

St. Michael's Sr. Sec. School
3, Pusa Road, New Delhi
Class – IX Holiday Homework
(2026 – 2027)

MATHS

- A. Roll no. 1 to 5 have to make a Maths model, on the given topic, for Exhibition (11 th July 2026)**
- B. PROJECT Work (Any One) :-** In Project File (use 5-7 page)
- Fractal Project– Make a colourful Fractal Tree / Sierpinski Triangle / Koch Snowflake using origami. Show repeating patterns. Write 5 lines explaining fractals and their uses in nature.
 - 3D Shapes – Make shapes of cube, cuboid, cone, cylinder and sphere. Mention its formula and daily life usage.
 - Symmetry – Prepare a project showing line symmetry and rotational symmetry.
 - Bar Graph – Make a bar graph showing monthly expenses/Temperature from 25th May to 25th June.

Or you can use any topic from the given website for the project/Model work.

<https://mathigon.org/activities>

www.mathscareers.org.uk

- A. Solve the following in your maths registers:

Section A: Number Systems & Exponents

1. Find three rational numbers between $\frac{2}{3}$ and $\frac{3}{4}$ using the denominator equalization method.
2. Represent the following rational numbers on a single number line: $-\frac{2}{5}$, $\frac{1}{2}$, and $\frac{4}{5}$.
3. Simplify using the laws of exponents: $(2^5 \div 2^8)^5 \times 2^{-5}$.
4. Find the value of m if $(-3)^{m+1} \times (-3)^5 = (-3)^7$.
5. Express **0.0000000000942** in standard scientific notation.

Section B: Algebra & Linear Equations

1. Solve for x : $x/2 - 1/5 = x/3 + 1/4$.
2. The sum of three consecutive multiples of 8 is 888. Find the multiples.
3. Solve the equation: $0.25(4f - 3) = 0.05(200f - 9)$.
4. Factorize the expression using identities: $49x^2 - 36$.
5. Expand using $(a+b)^2$ or $(a-b)^2$: expand $(2x - 5y)^2$.
6. Subtract $4a - 7ab + 3b + 12$ from $12a - 9ab + 5b - 3$.

Section C: Geometry & Mensuration

1. The measures of two adjacent angles of a parallelogram are in the ratio **3:2**. Find the measure of each of the angles.
2. ABCD is a rhombus with diagonals **AC = 10 cm** and **BD = 24 cm**. Find the length of its side.
3. A godown measures **40m × 25m × 15m**. Find the maximum number of wooden crates each

measuring $1.5m \times 1.25m \times 0.5m$ that can be stored in it.

- The area of a trapezium is 34 cm^2 and the length of one of the parallel sides is 10 cm and its height is 4 cm . Find the length of the other parallel side.
- Find the height of a cylinder whose radius is 7 cm and the total surface area is 968 cm^2 .

Section D: Data Handling & Logic

- A bag has 4 red balls and 2 yellow balls. A ball is drawn from the bag without looking. What is the probability of getting a red ball?
- The following marks were obtained by 10 students: **25, 30, 25, 20, 15, 25, 10, 25, 40, 35**. Find the Mean, Median, and Mode.
- Construct a pie chart for the following data: Time spent by a child (Sleep: 8hrs, School: 6hrs, Homework: 4hrs, Play: 4hrs, Others: 2hrs).

Section D: Coordinate Geometry

- The School Sports Day: On a sports day, students are standing at specific positions on a coordinate grid. Student A is at (2,3) and Student B is at (10,9).
 - Calculate the distance between Student A and Student B.
 - If Student C stands exactly midway between A and B, find the coordinates of Student C.
 - If a fourth student D stands such that ABCD forms a parallelogram with D at (x,y), find (x,y) given C is (1,2) in a different setup. (Use standard parallelogram property: diagonals bisect each other).
 - Name the type of quadrilateral formed by the points A(-1,-2), B(1,0), C(-1,2), and D(-3,0), and justify your answer using the distance formula.
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SCIENCE

A. Make a working model, on any one Topic, for Interhouse Competition (4th July 2026).

- Separation Techniques used in our day-to-day life and their importance.
- Difference between an animal and a plant cell through their three-dimensional structure

Roll no. 6 to 10 have to make a Science working model, on the given topic, for Science Exhibition (11th July 2026)

B. Write 5 Practicals of Chemistry in your Lab file

C. Do the following assignment in your science register

Q1. What sort of mixtures can be isolated by crystallisation?

Q2. What do you mean by the terms solute and solvent?

Q3. Why are alloys regarded as mixtures?

Q4. What are the applications of centrifugation?

Q5. Name a technique that can be used to separate butter from curd?

Q6. Why can true solution particles not be seen by the naked eye?

Q7. Draw a well-labelled diagram to show distillation.

Q8. How will you separate a mixture containing kerosene and petrol (the difference in their boiling points is more than 25°C), which are miscible with each other?

Q9. Is Coca Cola a mixture? Justify your answer.

