

Ritesh
14/09/19

D.A.V. PUBLIC SCHOOLS

BIHAR ZONE

Mid Term Examination: 2019-2020

Class: IX

Subject - MATHEMATICS

Time- 3 Hrs

F.M.- 80

General Instructions: -

- All Questions are compulsory.
- The question paper consists of 40 questions divided into four sections A,B,C and D.
- Section A contains 20 question of 1 Mark each. Section B contains 6 questions of 2 marks each. Section C contains 8 questions of 3 marks each. Section D contains 6 questions of 4 marks each.
- Use of calculators is not permitted.

Section -A (1 × 20 = 20)

1. 0.010110111 is a/an Number.
a) rational b) irrational c) imaginary d) integer
2. Which of the following needs a proof?
a) An axiom b) a definition c) a postulate d) a theorem.
3. A solid has dimensions.
a) 0 b)1 c)2 d)3
4. In $\triangle ABC$, $AB=2.5$ cm and $BC=6$ cm . then length of AC can not be
a) 3.4 cm b) 4cm c) 3.8 cm d) 3.6 cm.
5. If $x > 0$ and $y < 0$, then the point (x,y) lie in quadrant.
a) I b) II c) III d) IV
6. What is the rationalizing factor of denominator of $\frac{2+\sqrt{3}}{2-\sqrt{3}}$?
a) $2+\sqrt{3}$ b) $2-\sqrt{3}$ c) $\sqrt{3}-2$ d) $3-\sqrt{2}$
7. Which point does not lie in any quadrant?
a) (3, -6) b) (-3, 4) c) (5, 7) d) (0, 3)
8. Which of the following is a polynomial?
a) $x-\frac{1}{x}+2$ b) $\frac{1}{x}+5$ c) $\sqrt{x}+3$ d) -4

P.T.O.

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Class-IX (Mathematics)

9. What is the coefficient of the highest power of x in the polynomial $2x^3 - 4x^4 + 5x^2 - x^5 + 3$?
a) 5 b) -1 c) -5 d) 1
10. What is the measure of an angle which is five times its complement?
a) 15° b) 30° c) 75° d) 150°
11. What is the zeroes of the zero polynomial?
12. Find the supplementary angle of the complementary angle of 45° .
13. Find the longest side of $\triangle ABC$ $\angle A = 40^\circ$ and $\angle B = 65^\circ$?
14. Every rational number and irrational number is a Number
15. A circle can be drawn with any and any
16. All right angles are to one another.
17. The angles opposite to two equal sides of a triangle are
18. The point at which the two coordinate axes meet is called
19. If $p(x) = x + 4$ then find the value of $p(x) + p(-x)$
20. If one of the exterior angle of a triangle is 110° and its two interior opposite angles are equal, then find each of these equal angle?

Section -B (2 × 6= 12)

21. Simplify $\sqrt[3]{2} \times \sqrt[4]{2} \times \sqrt[12]{32}$.
22. Find the value of k , if $x^2 + kx - 3 = (x-3)(x+1)$.
23. If A, B and C are three points on a line, and B lies between A and C , by using Euclid's Geometry prove that $AB + BC = AC$.
24. Prove that lines which are parallel to the same line are parallel to each other.
25. Prove that, the sum of the angles of a triangle is 180° .
26. Using heron's formula, find the area of an equilateral triangle of side a units.

Or

Express y in terms of x and check whether the point $(-3, -2)$ lies on the line or not $3x - 2y + 5 = 0$

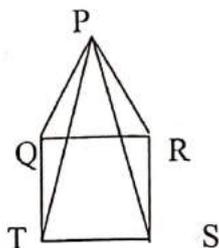
Section -C (3 × 8= 24)

27. If $x = 2 + \sqrt{3}$, find the value of $x^2 + \frac{1}{x^2}$
28. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $(x-1)$ and $(x+1)$, the remainders are respectively 5 and 19. Determine the remainder when $f(x)$ is divided by $(x-2)$.
29. By Euclid's Geometry, prove that every line segment has one and only one mid-point.

P.T.O.

(3) Class-IX (Mathematics)

30. If two lines intersect each other, then prove that the vertically opposite angles are equal.
31. In the given figure, PQR is an equilateral triangle and QRST is a square. Prove that, (i) $PT=PS$
(ii) $\angle PSR=15^\circ$.



32. An isosceles triangle has perimeter 30cm and each equal sides is 12cm. find the area of the triangle.

Or

Check by substituting whether $x=-6$ and $y=-3$ is a solution of equation $2(x-1) - 5y=1$ or not. Find one more solution. How many more solution can you find.

33. Using factor theorem, factorize the polynomial $f(x)=2x^3 + x^2 - 2x - 1$.
34. In $\triangle ABC$, AD is the bisector of $\angle A$ and $AC > AB$. Proved that, $\angle ADC > \angle ADB$.

Section -D (6 × 4 = 24)

35. Represent $(\sqrt{7.5})$ geometrically on the number line.

36. If $x=(3 - 2\sqrt{2})$. Show that $(\sqrt{x} - \frac{1}{\sqrt{x}}) = \pm 2$.

OR

Show that
$$\frac{1}{3-\sqrt{8}} - \frac{1}{\sqrt{8}-\sqrt{7}} + \frac{1}{\sqrt{7}-\sqrt{6}} - \frac{1}{\sqrt{6}-\sqrt{5}} + \frac{1}{\sqrt{5}-2} = 5$$

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

Or

Draw the graph of $x=0$, $y=0$, $x-4=0$ and $y+5=0$. Name the shape enclosed by these lines and shade it.

38. State and prove ASA congruence rule.
39. The three vertices of a square ABCD are A (3,2), B(-2,2) and D(3,-3). Plot these points on a graph paper and hence, find the coordinates of C.
40. In a triangle, Prove that the angle between the internal bisector of one base angle and the External bisector of the other is equal to one half of the vertical angle.

