

CLASS-IX

MATHEMATICS HOLIDAY HOMEWORK

Dear students

Learning is a beginning of wealth,

Learning is beginning of health,

Learning is beginning of spirituality.

Searching and learning is where the miracle process begins.

Holiday is a time that we all eagerly wait for. We all make plans to enjoy, to relax and to empower ourselves during these gala days. This summer vacation, the holiday homework so designed by the mentors of the school is a medium for you all to achieve the motto of Fun and Learn.

NUMBER SYSTEM

Learning Outcomes

Students are able to

Represent real numbers on the number line

1. ACTIVITY -SQUARE ROOT SPIRAL

Instructions

- Represent $\sqrt{2}, \sqrt{3}, \sqrt{4}, \sqrt{5}, \sqrt{6}, \sqrt{7}, \dots$ in a continuous manner.
- A sample image for the spiral has been attached, use your creativity to create the square root spiral.



Heron's Formula

Learning Outcomes

Students are able to

- Know about the formula to calculate the area of a triangle
- Apply it in real life application.

2. ACTIVITY- Food Triangle

Instructions- Find the area of your favorite triangular shaped food.(Any 1)

Coordinate Geometry

Learning Outcomes

Students are able to

- Know About Famous Orissi Dance
- Recall the Cartesian coordinate system.
- Apply it in real life application.

Activity

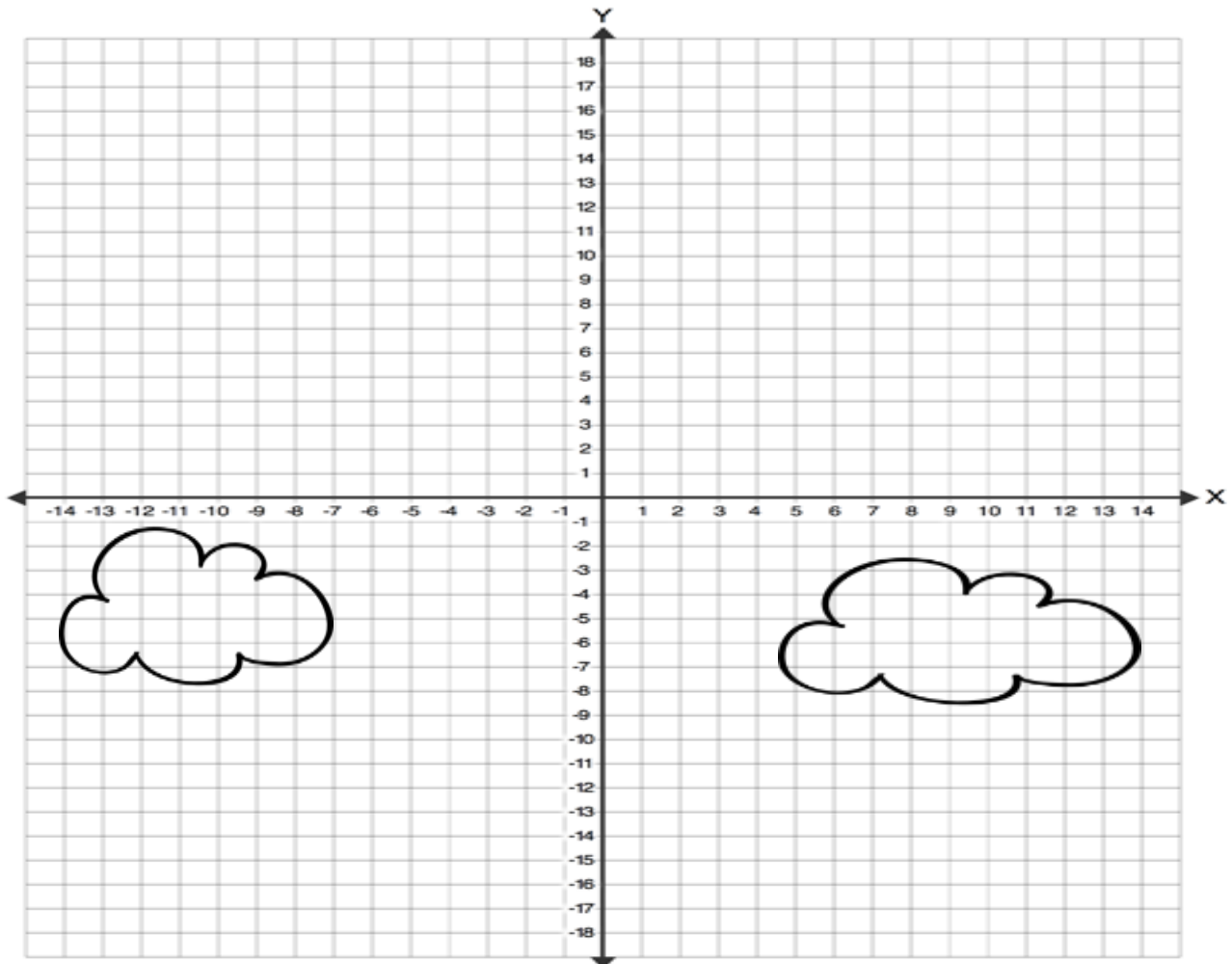
Read through the statement below. If you agree, circle the color in “**Agree**” column. If you disagree, circle the color in the “**Disagree**” column. Then connect the given points on the coordinate grid using the color you circled.

