Neither electric field nor electric potential is zero  
 (d) Electric field is directed perpendicular to axis

Assertion (A) & Reason(R):

For question numbers 1 to 6, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

- a) Both A and R are true and R is the correct explanation of A  
 b) Both A and R are true but R is NOT the correct explanation of A  
 c) A is true but R is false  
 d) A is false and R is also false

1. Assertion (A): Sensitive instruments can protect from outside electrical influence by enclosing them in a hollow conductor.  
 Reason(R): Potential inside the cavity is zero.
2. Assertion (A) -The work done by an electrostatic field in moving a charge from one point to another depends only on the initial and the final points.  
 Reason (R)- Electrostatic force is a conservative fore
3. Assertion (A): The Coulomb force between two points charges depend upon the dielectric constant of the intervening medium.  
 Reason(R): Coulomb's force varies inversely with the dielectric constant of medium.
4. Assertion(A): The charge given to a metallic sphere does not depend on whether it is hollow or solid  
 Reason(R): The charge resides only at the surface of conductor.
5. Assertion (A): A comb run through one's dry hair attracts small bits of paper.  
 Reason(R): Molecules in the paper gets polarized by the charged comb resulting in net force of attraction
6. Assertion (A): A proton is placed in a uniform electric field, it tend to move along the direction of electric field.  
 Reason(R): A proton is placed in a uniform electric field it experiences a force.
7. Assertion (A): Electric field at the surface of a charged conductor is always normal to the surface at every point.  
 Reason(R): Electric field gives the magnitude & direction of electric force ( ) experienced by any charge placed at any point.
8. Assertion (A): The electrostatics force increases with decrease the distance between the charges.  
 Reason (R): The electrostatic force of attraction or repulsion between any two stationaries point charges is inversely proportional to the square of the distance between them.

## SHORT ANSWER QUESTIONS

1. Compute the gravitational force and the electric force between the electron and the proton in the hydrogen atom if they are  $5.3 \times 10^{-11}$  meters apart. Then calculate the ratio of  $F_e$  to  $F_g$ .
2. Given a uniform electric field  $\vec{E} = 4 \times 10^3 \hat{i}$  N/C. Find the flux of this field through a square of 5 cm on a side whose plane is parallel to the Y-Z plane. What would be the flux through the same square if the plane makes a  $30^\circ$  angle with the x-axis?
3. Two charged spheres 10 cm apart attract each other with a force of  $3.0 \times 10^6$  N. What force results from each of the following changes, considered separately?
  - a) Both charges are doubled and the distance remains the same.
  - b) An uncharged, identical sphere is touched to one of the spheres, and then taken far away.
  - c) The separation is increased to 30 cm.
4. Two spheres; 4.0 cm apart, attract each other with a force of  $1.2 \times 10^6$  N. Determine the magnitude of the charge on each, if one has twice the charge (of the opposite sign) as the other.
5. Four charges of  $+2\mu\text{C}$ ,  $+2\mu\text{C}$ ,  $-2\mu\text{C}$  and  $-2\mu\text{C}$  are placed at four corners A,B,C,D, respectively of a square having side 10 cm. What is the magnitude and direction of electric field at the centre?
6. Find the total capacitance of the combination of capacitors in Figure 4.

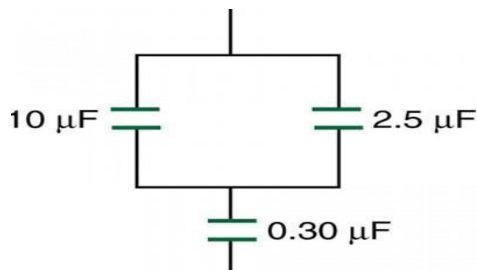
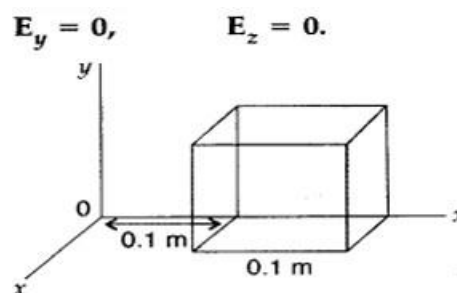


Figure 4. A combination of series and parallel connections of capacitors.

