PEDAGOGICAL PLAN FOR Mathematics (2020-21)

CLASS – IX

MONTH	UNIT/TOPIC	PRACTICALS/ART INTEGRATED ACTIVITIES /INNOVATIVE PEDAGOGY	LEARNING OUTCOMES
APRIL	Number system Polynomials	**Lab activity/ Art Integrated activity:** • To construct square root spiral with coloured paper • Using coloured papers,To verify identity $(a+b+c)^2=a^2+b^2+c^2+2ab+2bc+2ca$. **Worksheets:** • MCQ based. • Hots question based. • Based on simple concepts. **Audio Visual teaching aids:** • Smart class module.	**Students would be able to –** • Represent natural numbers, integers, rational numbers on the number Line and terminating / non-terminating recurring decimals on the number Line through successive magnification. • Recall of Laws of exponents with integral powers. Rational exponents with positive real bases. • Method of Rationalization. • find Factors and multiples. Zeros of a polynomial. • State the Remainder Theorem with examples. Statement and proof of the Factor Theorem. • Recall of algebraic expressions and identities.
MAY	Lines and angles Linear equation in two variables	**Lab activity/ Art Integrated activity:** To verify Pythagoras theorem by paper cutting method **Worksheets:** • MCQ based. • Hots question based. • Based on simple concepts.	**Students will be able to-** • Recall if a ray stands on a Line, then the sum of the two adjacent angLes so formed is 180^O and the converse. • Recall if two Lines intersect, vertically opposite angles are equal. • Results on corresponding angles, alternate angles, interior angles when a transversal intersects two parallel Lines. • Understand that a Linear equation in two variables has infinitely many solutions. • Draw graph of Linear equations in two variables.

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<td rowspan="2">MAY</td>
<td>Coordinate geometry</td>
<td rowspan="2">Lab activity:
Geo gebra as a tool can be used for Coordinate geometry..
Worksheets:
• MCQ based.
• Hots question based.
• Based on simple concepts.
Audio Visual teaching aids:
• Smart class module.
• Different software can be used like Geo Gebra.</td>
<td rowspan="2">Students will be able to:
• Define the Cartesian plane, coordinates of a point, names and terms associated with the coordinate pLane, notations, plotting points in the plane.
• Find area of a triangle using Heron's formula (without proof) and its application .</td>
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<td>Heron’s formula</td>
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<td rowspan="2">JULY</td>
<td>Triangles</td>
<td rowspan="2">Lab activity:
To verify that sum of external angles of a regular polygon is 360°.
• To verify Pythagoras theorem by paper cutting method.
Worksheets:
• MCQ based.
• Hots question based.
• Based on simple concepts.
Quiz based on different concept can be organize.
Audio Visual teaching aids:
• Smart class module.
• Different software can be used like Geo Gebra.</td>
<td rowspan="2">Students will be able to:
• Recall rules of congruency i.e. SSS, ASA, SAS and RHS.
• Prove of the angles opposite to equal sides of a triangle are equal and vice versa.
• Recall The sum of the angles of a triangle is 180^{O}.
• If a side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.
• Prove that diagonal divides a parallelogram into two congruent triangles.
• Recall in a parallelogram opposite sides are equal, and conversely. If a pair of its opposite sides is parallel and equal.</td>
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<td>Quadrilateral</td>
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<td rowspan="2">AUGUST</td>
<td>Quadrilateral(contd.)</td>
<td rowspan="2">Lab /Sports Integrated activity:
To measure the area of Basket ball court, Badminton court, Volume of cylindrical Pole .
To verify mid-point theorem.
To verify that the quadrilateral obtained by joining the mid points of the sides of the quadrilateral is a parallelogram .
Art Integrated Project
State paired with Arunachal Pradesh
Audio Visual teaching aids:
Smart class module.
Different software can be used like Geo Gebra.</td>
<td rowspan="2">Students will be able to:
Proof of Midpoint theorem i.e. in a triangle, the Line segment joining the mid points of any two sides is parallel to the third side and in half of it and its converse.
Problems based on parallelogram divides it into two congruent triangles.
Proof the diagonal of a quadrilateral bisect each other, then it is a parallelogram.
Integrate Maths with different art forms.
Understand the diverse culture of our country create awareness about the different art forms in other States.
Help students to improve their cognitive abilities.
Explore more in the weaving technology and to identify the Mathematical concepts involved in the art form-
Most popular motives are Zig-Zag lines and angular designs</td>
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<td>Art Integrated project work under Ek Bharat Shrestha Bharat Programme</td>
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<td>SEPTEMBER</td>
<td>Surface area and volume</td>
<td>Lab activity:
To find the area of a right circular cylinder.
To transform a square into a triangle both having equal area.
Worksheets:
MCQ based.
Hots question based.
Based on simple concepts.</td>
<td>Students will be able to:
Find surface areas and volumes of cubes, cuboids, spheres (including hemispheres) and right circular cylinders/cones.</td>
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OCTOBER	Statistics	**Lab activity:** • Introduce the process of constructing Mathematical Models • The process of Modeling, its Advantage and Limitations. **Worksheets:** • MCQ based. • Hots question based. • Based on simple concepts.	**Students would be able to:** • Understand the concept of collection of data, presentation of data - tabular form, ungrouped / grouped, bar graphs,
NOVEMBER	Circles	**Worksheets:** • MCQ based. • Hots question based. • Based on simple concepts.	**Students would be able to:** • Proof of the angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle. • Angles in the same segment of a circle are equal.
DECEMBER	Probability	**Worksheets:** • MCQ based. • Hots question based. • Based on simple concepts. **Audio Visual teaching aids:** • Smart class module. • Different software can be used like Geo Gebra.	**Students would be able to:** • Understand experiments and observed frequency approach to probability. Focus is on empirical probability.
JANUARY	Construction	**Worksheets:** • MCQ based. • Hots question based. Based on simple	**Students would be able to:** • Construct bisectors of Line segments and angles of measure 60^o, 90^o, 45^o etc., equilateral triangles. • Construct triangle given its base, sum/difference of the other two sides and one base angle.

FEBRUARY	REVISION