3. SUMMER PERSONALITY TEST

Statement	Agree	Disagree	Connect the points
I like Pastel Color	Yellow	Gray	(-12, 6) and (-12,0)
I like when the days get longer	Pink	Gray	(-14, 7) and (-14, 0)
I Like when it rains	Blue	Gray	(-9,-2) and (-8, 3)
I like when flower start to bloom	Pink	Gray	(-13,7) and (-10,14)
I enjoy gardening	Yellow	Gray	(-11, 4) and (-9, 8)
I enjoy going for walks in the sunshine	Yellow	Gray	(-8, -10) and (-6, 15)
I think flying a kite is fun	Pink	Gray	(-6, 17) and (0, 18)
I can spot 4-leaf clover	Green	Gray	(-8, -4) and (-7,0)
I like having a picnic	Yellow	Gray	(0,16) and (2,16)
I like the smell of flowers	Pink	Gray	(4, 17) and (8, 16)
I like seeing the trees become greener.	Green	Gray	(-6, 5) and (-4, 8)
I enjoy hearing the birds sing	Blue	Gray	(-7, 8) and (-3, 12)
I enjoy mowing the lawn	Green	Gray	(-3, 9) and (0, 10)
I enjoy going to parks	Pink	Gray	(11, 14) and (12, 11)

I like butterflies	Yellow	Gray	(5,14) and (6, 11)
I like basketball and cricket	Blue	Gray	(0, 13) and (2, 13)
I like to wear rubber boots	Blue	Gray	(7, 9) and (9,4)
I like playing in the mud.	Pink	Gray	(13, 7) and (14, 0)
I think baby ducks and chicks are cute.	Green	Gray	(2, 10) and (3, 9)
I enjoy cleaning.	Pink	Gray	(14, -1) and (14, -7)
I like the taste of honey.	Yellow	Gray	(10, 7) and (12, 0)
I like the sound of bees buzzing.	Yellow	Gray	(12, -2) and (12, -5)
I like the smell of freshly cut grass.	Green	Gray	(6, 6) and (8, 2)
I like to walk through buddies'	Blue	Gray	(10, 0) and (10, -4)
I like rainbows.	Green	Gray	(0, 8.5) and (9, -4)

