ATP Education

Class 9 Mathematics - Chapter-wise Assignment

Chapter 1: Number Systems

1. Represent $\sqrt{7}$ on a number line.
2. Simplify: $(7 + \sqrt{5})(7 - \sqrt{5})$.
3. If $x = \sqrt{3} + \sqrt{2}$, find x^2.
4. Express 0.272727... as a fraction in lowest terms.
5. Find the cube root of 3375 by prime factorization.
6. Rationalize the denominator of $5 / (\sqrt{3} + \sqrt{2})$.
7. Check whether $3\sqrt{2} + 2\sqrt{3}$ is rational or irrational.
8. Find HCF and LCM of 36 and 60 using prime factorization.

Chapter 2: Polynomials

1. Find zeros of $x^2 - 5x + 6$.
2. Divide $2x^3 + 3x^2 - 5x + 6$ by $x - 2$.
3. Factorize $x^4 - 16$.
4. Verify factor theorem for $p(x) = x^3 - 3x^2 + 2x$ and $x = 1$.
5. Find remainder when $x^3 - 2x + 4$ is divided by $x + 1$.
6. Factorize $x^3 + 3x^2 - 4x - 12$.
7. Find zeroes of $2x^2 + 7x + 3$ using factorization.
8. Determine whether $x - 1$ is a factor of $x^3 - x^2 + 2x - 2$.

Chapter 3: Coordinate Geometry

1. Find distance between points (3, 4) and (7, 1).
2. Find midpoint of segment joining (-2, 5) and (4, -3).
3. Determine if points (2, 3), (-1, 2), (3, -2) are collinear.
4. Find area of triangle with vertices (0, 0), (4, 0), (4, 3).
5. Find coordinates of a point dividing line segment joining (2, -3) and (-4, 5) in ratio 2:1.
6. Write equation of line passing through points (1,2) and (3,4).
7. Find slope of line joining points (2, 5) and (7, 9).
8. Check whether points (1,1), (2,3), (3,5) are collinear.

Chapter 4: Linear Equations

1. Solve: 2x + 3y = 7 and x - y = 2.
2. Solve by substitution: 3x - 2y = 5, 2x + y = 4.
3. Solve by elimination: x + y = 6, 2x - y = 3.
4. Form equations: Sum of two numbers is 15, difference is 5. Solve.
5. Word problem: Sum of ages of father and son is 60. Father's age is 4 times son's age. Find their ages.
6. Find values of x and y: 5x - 2y = 4, 3x + y = 9.
7. Form equations for numbers whose product is 36 and sum is 15.
8. Find two numbers if their sum is 20 and difference is 4.

Chapter 5: Geometry

1. Prove sum of angles of a triangle is 180°.
2. Draw a pair of tangents to a circle of radius 3 cm inclined at 60° to each other.
3. Prove line joining midpoints of two sides of triangle is parallel to third side.
4. In triangle ABC, prove Pythagoras theorem for right triangle.
5. Find length of median of triangle with vertices (0,0), (6,0), (0,8).
6. Draw a triangle given base, height, and vertical angle.
7. Find area of an equilateral triangle of side 5 cm.
8. Construct triangle when base, sum of other two sides, and one angle are given.

Chapter 6: Mensuration

1. Volume of cone with radius 7 cm, height 10 cm.
2. Surface area of cylinder with radius 5 cm, height 12 cm.
3. Sphere radius 6 cm melted to form smaller spheres radius 2 cm. Find number.
4. Volume of frustum of cone with radii 7 cm, 4 cm, height 9 cm.
5. Find lateral surface area of cone radius 8 cm, slant height 10 cm.
6. Curved surface area of cylinder with radius 7 cm, height 14 cm.
7. Volume of sphere with radius 10 cm.
8. Find total surface area of cuboid with dimensions 5 cm × 6 cm × 7 cm.

Chapter 7: Statistics

1. Find mean of 2, 5, 7, 10, 12.
2. Represent data in bar graph: Classes 6–10 with students 12,15,10,18,20.
3. Find median and mode of 3,7,7,9,12,15,17.
4. Find range, mean, median of 5,10,15,20,25.
5. Draw histogram: Marks 0–50 in intervals of 10, students 5,8,12,10,5.
6. Construct cumulative frequency graph using above data.
7. Draw a pie chart for marks: 10, 15, 20, 25, 30.
8. Find mean deviation for 5, 10, 15, 20, 25.

Chapter 8: Probability

1. Bag has 3 red, 2 blue balls. Probability of red ball?
2. Two dice thrown. Probability of sum = 7.
3. Coin tossed twice. Probability of at least one head.
4. Card drawn from standard deck. Probability of getting King or Queen.
5. Bag with 5 white, 3 black, 2 red balls. Probability of drawing white or red ball.
6. If a die is thrown, probability of getting an even number.
7. Probability of selecting a vowel from English alphabets.
8. Probability of getting head and tail in single toss of 2 coins.