7. Suppose you want a capacitor with a total capacitance of  $0.750$  F and you possess numerous  $1.50$  mF capacitors. What is the smallest number you could hook together to achieve your goal, and how would you connect them?
8. What total capacitances can you make by connecting a  $5.00 \mu\text{F}$  and an  $8.00 \mu\text{F}$  capacitor Together ?
9. (a) Define electric flux. Write its SI units. (b) The electric field components due to a charge inside the cube of side  $0.1$  m are as shown :  $E_x = \alpha x$ , where  $\alpha = 500$  N/C-m Calculate (i) the flux through the cube, and (ii) the charge inside the cube.



10. What is Gauss's theorem? Derive an expression for electric field due to infinite long charge conductor?
11. Derive the expression for the capacitance of a parallel plate capacitor of area cross section  $a$  and separation  $d$  between the plates filled with dielectric constant  $K$ .
12. A parallel plate capacitor is charged by a battery. After some time the battery is disconnected and a dielectric slab of dielectric constant  $K$  is inserted between the plates. How would (i) the capacitance, (ii) the electric field between the plates and (iii) the energy stored in the capacitor, be affected? Justify your answer.  
Find the expression for potential energy stored in the electric dipole when is placed in uniform electric field with any angle?
13. Derive the expression for electric field at a point lying on its axial line from the centre of an electric dipole.
- Project work -Students are required to complete one project on topic given against their Roll nos

Project No 1- Roll no 1,9,17,25,33,41,49

Project No 3- Roll no 3, 11,19 ,27, 35 ,43

Project No 4- Roll no 4, 12,20,28,36,44

Project No 5- Roll no 5, 13,21,29,37,45

Project No 2- Roll no 2,10,18,26,34,42,50

Project No 6- Roll no 6,14, 22 30,38,46

Project No7- Roll no -7,15,23,31,39,47

Project No8- Roll no 8,16,24,32,40,48,

## SUGGESTED PROJECTS

1. To study various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance). (b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equiconvex lens (made from a glass of known refractive index) and an adjustable object needle.
4. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
5. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
6. To estimate the charge induced on each one of the two identical Styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
7. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
8. To study the earth's magnetic field using a compass needle -bar magnet by plotting magnetic field lines and tangent galvanometer.

# CHEMISTRY

<https://drive.google.com/file/d/19MoCV0Xw8ay5yxc5GThDyXVZORzRu61e/view?usp=sharing>

1. Complete all ques (exercise and intext) of all taught chapters, from NCERT textbook in HW chemistry notebook.
2. Do all previous year board ques (year 2024-2026) of taught chapters in HW chemistry notebook.
3. Prepare investigatory project file for AISSCE-2027 under the title of:
  - Certificate • Acknowledgement • Introduction • Why I selected this project • Details of the project (research related to the topic) • Experiment (detailed manner including procedure) • Observations & Analysis • Result • Bibliography (mention the links)
4. Practice for the following topics in chemistry notebook:
  - a) Nomenclature (minimum 15 organic compounds and minimum 3 branch in a compound with two or more functional group)

b) Name reactions of organic chemistry

Sandmayer's reaction,

Fittig Reaction,

Wurtz Fittig reaction

Finkelstein reaction

swarts reaction

reimer teimenn reaction

Kolbe's reaction

Williamson synthesis

etard reaction

Stephen reaction

rosenmund reaction

clemmenson reaction

Wolff kischner reaction

gatterman reaction

gatterman Koch reaction

Aldol condensation

cannizzaro reaction

Kolbe's electrolysis

HVZ reaction

carbylamine reaction

coupling reaction

Ammonolysis

HBR reaction

gabrieal pthalamide

reaction

5. Ques for practice:
  - i) 0.5g of KCl was dissolved in 100g of water and the solution originally at 20 °C froze at -0.24 °C. Calculate the percentage ionization of the salt.  $K_f$  for water is 1.86 Kkgmol<sup>-1</sup>.
  - ii) For what concentration of Ag+(aq). will the emf of given cell be zero at 25 °C . if the concentration of Cu(s) | Cu<sup>2+</sup>(0.1M) || Aa+(aq.) | Ag(s)?  
Given.  $E^\circ_{Ag^+/Ag} = 0.80V$ :  $E^\circ_{Cu^{2+}/Cu} = 0.34V$ .
  - iii) Explain the variation of Molar conductivity with concentration of electrolyte. Also explain the reason for different graph for strong and weak electrolyte.
  - iv) The degree of dissociation of Ca(NQ3)2 in a dilute aqueous solution, containing 7.0 g of salt per 100 g of water at 100°C is 70%. If the vapour pressure of water at 100°C is 760 mm of Hg, calculate the vapour pressure of the solution.