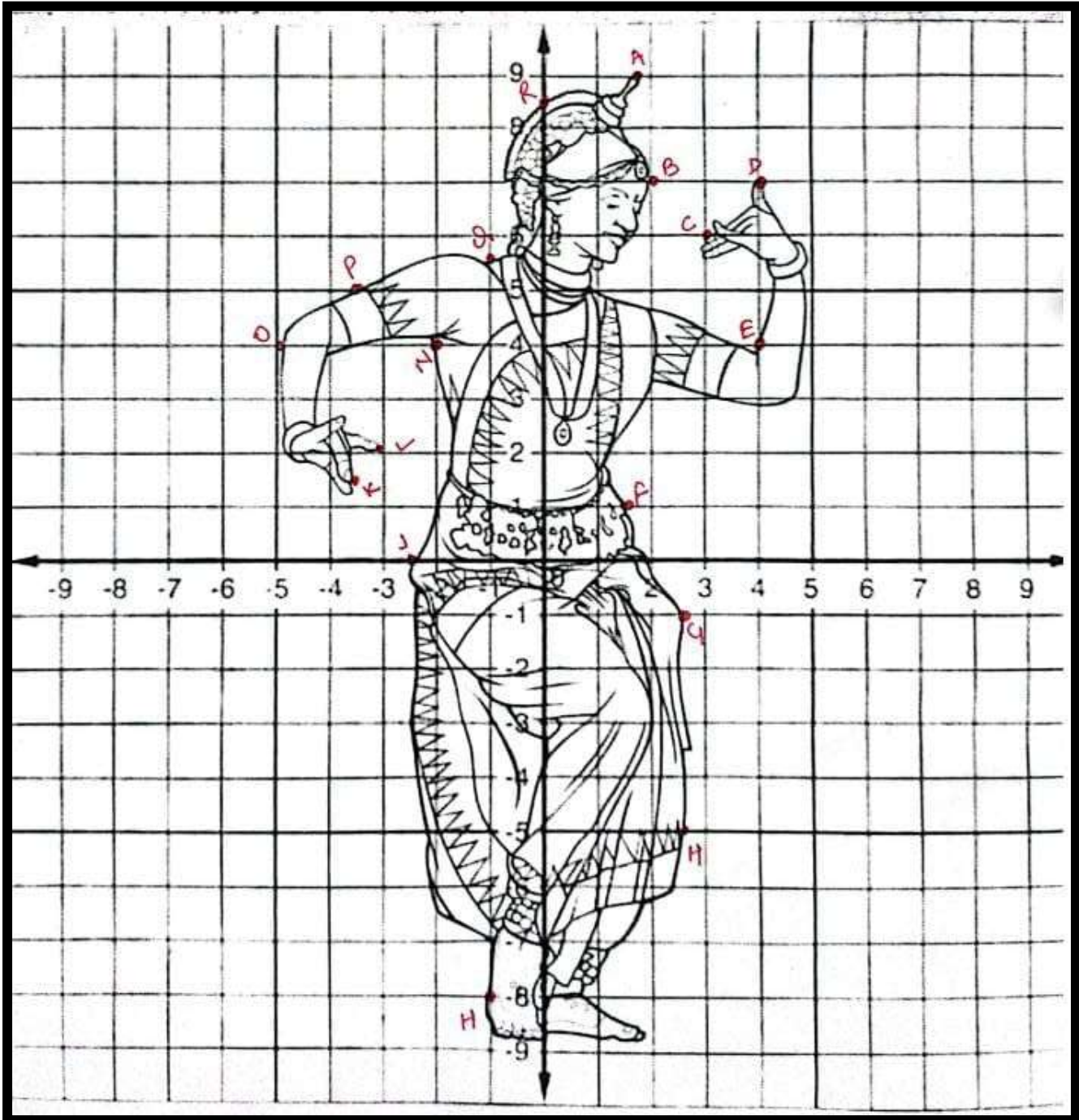
SUMMER PERSONALITY TEST



4. Instructions

During the summer vacations explore Famous dance of Odisha..

- Locate marked points in provided pictures.
- Write all marked points on a sheet of paper and segregate them as per different quadrants and axes
- Write in brief about above mentioned.



LINEAR EQUATION IN TWO VARIABLES

Learning Outcomes:

Students are able to:

- Recall term Linear equations in two variables.
- Draw Graph of Linear equations in two variables.

5. Instructions

- Draw the graph of following figures on the same graph paper.
- Find the area enclosed by different figures.
- Mention Sustainable Development Goal use in above graph.

Figure 1	$x = (-6), x = (-4), 2x+y = (-5), 2x-y = (-15), x\text{-axis}$
Figure 2	$x = (-3), y = 10, x\text{-axis and } y\text{-axis}$
Figure 3	$x = 1, x = 3, x = y - 4, x\text{-axis}$
Figure 4	$x = 6, x = 4, y = 3, x\text{-axis}$

Project- KNOW ABOUT STORY OF PI (π)

The number pi (π) is one of the most intriguing and significant constants in mathematics

Make a project on A4 size sheet in a creative manner about the story of pi which i emphasize the historical development and wide-ranging significance of pi in mathematics and beyond.

