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Candidates must write the Set No. on the title page of the answer book.

DAV PUBLIC SCHOOLS, ODISHA ZONE – I

PERIODIC TEST -2 , 2017-18

- Check that this question paper contains 4 printed pages.
- Set number given on the right hand side of the question paper should be written on the title page of the answer book by the candidate.
- Check that this question paper contains 30 questions.
- Write down the Serial Number of the question before attempting it.
- 15 minutes cooling time has been allotted to read this question paper only and do not write any answer on the answer book during this period.

CLASS – IX

SUB : MATHEMATICS

*Time : 3 Hours**Maximum Marks : 80***General Instructions :**

- All questions are compulsory.
- There are 4 sections. Section A carries 6 questions of 1 mark each.
- Section B carries 6 questions of 2 marks each.
- Section C carries 10 questions of 3 marks each.
- Section D carries 8 questions of 4 marks each.

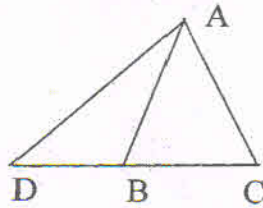
Section: A**(1 X 6 = 6)**

1. How many planes can be made to pass through two distinct points?
2. Find the area of the triangle formed by joining the points (0,0), (2,0) & (0,-1).
3. In two triangles ABC & DEF, it is given that $\angle A = \angle D$, $AC = DF$ & $BC = EF$.
Check whether the given triangles are congruent or not.
4. Find the area of an equilateral triangle whose measure of its side is 4cm.
5. Insert an irrational number between $\frac{1}{2}$ and $\frac{3}{5}$.
6. Find the remainder when $x^4 + x^3 - 2x^2 + x + 1$ is divided by $(x - 1)$.

Section: B

(2 X 6 = 12)

7. If $a + b + c = 9$, $ab + bc + ca = 26$, find $a^2 + b^2 + c^2$.
8. In the given figure, $AB = AC$ & D is any point on CB produced. Show that $AD > AB$.



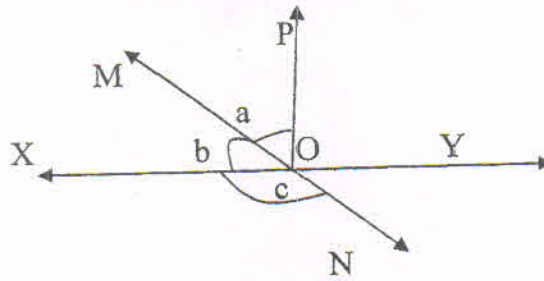
9. Diagonal AC of a quadrilateral $ABCD$ bisects the angles A and C . Prove that $AB = AD$.
10. Plot the points $A(1,0)$, $B(4,0)$ & $C(1,3)$. Find the coordinate of point D such that $ABCD$ is a square.
11. Find the distance of the point $P(3,4)$ from the origin.
12. If a point C lies between two points A and B on AB such that $AC = BC$, use Euclid's Axiom to prove that $AC = \frac{1}{2}AB$

Section: C

(3 X 10 = 30)

13. Factorise $x^3 - 2x^2 - x + 2$ by using factor theorem.
14. In a rectangular field of dimension $50\text{m} \times 30\text{m}$, a triangular park is constructed. If the dimensions of the park are 14m , 15m & 13m , find the area of the remaining field.
15. The side BC of $\triangle ABC$ is produced to D . The bisector of $\angle A$ meets BC in L . Prove that $\angle ABC + \angle ACD = 2\angle ALC$
16. Find the coordinate of the point
- Which lies on both the axes?
 - Whose abscissa is -4 and lies on X -axis?
 - Which is 5 units far from X -axis & 2 units far from Y -axis and lies on 1^{st} quadrant?
17. Plot the points $A(4,0)$ & $B(0,4)$. Join A , B to origin O . Find the area of triangle OAB .
18. Find the area of an equilateral triangle of each side ' $3a$ ' units by using Heron's Formula.
19. Prove that sum of any two sides of a triangle is greater than twice the median with respect to the third side.

20. Line XY and MN intersect at O. If $m\angle POY = 90^\circ$ & $a:b=2:3$. Find the measure of c.

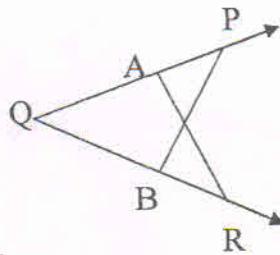


21. In ΔPQR , S is any point on the side QR. Show that $PQ+QR+RP > 2PS$.
 22. Two sides AB, BC & median AM of ΔABC are respectively equal to sides PQ, QR & median PN of ΔPQR . Show that $\Delta ABC \cong \Delta PQR$.

Section: D

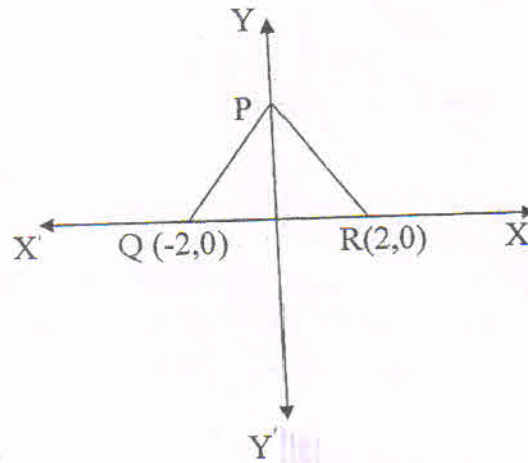
(4 X 8 = 32)

23. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$, $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find $x^2 + y^2$
 24. ABCD is a field in the form of a quadrilateral whose sides $AB=40m$, $BC=15m$, $CD=28m$, $DA=9m$, $m\angle DAB=90^\circ$. Find the area of the field.
 25. A field is in the shape of a trapezium, its parallel sides are 25m & 10m and the non-parallel sides are 14m & 13m. Find the area of the field.
 26. In the given figure, $PQ=QR$, & $\angle PAR = \angle RBP$. Prove that $AR = PB$.



27. BE and CF are two equal altitudes of a ΔABC . Using RHS congruence rule, prove that the triangle is isosceles.
 28. For spreading the message "Save Environment, Save Future", a rally was organised by some students of a school. They were given triangular cardboard pieces ABC which they divide into 2 parts by drawing the angle bisectors BO & CO of base angle B and C. Prove that $\angle BOC = 90^\circ + \frac{1}{2} \angle A$. What is the benefits of these types of rallies?

29. In the given figure, PQR is an equilateral triangle with coordinates Q & R as $(-2,0)$ & $(2,0)$ respectively. Find the coordinate of the vertex of point P.



30. The sides AB, AC of a ΔABC are equal and 'P' is any point within the triangle on the bisector of $\angle BAC$. BP produced meets AC in 'Q'. Prove that $BP > PQ$.

