DELHI PUBLIC SCHOOL, JAMMU
SESSION: 2018-19
ASSIGNMENT

Class: IX **Subject: Mathematics**

SECTION-A

Q1. Find the sum of $0.\overline{5}$ and $0.\overline{2}$.

Q2. The two supplementary angles are in the ratio 2 : 7. Find the measure of angles.

Q3. Represent $\sqrt{4.2}$ on the number line.

Q4. The coefficient of x^2 in (x^2+2) is :

Q5. If x - 2 is a factor of the polynomial $P(x) = x^3 - 5x^2 + kx + 4$, find the value of k.

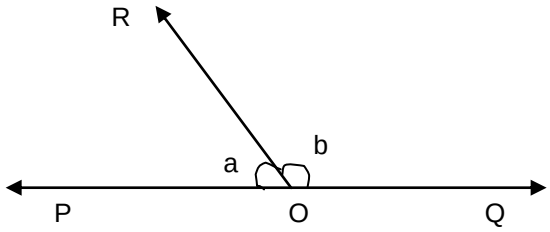
Q6. Find the mean of the first 5 prime numbers.

SECTION-B

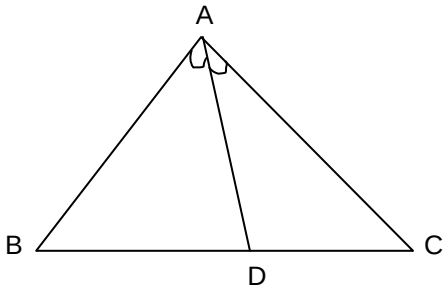
Q7. The surface area of a cuboid is $1372cm^2$. If its dimensions are in the ratio 4 : 2 : 1, find its length.

Q8. Expand using a suitable identity: $(3x - 2y)^3 - (3x + 2y)^3$.

Q9. In the given figure, if $\angle POR$ and $\angle QOR$ form a linear pair and $a - b = 80^0$, then find the value of a and b.



Q10. In ΔABC, $\angle B = 55^o$, $\angle C = 45^o$, AD bisects $\angle A$. Find $\angle ADB$ and $\angle ADC$.



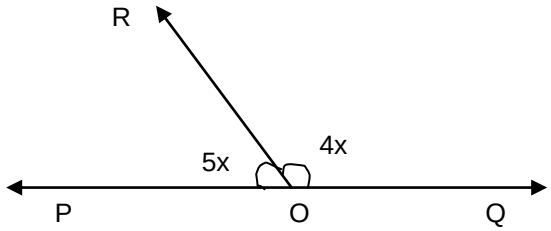
Q11. Find the area of a quadrilateral ABCD whose sides are 9m, 40m, 28m and 15 m respectively and the angle between two sides is a right angle.

Q12. Find two irrational numbers between $\sqrt{2}$ and $\sqrt{3}$.

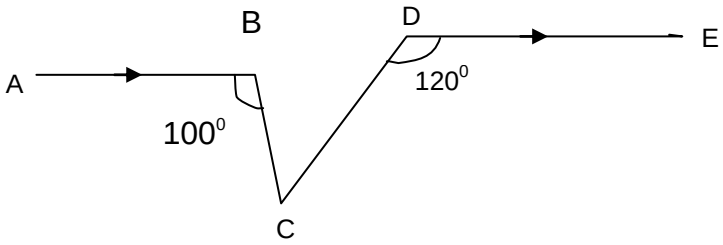
Q13. Simplify: $\left[5\left\{8^{\frac{1}{3}} + 27^{\frac{1}{3}}\right\}^3\right]^{\frac{1}{4}}$.

Q14. If $a^2 + b^2 + c^2 = 90$ and $a + b + c = 20$, then find the value of $ab + bc + ca$.

Q15. In the given figure, what value of x will make POQ a straight line?



Q16. In the given figure, AB||DE. Find the measure of $\angle BCD$



Q17. Find the area of a trapezium whose parallel sides are 18cm and 10cm and the two other sides are of length 5cm.

SECTION-C

Q18. In ΔABC, the bisectors of $\angle B$ and $\angle C$ intersect each other at point O.

Prove that $\angle BOC = 90^0 + \frac{1}{2}\angle A$.

Q19. Represent $\sqrt{9.3}$ geometrically. Give its verification.

Q20. If $x + y + z = 9$, $xy + yx + zx = 40$,, find the value of $x^2 + y^2 + z^2$.

Q21. If $x^2 + \frac{1}{x^2} = 4$, then find the value of $x^3 + \frac{1}{x^3}$.

Q22. In any triangle, the side opposite to the larger (greater) angle is larger.

Q23. In the given figure, the sides AB and AC of triangle ABC are produced to points E and D respectively. If bisectors BO and CO of $\angle CBE$ and $\angle BCD$ respectively meet at point I, then prove that $\angle BOC = 90^0 - \frac{1}{2}\angle BAC$.

Q24. The median of the following observations arranged in ascending order is 24. Find the value of x.
11, 12, 14, 18, x+2, x+4, 30, 32, 35, 41.

Q25. Draw the graph of the linear equation, 2x + 3y =12. At what points, the graph of the equation cuts the x-axis and the y-axis?

Q26. Draw the graph of the equation 2x + 3y = 6. Find the area of triangle formed along x-axis and y-axis.

Q27. Yamini and Fatima two students of Class-IX of a school, together contributed Rs. 100 towards the Prime Minister's Relief Fund to help the earthquake victims. Write a linear equation which this data satisfies. Draw the graph of the same.

Q28. Following table gives the distribution of the marks obtained by the students of a class.

Marks	0-15	15-30	30-45	45-60	60-75	75-90
No. of Students	5	12	28	30	35	13

Represent the data by a frequency polygon.

Q29. The mean weight per student in a group of 7 students in 55kg. The individual weights of 6 of them, in kg, are 52, 54, 55, 53, 56, 54. Find the weight of the seventh student.

SECTION-D

Q30. Show that 1 and -1 are the zeros of the polynomial, $x^3 - 3x^2 - x + 3$. Also, find the third zero of the polynomial.

Q31. If a point C lies between two points A and B such that AC = BC, then prove that AC = $\frac{1}{2}$ AB. Explain by drawing the figure.

Q32. If $\frac{\sqrt{x+4}+\sqrt{x-10}}{\sqrt{x+4}-\sqrt{x-10}}=\frac{5}{2}$, find the value of x.

Q33. If two lines intersect, prove that the vertically opposite angles are equal.

Q34. Prove that the bisectors of corresponding angles made on two parallel lines are parallel.

Q35. AB is a line-segment and 'L' is its perpendicular bisector. If a point P lies on L, show that P is equi-distant from A and B.

Q36. If two sides of a triangle are equal, then the angles opposite to these are also equal.

Q37. In an isosceles ΔABC with AB = AC, D and E are points on BC such that BE = CD. Show that AD = AE.

Q38. Find the value of p, if mean of the following distribution is 20:

x	15	17	19	20 + p	23
f	2	3	4	5p	6

Q39. ABCD is a quadrilateral in which P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that PQRS is a parallelogram.

Q40. Parallalograms on the same base between the same parallel are equal in area.

Q41. The median of a triangle divides it into two triangles of equal area.