Worksheet

Heron's Formula

1. What is the length of each side of an equilateral triangle having an area of $4\sqrt{3}$ sq. cm?
2. What is the area of an equilateral triangle with side $\sqrt{3}/4$ cm?
3. The area of a rhombus is 96 cm^2 . If one of its diagonals is 16 cm, then find the length of its side.
4. Find the area of a rhombus whose perimeter is 200 m and one of the diagonals is 80 m.
5. The sides of a triangular park are in the ratio 3 : 5 : 7 and its perimeter is 300 m. Find its area and the length of perpendicular drawn on the biggest side.
6. Find the area of a triangle whose perimeter is 180cm and two of its sides are 80cm and 18 cm. Also calculate the altitude of the triangle corresponding to the shortest side.

Number System

1. Write two rational numbers between: a. $\sqrt{2}$ and $\sqrt{3}$ b. $\frac{-2}{5}$ and $\frac{1}{2}$
2. Write two irrational numbers between: a. $\sqrt{3}$ and $\sqrt{4}$. b. 2.2 and 2.3.
3. Represent $\sqrt{10}, \sqrt{17}, \sqrt{9.5}$ on a number line.
4. Arrange in ascending order $\sqrt[8]{90}, \sqrt[4]{10}, \sqrt{6}$.
5. Rationalize the denominator of each of the following :

a. $\frac{1}{1+\sqrt{2}-\sqrt{3}}$

b. $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}+\sqrt{2}-\sqrt{5}}$

6. Express the following in the form of rational number:

a. $2.\overline{34}$

b. $5.4\overline{5}$

c. $5.\overline{2} + 0.4\overline{5}$

7. If $x = \frac{\sqrt{2}-1}{\sqrt{2}+1}$ and $y = \frac{\sqrt{2}+1}{\sqrt{2}-1}$, find the value of x^2+y^2+xy .

8. If $\frac{\sqrt{11}-\sqrt{7}}{\sqrt{11}+\sqrt{7}} = x - y\sqrt{77}$, find the values of x and y where x and y are rational numbers.

9. Simplify : $\left[\left[5 \left\{ \left(\frac{1}{8} \right)^{-\frac{1}{3}} + \left(\frac{1}{27} \right)^{-\frac{1}{3}} \right\} \right]^2 \right]^{\frac{1}{4}}$

10. If $a - 8\sqrt{5}b = \frac{8+\sqrt{5}}{8-\sqrt{5}} - \frac{8-\sqrt{5}}{8+\sqrt{5}}$, find a and b.

Coordinate Geometry

1. A point lies on y-axis at a distance of 2 units from the x-axis. Write its coordinates.
2. Which of the following points belong to x-axis?
A(3,-1), B(4,0), C(-2, 0), D(0,3), E(-2,-1), F(-4, 0), G(1,0)
3. A park in the shape of a quadrilateral ABCD with A(8, 3), B(0,-1), C(-2, 3) and D(6, 7) is developed with flowers and green plants. Plot the points. Name the shape of the park. Will you support that green be developed in your city near the schools and hospitals? Give reasons.
4. What is the mirror image of the point (3, 9) with respect to x-axis?
5. Plot the points A(3, 0), B(3, 3) and C(0, 3) in a Cartesian plane. Join OA, AB, BC and CO.
Name the figure so formed and write its one property.
6. 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?
7. The length of perpendiculars PM and PN drawn from a point P, on x-axis and y-axis are 3 and 2 units respectively. Find the coordinates of points P, M, and N.
8. Plot three points A, B and C which have same abscissa 4 but lie in I and IV quadrants and on x-axis respectively. Also plot mirror image of A in y-axis.

Linear equations in two variables

1. Is line $2x + y = 3$ passes from origin. Explain your answer.
2. Find the solution of linear equation $x + 2y = 8$ which represents a point on :
a. the x – axis b.)the y – axis
c. The line parallel to x – axis and at a distance of 3 units above it.
3. A lending library has a fixed charge for first three days and an additional charge for each day thereafter. Neetu paid Rs. 21 for a book kept for five days. Write a linear equation which satisfies this data. Draw the graph for the same.