- v) The vapour pressure of pure liquids A and B are 450 and 750 mm Hg respectively, at 350K. Find out the composition of the liquid mixture if total vapour pressure is 600 mm Hg. Also find the composition of the vapour phase.
- vi) Explain cell with its type. Write anodic cathodic and overall reaction of Dry cell, Lead Accumulator cell and Fuel cell. How fuel cell is better than chemical cell.
- vii) Explain Corrosion with reaction of atmospheric corrosion of Fe. Suggest some methods to control it.
- viii) Determine the correct order of aqueous solution for the property mentioned against them:
- 10% glucose ( $p_1$ ), 10% urea ( $p_2$ ), 10% sucrose ( $p_3$ ) [Osmotic pressure]
  - 0.1 m NaCl, 0.1 m urea, 0.1 m  $MgCl_2$  [Elevation in b.pt.]
  - 0.1 m  $CaCl_2$ , 0.1 m sucrose, 0.1 m NaCl [Depression in f.pt.]
- ix) The electrical resistance of a column of 0.05 M NaOH solution of diameter 1 cm and length 50 cm is  $5.55 \times 10^3$  ohm. Calculate its resistivity, conductivity and molar conductivity.
- x) **Directions:** These questions consist of two statements; each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following four responses. (a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion. (b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion. (c) If the Assertion is correct but Reason is incorrect. (d) If both the Assertion and Reason are incorrect.
- A) Assertion :** The resistivity for a substance is its resistance when it is one meter long and its area of cross section is one square meter.  
**Reason :** The SI units of resistivity is ohm metre (m).
- B) Assertion :** On increasing dilution, the specific conductance keeps on increasing.  
**Reason :** On increasing dilution, degree of ionisation of weak electrolyte increases and molality of ions also increases.
- C) Assertion :** Galvanised iron does not rust.  
**Reason :** Zinc has a more negative electrode potential than iron.

# MATHS

[https://drive.google.com/file/d/1AdcVuftarbrx\\_Cw-TfYssN8zZ5u3Yq/view?usp=sharing](https://drive.google.com/file/d/1AdcVuftarbrx_Cw-TfYssN8zZ5u3Yq/view?usp=sharing)

## \* ACTIVITIES:

- To verify that the relation R in the set L of all lines in a plane, defined by  $R = \{(a,b) : a \text{ is perpendicular to } b \text{ and } a, b \in L\}$  is an equivalence relation.
- To demonstrate a function which is not one one but onto and one-one but not onto.
- To draw the graph of  $\sin^{-1}x$  using the graph of  $\sin x$  and demonstrate the concept of mirror reflection (about the line  $y=x$ ).

Do these activities in Activity file.

**\*ASSIGNMENT:**

1. Show that the relation R on the set Z of all integers defined by  $(x,y) \in R$  iff  $(x-y)$  is divisible by 3, is an equivalence relation.
2. Let N be the set of natural numbers and R be the relation on  $N \times N$  defined by:  $(a,b) R (c,d)$  if  $ad(b+c)=bc(a+d)$ . Show that R is an equivalence relation.
3. Show that the function  $f: N \rightarrow N$  given by:  $f(x) = \begin{cases} x + 1, & \text{if } x \text{ is odd} \\ x - 1, & \text{if } x \text{ is even} \end{cases}$  is both one-one and onto.

4. Show that the function  $f: R \rightarrow R$  defined by  $f(x) = \overline{x^2+1}$ ,  $x \in R$  is neither one-one nor onto.
5. Let  $f: R^+ \rightarrow [-9, \infty)$  be a function defined as:  $f(x) = 5x^2 + 6x - 9$ . Show that  $f(x)$  is bijective function.
6. Let  $f: [-1, \infty) \rightarrow [-1, \infty)$  is given by  $f(x) = (x^2 + 1)^2 - 1$ ,  $x \geq 1$ . Show that f is bijective.

7. Prove that:  $\tan^{-1} \left[ 2 \sin \left( 2 \cos^{-1} \frac{\sqrt{3}}{2} \right) \right] = \frac{\pi}{3}$

8. If  $\tan^{-1}(\cot \theta) = 2\theta$ , then find the value of  $\theta$ .

9. Find the principal value of  $\sin^{-1} \left[ \sin \left( \frac{7\pi}{5} \right) \right]$

10. Write the principal value of  $\tan^{-1}(1) + \cos^{-1}(-1/2)$ .

11. Write the value of  $\sin \left[ \frac{\pi}{3} - \sin^{-1} \left( -\frac{1}{2} \right) \right]$ .

12. Find the value of  $\tan^{-1}(1) + \cos^{-1} \left( -\frac{1}{2} \right) + \sin^{-1} \left( -\frac{1}{2} \right)$

13. If  $A = \begin{bmatrix} 1 & 2 & 1 \\ -1 & 1 & 1 \\ 1 & -3 & 1 \end{bmatrix}$ , find  $A^{-1}$  and hence solve the system of equations:

$$x+2y+z=4;$$

$$-x+y+z=0;$$

$$x-3y+z=2$$

14. If  $A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$

are two square matrices, find AB and hence solve the system of equations:  $x-y=3$ ;  $2x+3y+4z=17$ ;  $y+2z=7$