Q10. Ramya was making tea. Her brother asked her to make a list of the steps that she had taken to make tea by using the terms solution, solvent, solute, dissolve, soluble, insoluble, filtration and residue to describe her solution.

Q11. You are provided with a solution of substances 'X'. How will you test whether it is saturated or unsaturated with respect to 'X' at a given temperature? What happens when a hot saturated solution is allowed to cool?

Q12. Explain what is observed when a strong beam of light is focused on a colloidal solution of starch in water. Name the phenomenon.

Q13. What would you observe when (i) a saturated solution of potassium chloride prepared at 60°C is allowed to cool at room temperature? (ii) an aqueous sugar solution is heated to dryness?

Q14. (a) Why path of light is not visible in a solution when a beam of light is passed through it ?

(b) Classify each of following as solution, colloid or suspension:

(i) A mixture whose particles are big enough to scatter a beam of light passing through it.

(ii) A mixture whose particles settle down when it is left undisturbed.

Q15. Calculate the mass of sodium sulphate required to prepare its 20% (mass per cent) solution in 100 g of water.

Q16. (a) Write two points of difference between nuclear region of a bacterial cell and nuclear region of an animal cell.

(b) Which structure present in the nuclear region of a living cell bear genes?

Q17. (a) Draw the structure of a plant cell and label the part which:

- i. have cisternae-like structures for transport and synthesis.
- ii. is a place where most biochemical reactions occur.
- iii. packages and delivers the material synthesised in a cell.
- iv. acts as a kitchen of the cell.

(b) Also differentiate this cell from an animal cell based on:

(i) Outer membranes (ii) Presence of centrioles

Q18. In Biology practical class, the teacher asked Renuka and Sahil to keep the onion peel and RBC in two different beakers of hypotonic solution. Renuka noticed that the onion peel swelled while Sahil witnessed the RBCs explode quickly. Why did this happen? Give reason by supporting the activity performed by both of them.

Q19. (a) Name the two organelles in a plant cell that contain their own genetic material and ribosomes.

(b) If you are provided with some vegetables to cook, you generally add salt into vegetables during the cooking process. After adding salt, vegetables release water. What mechanism is responsible for this?

Q20. Why does the skin of your finger shrink when you wash clothes for a long time?

SOCIAL SCIENCE

A. ASSIGNMENT

MAKE AN ACTIVITY COPY OF CLASS TEST SIZE AND COMPLETE THE GIVEN WORK

1. 'The study of social science gives us a systematic knowledge of human life in connection to his society by bringing together several disciplines to build a fuller picture of society and help us to understand the world carefully and responsibly'. Justify the scope of social science according to this explanation.
2. How does the study of social science connect classroom learning to everyday experiences? Focus on the practical connectivity of social science with environmental sustainability and explain.
3. How does the study of social science match with the national education goals by promoting the concept of inclusivity?
4. Differentiate weather and climate. What are the basic elements that help us to understand weather and climate and their impact on human life and the environment?

5. Differentiate between the characteristics of hot weather season and cold weather season.
6. Explain the features of advancing monsoon season and retreating monsoon season.
7. What are the causes and effects of climate change?
8. On an outline map of India, depict the movement of the advancing monsoon winds.
9. On an outline map of India, depict the movement of the retreating monsoon winds.
10. Why is monsoon considered as a unifying bond in Indian context?

B. MODEL MAKING

This has to be done by the students of following mentioned roll numbers.

The topic mentioned is specifically planned according to the class, hence it needs to be taken sincerely.

CLASS - 9 RUBY, EMERALD AND DIAMOND

ROLL NUMBERS- 11, 12, 13, 14, 15

Roll no 11- 3D model on the topic, 'Evolution of Man' – [Palaeolithic – Mesolithic- Neolithic period].

Roll no 12- 3D model on the topic, 'Disaster safe city'

Roll no 13- 3D model on the topic, 'Layers of the Atmosphere'

Roll no 14- 3D model on the topic, 'Waste Management'

Roll no 15- 3D model on the topic, 'Election Booth Set-up'

ENGLISH

A. Write a book review on any novel issued by the school library.

Key Points for a Book Review

- Title & Author: Start by mentioning the name of the book and who wrote it.
- Genre & Theme: Identify what type of book it is (fiction, non-fiction, fantasy, biography, etc.) and the main idea or theme.
- Summary: Give a short overview of the story or content without revealing too many spoilers.
- Characters: Talk about the main characters and how they are described or developed.
- Setting: Mention where and when the story takes place.
- Writing Style: Comment on how the author writes—simple, descriptive, humorous, emotional, etc.
- Your Opinion: Share what you liked or disliked about the book. Be specific (e.g., "The ending was surprising" or "The story was slow in the middle").
- Message or Lesson: Explain what you learned or what message the book gives.
- Recommendation: Say whether you would suggest this book to other students and why.

