DELHI PUBLIC SCHOOL, JAMMU
ASSIGNMENT FOR HALF YEARLY (2017-18)

Class : **9th**
Subject : **Math**

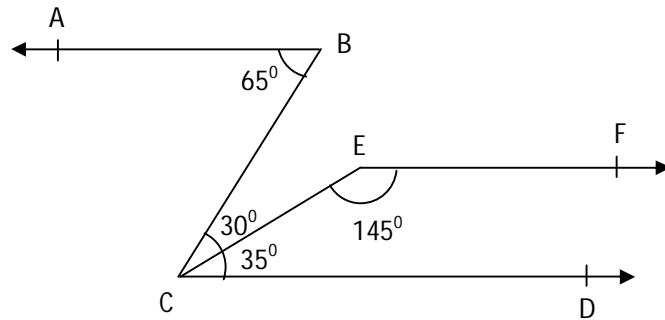Q1. If x = 4 - $\sqrt{15}$, find the value of $\left(x + \dfrac{1}{2} \right)^2$.

Q2. Simplify: $\dfrac{1}{\sqrt{3}+\sqrt{2}} - \dfrac{2}{\sqrt{5}-\sqrt{3}} - \dfrac{3}{\sqrt{2}-\sqrt{5}}$.

Q3. Simplify: $\sqrt[4]{81} - 8\sqrt[3]{216} + 15\sqrt[5]{32} + \sqrt{225}$.

Q4. Plot the points P(1, 0), Q (4, 0) and S (1, 3). Find the coordinate of the point R such that PQRS is a square.

Q5. Plot the points (6, 5), (6, -3) and (-2, -3). Join them to find the figure and find the area of the figure so obtained.

Q6. In the given, figure, $\angle ABC = 65^0$, $\angle BCE = 30^0$, $\angle DCE = 35^0$ and $\angle CEF = 145^0$. Shows that AB||EF.

Q7. If two parallel lines are intersected by a transversal, the prove that the bisectors of any two alternate angles are parallel.

Q8. Factorise the following: $12\left(4x - \dfrac{1}{4x} \right)^2 + 5\left(4x - \dfrac{1}{4x} \right) - 2$.

Q9. If $ax^3 + bx^2 + x - 6$ has (x + 2) as a factor and leaves remainder 4 when divided by (x -2). Find the values of a and b.

Q10. Factorise $x^4 - 7x^3 + 9x^2 + 7x - 10$ by using factor theorem.

Q11. Insert 5 rational numbers between $\dfrac{3}{5}$ and $\dfrac{5}{7}$.

Q12. Express $3.42\overline{5}$ in the form of $\dfrac{P}{q}$, where 'P' and 'q' are integers, q $\neq$ 0.

Q13. If the bisectors of angles B and C of a triangle ABC meet at O. Prove that $\angle BOC = 90 + \dfrac{1}{2}\angle A$.

Q14. Prove that $\sqrt{5}$ is not a rational number.

Q15. Find the value of a and b. If $\dfrac{7+3\sqrt{5}}{3+\sqrt{5}}+\dfrac{7-3\sqrt{5}}{3-\sqrt{5}}=a+\sqrt{5}b$.

Q16. Represent $1+\sqrt{3}$ on the number line.

Q17. In the given figure, the side QR of Δ PQR is produced to a point S. If the bisector of $\angle$PQR and $\angle$PRS meet at point T, then prove that $\angle$QTR = $\dfrac{1}{2}$ $\angle$QPR.

Q18. Factorize $(a + 2)^2 + r^2 + 2r$ (a + 2).

Q19. Find the value of 'a' if (x - a) is a factor of $x^5 - a^2 x^2 + 2x + a + 3$, hence factorise x^2 - 2ax - 3.

Q20. If $2\sqrt{x}+\sqrt{5x-4\sqrt{x}}=1$ then show that x - 1 = 0.

Q21. The sum of two angles of a triangle is equal to the third angle. Determine the third angle.

Q22. Prove that two triangles are congruent if any two angle and the included side of one triangle is equal to any two angles and the included side of the other triangle.

Q23. The area of an equilateral triangle is 2√3square centimeter Find the perimeter.

Q24. The sides of a triangle are p , q and r if p+q = 45 , q + r = 40 and p + r = 35 Then find the area of the triangle.

Q25. The sides of a triangular plot are in the ratio of 3: 5 : 7 and the perimeter is 300 m. Find its area.

Q26. Solve the equation a – 15 = 25, and state which axiom do you use here.