15. To promote the making of toilets for women, an organization tried to generate awareness through (i) house calls (ii) letters, and (iii) announcements.

The cost for each mode per attempts is given below :

- (i) Rs 50      (ii) Rs 20      (iii) Rs 40

The number of attempts made in three villages X,Y and Z are given below

	(i)	(ii)	(iii)
X	400	300	100
Y	300	250	75
Z	500	400	150

Find the total cost incurred by the organization for the three villages separately, using matrices.

16. If  $A = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$ , find  $A^2 - 5A + 4I$  and hence find a matrix X such that  $A^2 - 5A + 4I + X = O$ .

17. Express the following matrix as the sum of a symmetric and skew symmetric, and verify

your result :  $\begin{bmatrix} 3 & -2 & -4 \\ 3 & -2 & -5 \\ -1 & 1 & 2 \end{bmatrix}$ .

18. If  $A = \begin{bmatrix} 1 & -2 & 3 \\ 0 & -1 & 4 \\ -2 & 2 & 1 \end{bmatrix}$ , find  $(A')^{-1}$ .

19. The monthly incomes of Aryan and Babban are in the ratio 3:4 and their monthly expenditures are in the ratio 5:7 . If each saves Rs 15,000 per month, find their monthly incomes ,using matrix method.

20. If  $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$ , then verify that  $A \cdot \text{adj } A = |A| I$ . Also find  $A^{-1}$ .

Do the problems in Mathematics fair notebook.

Do the practice of given PYQ and competency based questions of chapters Relation and functions, Inverse Trigonometric functions, Matrices ,Determinants.

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# COMPUTER SCIENCE

[https://drive.google.com/file/d/1cb79GxEMyOStw75\\_387LQG6gDxobeBPw/view?usp=sharing](https://drive.google.com/file/d/1cb79GxEMyOStw75_387LQG6gDxobeBPw/view?usp=sharing)

## SUMMER HOLIDAY HW FOR XII CS 2026-27 (Topic - Revision Tour of XI Python)

Q no.	Questions
1	Out of the following, find those identifiers, which cannot be used for naming Variables or functions in a Python program: <b>#Tag, While, Class, Switch, 3rdRow, finally, Column 31, Total+ , Days * Rent, For, A_price, Grand Total, do, 2Clients, Participant13, My_city</b>
2	Which string method is used to implement the following: i. To count the number of characters in the string. ii. To change the first character of the string in capital letter. iii. To check whether given character is letter or a number. iv. To change lowercase to uppercase letter. v. Change one character into another character.
3	Write a program to check whether a string is palindrome or not
4	WAP a program to reverse a number (without using slicing) and check whether it is a palindrome or not.
5	Rewrite the following for loop into while loop: <b>for a in range(90, 9, -9): print a</b>
6	Write a program to input any string and to find the number of words in the string and also print the 5 <sup>th</sup> word.
7	How many times will Python execute the code inside the following while loop? You should answer the question without using the interpreter! Justify your answers. <b>i = 0 while i &lt; 0 and i &gt; 2 : print "Hello ..." i = i+1</b>
8	What is the correct way to add an element to the end of a list in Python? a. list.add(element)      b. list.append(element)      c. list.insert(element)      d. list.extend(element)
9	What will be the output of <b>print("Welcome To My Blog"[2:6] + "Welcome To My Blog"[5:9])</b> a. Lcomme      b. lcomme T      c. lcomme To      d. lcomme

