S.D.PUBLIC SCHOOL,BU- BLOCK, PITAMPURA, DELHI
HOLIDAYS' HOMEWORK 2024-25
SUBJECT- MATHEMATICS
CLASS – IX

The introduction of holidays' homework at SDPS reflects our commitment to maintaining high standards of teaching and learning excellence. We believe in nurturing students' academic growth not only within the classroom but also during breaks, ensuring continual progress and skill development. To this end, we have designed engaging and creative tasks to challenge our students, encouraging them to apply their knowledge, demonstrate self-discipline, and hone essential skills such as independent study and time management. We trust our students to approach these tasks with enthusiasm and creativity, showcasing their dedication to academic excellence.

TASK 1: **INTERDISCIPLINARY PROJECT**
PAIRING STATE - LAKSHADWEEP ISLANDS

CASE STUDY

Lakshadweep, a tropical paradise off India's southwest coast, is not just famous for its stunning coral reefs and turquoise waters. It's also home to a unique agricultural system that's adapted to the islands' limited land resources and harsh climatic conditions. The primary agricultural activities in Lakshadweep revolve around coconut cultivation. It's the mainstay of the island's economy, providing employment and income to a significant portion of the population.

Collect data about the area and production of coconuts in some islands of Lakshadweep. Calculate the productivity of each island and complete the table given below:

Name of Island	Area (in Hectares)	Production(Total Number of coconuts produced)	Productivity(Production of coconuts per hectare)
Kavaratti			
Kadmat			
Androth			
Kalpeni			
Amini			

a) Represent the Productivity(Production of coconuts per hectare) in the form of Line graph using MS Excel

b) Explore and find out how coconut farming plays an important role in economic growth of Lakshadweep Islands.

TASK 2: ART INTEGRATION

   IX A – Prepare a paper bag using Pastel sheet and decorate it with Mandala art.
    On an A4 sheet, write a short note on mathematical concepts used in Mandala art.

   IX B – Prepare a File Cover using Pastel sheet and decorate it with Gond Art.
    On an A4 sheet, write a short note on mathematical concepts used in Gond Art.

   IX C – Prepare a mathematical 3D solid gift box using pastel sheet and decorate it with
   Warli Art.
    On an A4 sheet, write a short note on mathematical concepts used in Warli Art.

TASK 3:
Assignment

1) Locate following irrational numbers on number line.

  a) $\sqrt{17}$ **b)** $\sqrt{10}$ **c)** $\sqrt{13}$

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

  a) $0.\overline{568}$ **b)** $0.1\overline{8}$ **c)** $2.4\overline{32}$ **d)** $0.12\overline{3}$

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) Represent $\sqrt{8.1}$ on the number line.

5) Rationalise the denominators of the following :

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

6) Find:

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

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

8) Which of the following expressions are polynomials? Justify your answer.

  a) $x^2 + y^2$ + xyz   **b)** $\frac{x+1}{x-2}$ **c)** $x^2 - \frac{1}{x^2}$ **d)** $t^5 - \frac{4\,t^{\frac{3}{2}}}{\sqrt{t}}$ + 3

9) Verify whether the following are the zeroes of polynomial.

a) $p(x) = 5x - 1$, $x = \dfrac{1}{5}$

b) $p(y) = y^3 - y^2 - y + 1$, $y = 2$

c) $p(x) = (x + 2)(x - 3)$, $x = -2, 3$

10) Find the zeroes of the polynomial : $p(x) = (x - 2)^2 - (x + 2)^2$.

11) If $x = \dfrac{3}{2}$ is a zero of the polynomial $2x^2 + kx - 12$, then find the value of k.

12) Factorise : a) $x^3 + x^2 - 17x + 15$

b) $x^3 - 10 \ x^2 - 53x - 42$

13) Factorise by splitting the middle term.

a) $6 \ x^2 + 17x + 5$

b) $x^2 - 28x + 132$

14) If a + b + c = 5 and ab + bc + ca = 10, then prove that $a^3 + b^3 + c^3 - 3abc = -25$

15) Factorise the following:

1. $4 \ a^2 + b^2 + 9 \ c^2 + 4ab + 6bc + 12ca$
2. $8 \ x^3 + 27 \ x^3 + 36 \ x^2 y + 54x \ y^2$
3. $27 \ y^3 - 125 \ z^3$
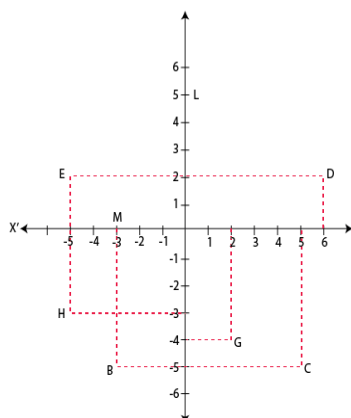
16) Find the coordinates of the point

1. which lies on x and y axes both.
2. Whose ordinate is -4 and which lies on y axis.
3. Whose abscissa is 5 and which lies on x axis.

17) A point lies on x axis at a distance of 9 units from y axis. What are its coordinates ? What will be its coordinates if it lies on y axis at a distance of -9 units from x axis?

18) In which quadrant will the point lie, if

1. the ordinate is 3 and the abscissa is -4
2. the abscissa is -3 and the ordinate is -4
3. the ordinate is 4 and the abscissa is 3
4. the ordinate is -4 and abscissa is 3

19) On plotting the points O(0,0), A(3,0), B(3,4), C(0,4) and joining OA, AB, BC and CO, which figure is obtained? (square, rectangle, trapezium, rhombus)

20) From the given figure , answer the following

1. The coordinates of B.

2. The coordinates of C.
3. The point identified by the coordinates(- 3, –5).
4. The point identified by the coordinates (2, – 4).
5. The abscissa of the point D.
6. The ordinate of the point H.
7. The coordinates of the point L.