B. FOR MOSAIC EXHIBITION:

Cultural Kaleidoscope (Roll no. 16 – 20)

9 Ruby - Dance Steps: footprints showing dance patterns. Ball room dance in Victorian Era

9th Emerald - Traditional Attire of men and women in Shakespearean era

9 Diamond - Role of women in Victorian Era

(Plight of women to be enacted – sewing, Grooming etc)

हिंदी

- A. परियोजना कार्य - अनुक्रमांक 21 -25 चित्र वर्णन आधारित 3डी मॉडल तैयार करें।
 - B. ' कृत्रिम बौद्धिकता / आर्टिफीसियल इंटेलिजेंस - वरदान या अभिशाप पर लगभग 180-200 शब्दों में अनुच्छेद लिखिए।
 - C. पाठ -१ दो बैलों की कथा का अभ्यास कार्य पूर्ण करके याद करें।
 - D. पाठ -२ क्या लिखूँ अभ्यास कार्य पूर्ण करके याद करें।
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ARTIFICIAL INTELLIGENCE AND ROBOTICS

- A. Python Programming Assignment (Given at the back of the book)

Students must solve the following 15 Python coding questions using Jupyter Notebook.

Submission Instructions:

- Write and run all programs in Jupyter Notebook
- Take screenshot/output if needed
- Create one document/file
- Paste all 15 codes with outputs
- Submit after summer vacation

B. Relative Task

Mini AI Project Proposal

(Choose one from below options)

Option 1: Student Performance Predictor

Input:

Marks

Output:

Pass / Fail prediction

Option 2: Chatbot for School Help Desk

Answers questions like:

- School timing
- Holiday schedule
- Uniform rules

Option 3: Mood Detector (Text Based)

Input:

“I am happy”

Output:

Positive

Students must submit the below for the above chosen option:

1. Problem Statement

What problem does the project solve?

2. Python Logic Flow

Flowchart

3. Sample Inputs/Outputs

4. Basic code attempt

Even incomplete is fine.

Mosaic Exhibition:- Roll No 26 to 30

-**Project Topic:-** Smart Dustbin(9th D, Group(Roll no.26 to 28))

-**Project Topic:-** Sunshine Alert and Windows Opening & Closing System
(9th D, Group (Roll no.29 to 30))

-**Project Topic:-** Smart Road Barrier System(9th E, Group(Roll no.26 to 28)

-**Project Topic:-** Smart Fire Alarm system (9th E, , Group(Roll no.29 to 30)

-**Project Topic:-** Automatic Metro elevator (9th R, Group(Roll no.26 to 28)

-**Project Topic :-** Home Automation (9th R, Group(Roll no.29 to 30))

ART AND CRAFT

ART- Make a Worli art on an earthen pot with the painting colours.

CRAFT- Make any one Diwali handicraft.

PT

MODEL FOR EXHIBITION

ROLL NO	9 Ruby	9 Emerald	9 Diamond
36	BASKETBALL GAME	CRICKET GAME	CRICKET GAME
38	TRADITIONAL GAMES	IMPORTANCE OF SPORTS AND GAME	FOOTBALL
39	LAWN TENNIS GAME	TENNIS GAME	BASKETBALL GAME

LIBRARY

Make the assigned Model for Exhibition

ROLL NO	9 Ruby	9 Emerald	9 Diamond
37	Evolution of Libraries: From Palm Leaves to Digital Libraries	Famous Libraries Around the World	Summary of the novel "the alchemist"
40	Importance of School Libraries in Personality Development	The Power of Reading Habits in Student Life	Can create an own story book

Instructions:

*PRESENT THESE TOPICS IN FORM OF POSTERS, CHARTS, BOOKS AND IT SHOULD INCLUDE PICTURES.

- * Use colourful and neat presentation.
 - * Models can be made using cardboard, waste material, or recycled items.
 - * Posters and charts should include pictures and slogans.
 - * Summary writing should be in neat handwriting.
 - * Cover page design should be creative and attractive.
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MOSAIC PROJECT (DANCE)

The project has been assigned to the appointed students for Dance.
Make a Collage on a Chart paper of any colour, the topic :- **Western Dance**

MOSAIC PROJECT (MUSIC)

The project has been assigned to the appointed students for Music.

- **Class 9th R, E, D –**

Make a model on any desired Musical Instrument.

VALUE EDUCATION

Make a chart on the given Topics for Class Board decoration (10 Marks)

- Roll no. 1 to 5- Go green- Breathe clean (Done in April)
 - Roll no. 6 to 10- Work is work- Respect it all (Done in May)
 - Roll no. 11 to 15- Be unique- Don't follow the crowd (July)
 - Roll no. 16 to 20- Heroes of India (August)
 - Roll no. 21 to 25- St Michael- The guardian Angel (September)
 - Roll no. 26 to 30- Light over Darkness (October)
 - Roll no. 31 to 35- Rea, learn, grow (November)
 - Roll no. 36 to 40- Joy to the World (December)
 - Roll no. 41 to 45- Hard work today, success tomorrow (January)
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