10	<p>Which of the following statement(s) would give an error during the execution of the following code?</p> <pre>R = {'pno':52,'pname':'Virat', 'expert':['Badminton','Tennis'], 'score':(77,44)} print(R) #Statement 1 R['expert'][0]='Cricket' #Statement 2 R['score'][0]=50 #Statement 3 R['pno']=50 #Statement 4</pre> <p>a. Statement 1    b. Statement 2    c. Statement 3    d. Statement 4</p>
11	<p>Given the following dictionaries</p> <pre>dict_student = {"rno" : "53", "name" : 'Rajveer Singh'} dict_marks = {"Accts" : 87, "English" : 65}</pre> <p>Which statement will append the contents of dict_marks in dict_student?</p> <p>a. dict_student + dict_marks    b. dict_student.add(dict_marks) c. dict_student.merge(dict_marks)    d. dict_student.update(dict_marks)</p>
12	<p>Which of the following is not a component of the math module in Python?</p> <p>a. ceil()    b. mean()    c. fabs()    d. pi</p>
13	<p>What will be the output of the following code?</p> <pre>L=["One", "Two", "Three", "Four"] print(len(L)/2*len(L[0]))</pre> <p>a. 6.5    b. 13    c. 13.5    d. 6.0</p>

14	<p>Rewrite the following code in Python after removing all the syntax errors. Underline each correction done in the code.</p> <pre>num1, num2 = 10, 45 While num1 % num2 == 0 num1+= 20 num2+= 30 Else: print('hello')</pre>
15	<p>Write a suitable Python statement for each of the following tasks using built-in functions/methods only: i To delete an element Mumbai:50 from Dictionary D. ii To display words in a string S in the form of a list</p>
16	<p>Write a program to take a string and count how many words are starting from a vowel 'aeiouAEIOU'</p>
17	<p>Write a Python Program to display alternate characters of a string my_str. For example, if my_str = "Computer Science" The output should be Cmue cec</p>
18	<p>WAP to count the number of digits in a string taken from the user</p>
19	<p>For example, Consider the following dictionary BOOKS</p> <pre>BOOKS = {1:"Python", 2:"Internet Fundamentals ", 3:"Networking ", 4:"Oracle sets", 5:"Understanding HTML"}</pre> <p>WAP a program that takes the dictionary BOOKS and displays the names in uppercase of those books whose name starts with a consonant.</p>

20	<p>What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code? <b>import random</b>  <b>points=[20,40,10,30,15]</b>  <b>points=[30,50,20,40,45]</b>  <b>begin=random.randint(1,3</b>  <b>) last=random.randint(2,4)</b>  <b>for c in range(begin,last+1):</b>  <b>    print(points[c],"#")</b></p> <p>(a) 20#50#30#                      (b) 20#40#45                      (c) 50#20#40#                      (d) both (b) and (c)</p>
21	<p><b>State True or False:</b>      “Tuple is datatype in Python which contain data in key-value pair.”</p>
22	<p>Select the correct output of the code:  <b>s='mail2kv@kvsangathan.kvs.in'</b>  <b>s=s.split('kv')</b>  <b>op = s[0] + "@kv" + s[2]</b>  <b>print(op)</b></p> <p>(A) mail2@kvsangathan      (B) mail2@sangathan.      (C) mail2@kvsangathan.      (D) mail2kvsangathan.</p>
23	<p>(A)      Given is a Python string declaration: <b>message='FirstPreBoardExam@2022-23'</b>  Write the output of:      <b>print(message[ : : -3].upper())</b></p> <p>(B)      Write the output of the code given below:  <b>d1={'rno':25, 'name':'dipanshu'}</b>  <b>d2={'name':'himanshu',</b>  <b>'age':30,'dept':'mechanical'} d2.update(d1)</b>  <b>print(d2.keys())</b></p>
24	<p>Predict the output of the Python code given below:  <b>data=["L",20,"M",40,"N",60]</b>  <b>times=0</b>  <b>alpha=""</b>  <b>add=0</b>  <b>for c in range(1,6,2):</b>  <b>    times = times + c</b>  <b>    alpha = alpha + data [c-1] +</b>  <b>    "@" add = add + data[c] print</b>  <b>    (times, add, alpha)</b></p>
25	<p>Predict the output of the Python code given below:  <b>L=[1,2,3,4,5] Lst=[]</b>  <b>for i in range(len(L)):</b>  <b>    if i%2==1:</b>  <b>        t=(L[i],L[i]**2)</b>  <b>        Lst.append(t)</b>  <b>print(Lst)</b></p>

