# INDIAN SCHOOL DARSAIT
## MID TERM EXAMINATION, SEPTEMBER 2017
## SAMPLE QUESTION PAPER (Set-1)
## MATHEMATICS

Class : IX | Max Marks :80
Time : 3 hrs

***General Instructions:***

*(i)* *All questions are compulsory.*

*(ii)* *The question paper consists of 30 questions divided into four sections A, B, C, and D. Section A comprises of 6 questions of 1 mark each, section B comprises of 6 questions of 2 mark each, section C comprises of 10 questions of 3 mark each , section D comprises of 8 questions of 4 mark each.*

*(iii)* *Use of calculator is not permitted.*

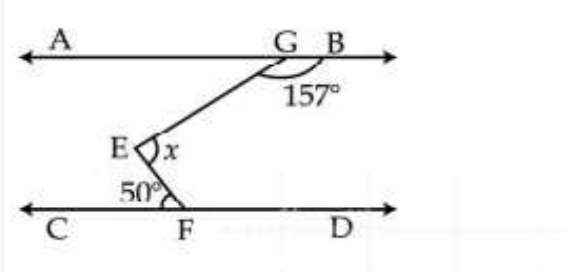
## SECTION - A

Question numbers 1 to 6 carry one mark each.

1. If $\sqrt{2}$ = 1.414, then find the value of $\frac{1}{1-\sqrt{2}}$. 1

2. Factorise: $125x^3 - y^3$. 1

3. In given figure AB II CD, find the value of x. 1




4. What do we call a triangle if the angles are in the ratio 5 : 3 : 7? 1

5. Write the distance of point R (2, 5) from x-axis. 1

6. If(3,2) is a solution of the equation 3x-Ky = 5, then find the value of K. 1

## SECTION – B

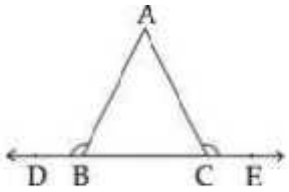
Question numbers 7 to 12 carry 2 marks each.

7. Simplify : $\sqrt[4]{16} - 6\sqrt[3]{343} + 18 \text{ X } \sqrt[5]{243} - \sqrt{196}$ 2

8. If 3x + 2y = 12 and xy = 6, then find $27x^3 + 8y^3$ . 2

9. Two line segments AB and CD intersect each other at O such that AO = OB and CO = OD. Prove that AC= BD. 2

10. In the figure, if $\angle ABD = \angle ACE$, then prove that AB = AC. 2




11. Find the co – ordinates of the vertices of the square ABCD (Side =a), taking AB and AD as axes . 2

12. Find the points on the graph of the linear equation 3x +5y = 15 , where it cuts the x-axis and y-axis. 2

## SECTION – C

Question numbers 13 to 22 carry 3 marks each.

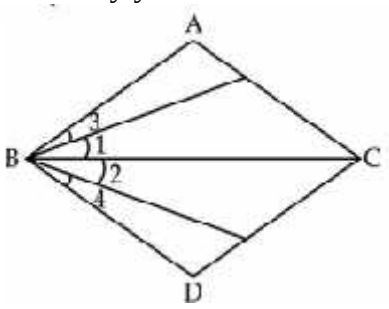
13. Find the values of a and b if $\frac{5+\sqrt{6}}{5-\sqrt{6}} = a + b\sqrt{6}$ 3

14. Simplify : $27^{\frac{1}{3}}\left[27^{\frac{1}{3}} - 27^{\frac{2}{3}}\right]$. 3

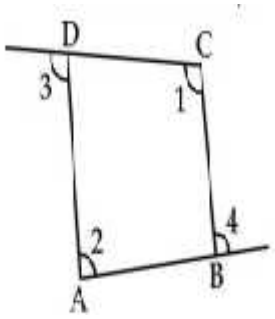
15. If $a^2+b^2+c^2=280$, and $ab+bc+ca=\frac{9}{2}$, then find the value of $(a+b+c)^3$. 3

16. If the polynomials ($px^3 +4x^2 +3x -4$) and ($x^3 - 4x +p$ )are divided by (x-3), then the remainder in each case is the same. Find the value of p. 3

17. In the given figure we have $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$. Show that $\angle ABC = \angle DBC$. State the Euclid's axiom used by you. 3




18. In the given figure $\angle 3$ and $\angle 4$ are exterior angles of Quadrilateral ABCD at point B and D. and $\angle A = \angle 2$ , $\angle C = \angle 1$. Prove that $\angle 3 + \angle 4 = \angle 1 + \angle 2$ 3




19. The degree measure of three angles of a triangle are x, y, and z. If z = $\frac{x+y}{2}$, then find the value of z. 3

20. Prove that the sum of three angles of a triangle is $180^0$. 3

21. Find three different solutions for the equation 3x -8y = 27. 3

22. Plot the points A(4,0) and B(0,4). Join AB to the origin O. Find the area of Δ AOB. 3

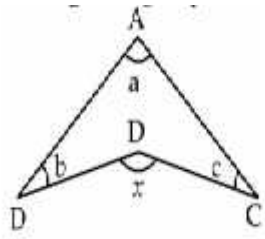
## SECTION – D

Question numbers 23 to 30 carry 4 marks each.

23. Varun was facing some difficulty in simplifying $\frac{1}{\sqrt{7}-\sqrt{3}}$ . His classmate Priya gave him a clue to rationalise the denominator for simplification. Varun simplified the expression and thanked Priya for this goodwill. How Varun simplified $\frac{1}{\sqrt{7}-\sqrt{3}}$ ? What value does it indicate ? 4

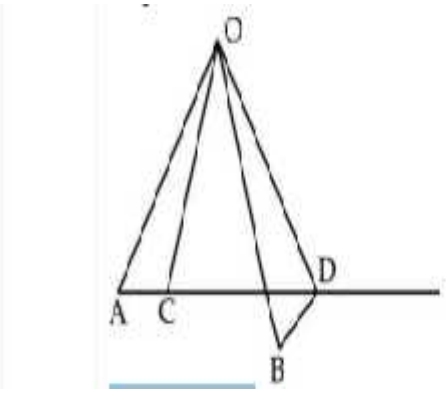
24. If a + b + c = 0, then prove that $\frac{(b+c)^2}{3b} + \frac{(c+a)^2}{3a} + \frac{(a+b)^2}{3a} = 1$. 4

25. In the given figure prove that x = a + b + c 4

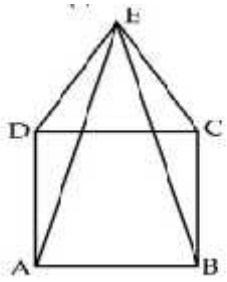



26. If two parallel lines are intersected by a transversal, prove that the bisectors of two pairs of interior angles enclose a rectangle. 4

27. In the figure OA = OB, OC= OD, and $\angle AOB = \angle COD$. Prove that AC = BD 4




28. In the given figure ABCD is a square. Δ DEC is an equilateral triangle. Prove that 4
(i) Δ ADE ≅ Δ BCE (ii) AE = BE




29. Three vertices of a rectangle ABCD are A(1,3), B(1,-1) and C(-1, -1). Plot these points on a graph paper and hence use it to find the coordinates of the 4th vertex D. Also find the area of the rectangle. 4

30. Let cost of a pen and a pencil be 'x' and 'y' respectively. A girl pays Rs 16 for 2 Pens and 3 Pencils. Write the given data in the form of a linear equation in two variables. Also represent it graphically. 4