S. D. PUBLIC SCHOOL, PITAMPURA, DELHI
HOLIDAYS' HOMEWORK 2026-27
SUBJECT – MATHEMATICS
CLASS - IX

GENERAL INSTRUCTIONS:

1. **CASE STUDY QUESTIONS TO BE DONE IN A-4 SHEETS.**
2. **MIND MAP TO BE DRAWN ON A4 SHEET.**
3. **ASSIGNMENT TO BE DONE IN RULED A4 SHEETS.**

A) Interdisciplinary project
Case Study: Industrial Development in Andaman & Nicobar Islands

The Andaman and Nicobar Islands, a Union Territory of India, are known for their rich natural resources and strategic location in the Bay of Bengal. The government has been promoting sustainable industrial development in sectors such as fisheries, coconut processing, timber-based industries, and tourism-linked cottage industries. The table below shows the number of registered industrial units across five major sectors over a 5-year period (2021–2025).

Table: Industrial Data — Andaman & Nicobar Islands

Sector	2021	2022	2023	2024	2025
Fisheries Processing	48	52	55	60	65
Coconut & Coir Products	30	33	33	36	38
Timber & Wood Products	22	20	18	17	15
Tourism & Handicrafts	40	38	45	52	60
Food Processing	20	22	25	27	30
Total Units	160	165	176	192	208

Note: Each figure represents the number of registered industrial units in that sector for that year.

ANSWER THE FOLLOWING QUESTIONS BASED ON THE DATA GIVEN ABOVE

(i) Find the mean number of total industrial units across all five years (2019 to 2023). Based on your answer, state whether the overall industrial growth trend is increasing, decreasing, or constant.

(Hint: Mean = Sum of all values ÷ Number of years. Show all calculation steps clearly)

(ii) **The data for the Fisheries Processing sector over five years is: 48, 52, 55, 60, 65. Calculate the median of this data. Also find the range and comment on what the range tells us about the growth in this sector.**

(Hint: Arrange the data in ascending order before finding the median. Range = Maximum value − Minimum value)

(iii) **The government plans to represent the sector-wise distribution of industrial units in 2025 using a bar graph on graph paper. If a scale of *1 cm = 10 units* is used on the y-axis:**
(a) What will be the height (in cm) of the bar for the Tourism & Handicrafts sector?
(b) Which sector will have the shortest bar, and what will its height be?

(Hint: Bar height = Number of units ÷ Scale value. Use year 2025 data only)

(iv) **The Timber & Wood Products sector showed a decline from 22 units in 2021 to 15 units in 2025 due to environmental conservation policies.**
(a) Calculate the percentage decrease in the number of units over this period.
(b) If the decline continues at the same absolute rate per year, in which year will the number of units fall below 10?

(Hint: Percentage decrease = (Decrease ÷ Original value) × 100. For part (b), find the annual decrease first, then use linear reasoning)

(v) **A local newspaper reported: *"The Tourism & Handicrafts sector and Fisheries Processing sector together accounted for more than 60% of all industrial units in 2025."***
Verify this claim mathematically using the given data. Is the newspaper's statement correct? Justify your answer with proper calculation.

(Hint: Find the combined units of both sectors in 2025, divide by total units in 2025, and convert to percentage)

B) Read chapter 3 – THE WORLD OF NUMBERS and draw its MINDMAP.

C) ASSIGNMENT

1) Locate following irrational numbers on number line.

a) $\sqrt{17}$ **b)** $\sqrt{10}$

2) Express in the form of $\frac{p}{q}$ **, where p and q are integers and q ≠ 0**

a) $0.\overline{568}$ **b)** $1.\overline{28}$ **c)** $2.4\overline{32}$

3) Find the values of 'm' and 'n' in the following

a) $\frac{3+\sqrt{7}}{3-\sqrt{7}}$ **= m +** $\sqrt{7}$ **n** **b)** $\frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$ **= m +** $\sqrt{15}$ **n**

4) Rationalise the denominators of the following :

a) $\frac{1}{4-2\sqrt{3}}$ **b)** $\frac{5}{\sqrt{3}-\sqrt{5}}$

5) Find:

a) $(81)^{\frac{3}{4}}$ **b)** $(\frac{16}{49})^{\frac{1}{2}}$ **c)** $(\frac{8}{27})^{\frac{-1}{3}} \times (\frac{32}{243})^{\frac{-1}{5}}$

6) If x = 3 + $2\sqrt{2}$ **, find the value of** $x^2 + \frac{1}{x^2}$ **.**

7) The coordinates of two towns are (3,5)and (−1,9). A courier wants to go from A to B in a straight path. Find the distance between the two towns.

8) Find the midpoint of (−2,4)and (6,10)and verify that the midpoint divides the line segment equally.

9) Show that the points (1,1), (5,1), (5,5), (1,5)are the vertices of a square.

10) Three vertices of a rectangle are O**(0,0),** A**(6,0), and** C**(0,4).**

(i) Find the coordinates of the fourth vertex B.

(ii) Calculate the length of the diagonal OB.