26	<p>Predict the output of the code given below: <code>s="C++VsPy" m=""</code> for <code>i in range(0, len(s))</code>:</p> <pre> if (s[i] &gt;= 'a' and s[i] &lt;= 'm'):     m = m +s[i].upper() elif (s[i] &gt;= 'n' and s[i] &lt;= 'z'):     m = m +s[i-1] elif (s[i].isupper()):     m = m + s[i].lower() else:     m = m +'&amp;' print(m) </pre>
27	<p>What will be the output of the following python program?</p> <pre> str = "" name = "9@Days" for x in name:     if x in "aeiou":         str+=x.upper()     elifnot x.isalnum():         str+="*"     elifx.isdigit():         pass     else:         str+=x.lower() print(str) </pre>
28	<p>State True or False</p> <p>i) "Python has a set of keywords that can also be used to declare variables"</p> <p>ii)</p>
29	<p>Select the correct output of the following python code:</p> <pre> str="My program is program for you" t = str.partition("program") print(t) </pre> <p>a) ('My ', 'program', ' is ', 'program', ' for you')</p> <p>b) ('My ', 'program', ' is program for you')</p> <p>c) ('My ', ' is program for you')</p> <p>d) ('My ', ' is ', ' for you')</p>
30	<p>a) What will be the output of the following string operation.</p> <pre> str="PYTHON@LANGUAGE" print(str[2:12:2]) </pre> <p>b) Write the output of the following code.</p> <pre> data = [1,2,4,5] for x indata: x = x + 10 print(data) </pre>



## Class XII – Artificial Intelligence Holiday Homework

Instructions:

1. Answer all questions neatly in your homework notebook.
2. Activity-based questions should be done as instructed.
3. Submit the homework on the given date.

### Objective Type Questions

1. What does AI stand for?
2. Name any one application of Artificial Intelligence.
3. What is data?
4. What is meant by machine learning?
5. Write one example of AI used in daily life.

### Short Answer Type Questions

1. Define Artificial Intelligence.
2. What is the role of data in AI?
3. Explain supervised learning.
4. What is problem scoping in AI?
5. Differentiate between human intelligence and artificial intelligence.

### Descriptive Questions

1. Explain the AI project cycle with the help of a diagram.
2. What is machine learning? Explain its types.
3. Describe any four real-life applications of Artificial Intelligence.
4. Explain the importance of ethics in Artificial Intelligence. **Activity / Case Study**
  1. Identify a real-life problem that can be solved using AI. Write the problem statement and suggest an AI-based solution.
  2. Prepare a short report on any AI-based application (like Chatbots, Face Recognition, Voice Assistants).



## SUMMER BREAK HOLIDAY HOMEWORK 2026-2027 SUBJECT: INFORMATICS PRACTICES- 12 D

- 1) Write a python program to create a Series object,Data Frame Object with using of all Attribute and in-build-function In A4 Sheet.
- 2) Create a List of Dictionary and Dictionary of list using of Numpy Module write a program in A4 Sheet.
- 3) Write a SQL Commands for the Following Statements:

### Q.1

Table : ACTIVITY

Acode	ActivityName	Stadium	ParticipantsNum	PrizeMoney	ScheduleDate
1001	Relay 100 × 4	Star Annex	16	10000	23-Jan-04
1002	High jump	Star Annex	10	12000	12-Dec-03
1003	Shot Put	Super Power	12	8000	14-Feb-04
1005	Long Jump	Star Annex	12	9000	01-Jan-04
1008	Discuss Throw	Super Power	10	15000	19-Mar-04

Table : COACH

Pcode	Name	Acode
1	Ahmad Hussain	1001
2	Ravinder	1008
3	Janila	1001
4	Naaz	1003

- (i) To display the names of all activities with their Acodes in descending order.
- (ii) To display sum of PrizeMoney for the Activities played in each of the Stadium separately.
- (iii) To display the coach's names and Acodes in ascending order of Acode from the table COACH.
- (iv) To display the content of all activities for which ScheduleDate is earlier than 01-01-2004 in ascending order of ParticipantsNum.

## Q.2

Table : STUDENT

T_ID	Name	Age	Department	Date_of_join	Salary	Gender
1	Jugal	34	Computer Sc	10/01/2017	12000	M
2	Sharmila	31	History	24/03/2008	20000	F
3	Sandeep	32	Mathematics	12/12/2016	30000	M
4	Sangeeta	35	History	01/07/2015	40000	F
5	Rakesh	42	Mathematics	05/09/2007	25000	M
6	Shyam	50	History	27/06/2008	30000	M
7	Shiv Om	44	Computer Sc	25/02/2017	21000	M
8	Shalakra	33	Mathematics	31/07/2018	20000	F

Table : POSTING

P_ID	Department	Place
1	History	Agra
2	Mathematics	Raipur
3	Computer Science	Delhi

- (i) To show all information about the teacher of History department.
- (ii) To list the names of female teachers who are in Mathematics department.
- (iii) To list the names of all teachers with their date of joining in ascending order.
- (iv) To display teacher's name, salary, age for male teachers only.
- (v) To display name, bonus for each teacher where bonus is 10% of salary.

## Q.3

Table : CABHUB

Vcode	VehicleName	Make	Color	Capacity	Charges
100	Innova	Toyota	WHITE	7	15
102	SX4	Suzuki	BLUE	4	14
104	C Class	Mercedes	RED	4	35
105	A-Star	Suzuki	WHITE	3	14
108	Indigo	Tata	SILVER	3	12

Table : CUSTOMER

CCode	CName	Vcode
1	Hemant Sahu	101
2	Raj Lal	108
3	Feroza Shah	105
4	Ketan Dhal	104

- (i) To display the names of all the white colored vehicles.
- (ii) To display name of vehicle, make and capacity of vehicles in ascending order of their seating capacity.
- (iii) To display the highest charges at which a vehicle can be hired from CABHUB.
- (iv) To display the customer name and the corresponding name of the vehicle hired by them.

Table : CARDEN

Ccode	CarName	Make	Color	Capacity	Charges
501	A-Star	Suzuki	RED	3	14
503	Indigo	Tata	SILVER	3	12
502	Innova	Toyota	WHITE	7	15
509	SX4	Suzuki	SILVER	4	14
510	C Class	Mercedes	RED	4	35

Table : CUSTOMER

CCode	Cname	Ccode
1001	Hemant Sahu	501
1002	Raj Lal	509
1003	Feroza Shah	503
1004	Ketan Dhal	502

- To display the names of all the silver colored cars.
- To display name of car, make and capacity of cars in descending order of their seating capacity.
- To display the highest charges at which a vehicle can be hired from CARDEN.
- To display the customer name and the corresponding name of the cars hired by them.

4) Try this CaseBase Questions and Refer your Book. Submit in A4 Sheet.

	Color	Count	Price
Apple	Red	3	120
Apple	Green	9	110
Pear	Red	25	125
Pear	Green	26	150
Lime	Green	99	70

Answer any four questions from (i) to (v)

- Which of the below given commands will yield the following output ?

	Price
Apple	120
Apple	110
Pear	125
Pear	150
Lime	70

- `data.iloc[ : 4 , 2: ]`
  - `data.iloc[ : , 2: ]`
  - `data.loc[ : 4 , 2: ]`
  - `data.loc[ : , 2: ]`
- Find all rows with the label "Apple". Extract all columns. (Choose the correct statement)
  - `data.loc[ : , 'Apple']`
  - `data.iloc['Apple', :]`
  - `data.iloc[ :, 'Apple']`
  - `data.loc['Apple', :]`
- List 2nd, 3rd and 4th rows. (Choose the correct statement)
  - `data.loc[ 0:3, : ]`
  - `data.loc[ :, 0:3 ]`
  - `data.iloc[ 0:3, : ]`
  - `data.loc[ :, 0:3 ]`
- List the rows having price more than 120. (Choose the correct statement)
  - `data['Price'] > 120`
  - `data[data['Price'] > 120]`
  - `data[ ['Price'] > 120 ]`
  - `data[ 'Price' >120 ]`
- List the fruit having the maximum price. (Choose the correct statement)
  - `data['Price'].max( )`
  - `data[data['Price'].max()]`
  - `data[data['Price'].max() == True ]`
  - `data[ data['Price'] == data['Price'].max( ) ]`

# ACCOUNTS



# BUSINESS STUDIES

<https://drive.google.com/file/d/1Hpg3cVS5AD0rbUB-IDPQqSsBH0MmG-cz/view?usp=sharing>

<https://drive.google.com/file/d/1LEaPbCnNFv4YN5CXGj5BHI4dnui5wWCU/view?usp=sharing>

# ECONOMICS

Classify the following into Intermediate goods and Final goods. Give reasons

1. Pen used by Students.
2. Milk used by a Confectioner in making Chocolates.
3. Milk purchased by Households.
4. Paper used by a Publisher in book-printing.
5. Machine purchased by a dealer.
6. A car purchased by a household.
7. Purchase of rice by a grocery shop.
8. Purchase of an air conditioner for use in shop.
9. Cloth used for making of a sofa set by the carpenter.
10. Machine purchased by a cloth manufacturing company.
11. Car purchased by a taxi operator.
12. Food processor used by the household in the kitchen.
13. Sugarcane used in the production of sugar.
14. Fees paid to a lawyer by a producer.
15. A machine purchased for installation in a factory.
16. A car purchased by the government for military purpose.

Choose the correct answers

1. Classification of goods depend on the \_\_\_\_\_ (a) consumption of goods (b) production of goods (c) first use of goods (d) end use of goods
2. Final goods are used by the \_\_\_\_\_ (a) consumers (b) producers (c) government (d) all of these
3. Those goods which satisfy human wants directly are called \_\_\_\_\_ (a) Intermediate goods (b) consumer goods (c) capital goods (d) None of these
4. Capital goods are those goods which \_\_\_\_\_ (a) are used in the production process for several years (b) are used in the production process for few years (c) which involve depreciation losses (d) both (a) and (c)
5. TV, Radio, Washing Machine etc. are examples of \_\_\_\_\_ (a) Durable consumer goods (b) Semi durable consumer goods (c) Single use consumer goods (d) Capital goods

Are the following normal residents of India? Give reasons of your answer.

1. Indians employed in WHO located in India.
2. An American tourist staying in India.
3. Indian workers employed in the power projects of Nepal on daily wages and crossing into Indian territory every week.
4. Indians working in USA Embassy in India.
5. Local people working in the office of International Monetary Fund in India.
6. Foreigners working in Indian Embassy in the USA.
7. Foreign technical experts working in India for a period of less than one year.

Give the correct answers from the choices given.

8. National Income includes only the income of the \_\_\_\_\_ (a) Residents (b) Non-residents (c) Both residents and non-residents (d) None of these.
9. Which of the following is an example of normal residents of India ? (a) Foreign worker working in WHO located in India (b) The German working as Director in IMF office located in India (c) Ambassador in India from rest of the world (d) Ambassador of India in rest of the world.
10. Foreigner working in Indian Embassy in Taiwan is \_\_\_\_\_ (a) Normal Resident of India (b) Non-Resident of India (c) None of these. (d) Both resident and non resident.

11. Indian working in Asian Development Bank in Philippines is \_\_\_\_\_ (a) Normal Resident of India (b) Non-Resident of India (c) None of these. (d) Both resident and non resident.

12. Indian student in USA who has been living there for five years is \_\_\_\_\_ (a) Normal Resident of India (b) Non-Resident of India (c) None of these. (d) Both resident and non resident.

Will the following be included in the domestic territory of India or not ? Give reasons.

13. Passenger planes operated by Air India between Canada and England.

14. The fishing boats operated by Indian fishermen in the international waters of Indian Ocean.

15. Indian Embassy located in France.

16. Indian Peace Keeping Force deployed in Afghanistan to maintain peace.

17. Indian Ships moving between Japan and South Korea.

18. A branch of State Bank of India located in china.

19. Microsoft office located in New Delhi.

20. Indian Company whose branch is located in Singapore.

Learn and Explain following answers

Difference between Stock and flow variable

Final and intermediate goods

Domestic territory vs normal resident concept

Circular flow of income

# GEOGRAPHY

Learn and write the answers of following questions-

1. How environmental determinism is different from possibilism?
2. There is a middle path between environmental determinism and possibility. Justify the statement.
3. How human geography is related to sister disciplines of social sciences?
4. 90 % of world population lives in about 10% of its land area. Justify the statement.
5. What do you mean by density of population? What are the factors influencing the distribution of population?
6. What are the components of population change?
7. Write in detail about demographic transition theory with diagram.
8. Write the difference between growth and development.

9. Write the details of 'Beti Bachao Beti Padhao' campaign.
10. What are key indicators of measurements of human development?
11. What are the four pillars of human development?
12. Write in detail about approaches of human development.
13. What information do you collect from human development index?
14. What kind of regional variations do we have in Indian population?
15. How Indian population it's growth (Phases of population growth)?
16. Write in detail about composition of working population of India?

Practice the following maps and paste in notebook-

Areas of subsistence gathering, Areas of nomadic Herding, Areas of commercial livestock rearing, Areas of primitive subsistence gathering, Areas of intensive subsistence farming, Areas of extensive commercial grain farming, Areas of mixed farming, Areas of dairy farming.

# HISTORY

1. Complete your notebook up to chapter 4. Make mind map, notes and exercise with PYQ of the chapters.
2. Solve previous four years question paper
3. Make group of five students, out line the project write synopsis, data map and presentation of your chosen topic (the chosen topic should not be same).
4. Visit national museum and national archives, any archeological monument and make at least five page of report on it.
5. Read chapter 5 & 6 and prepare question bank 10 MCQ EACH.

