KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION

SAMPLE PAPER 01 FOR PERIODIC TEST III EXAM (2017-18)

SUBJECT: MATHEMATICS(041)

BLUE PRINT : CLASS IX

Unit	Chapter	VSA (1 mark)	SA – I (2 marks)	SA – II (3 marks)	LA (4 marks)	Total	Unit Total
Number system	**Number Systems**	1(1)	2(1)	**3(1)***	4(1)	**10(4)**	**10(4)**
Algebra	**Polynomials**	1(1)	2(1)	3(1)	**4(1)***	**10(4)**	**18(7)**
	Linear Equations in two variables	1(1)	--	3(1)	4(1)	**8(3)**	
Coordinate Geometry	**Coordinate Geometry**	--	--	--	4(1)	**4(1)**	**4(1)**
Geometry	**Introduction to Euclid's Geometry**	--	--	3(1)	--	**3(1)**	**32(11)**
	Lines and Angles	--	--	**3(1)***	--	**3(1)**	
	Triangles	--	--	**3(1)***	--	**3(1)**	
	Quadrilaterals	--	2(1)	--	4(1)	**6(2)**	
	Area of Parallelograms and triangles	--	2(1)	**3(1)***	--	**5(2)**	
	Circles	1(1)	--	3(1)	**4(1)***	**8(3)**	
	Constructions	--	--	--	4(1)	**4(1)**	
Mensuration	**Heron's Formula**	1(1)	2(1)	3(1)	--	**6(3)**	**16(7)**
	Surface Areas and Volumes	1(1)	2(1)	3(1)	**4(1)***	**10(4)**	
	Total	**6(6)**	**12(6)**	**30(10)**	**32(8)**	**80(30)**	**80(30)**

Note: * - Internal Choice Questions

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION

SAMPLE PAPER 01 FOR PERIODIC TEST III EXAM (2017-18)

SUBJECT: MATHEMATICS **MAX. MARKS : 80**

CLASS : IX **DURATION : 3 HRS**

General Instruction:

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

(ii) This question paper contains **30** questions divided into four Sections A, B, C and D.

(iii) **Section A** comprises of 6 questions of **1 mark** each. **Section B** comprises of 6 questions of **2 marks** each. **Section C** comprises of 10 questions of **3 marks** each and **Section D** comprises of 8 questions of **4 marks** each.

(iv) There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.

(v) Use of Calculators is not permitted

SECTION – A

Questions 1 to 6 carry 1 mark each.

1. Find the total surface area of a hemisphere of radius 10 cm. (Use $\pi = 3.14$)

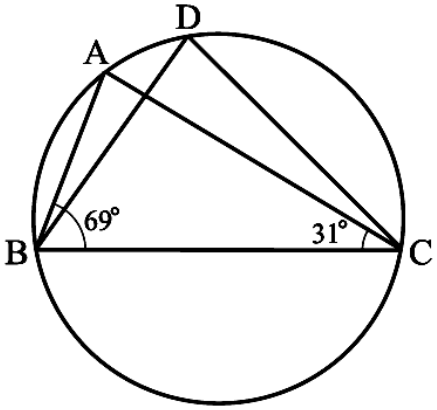
2. If the point (3, 4) lies on the graph of the equation $3y = ax + 7$, find the value of a.

3. Simplify: $\dfrac{\sqrt{32}+\sqrt{48}}{\sqrt{8}+\sqrt{12}}$

4. If its perimeter of an equilateral triangle is 180 cm, what will be its area?

5. For what value of m is $x^3 - 2mx^2 + 16$ divisible by $x + 2$?

6. In the below figure, $\angle ABC = 69°$, $\angle ACB = 31°$, find $\angle BDC$.



SECTION – B

Questions 6 to 12 carry 2 marks each.

7. A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?

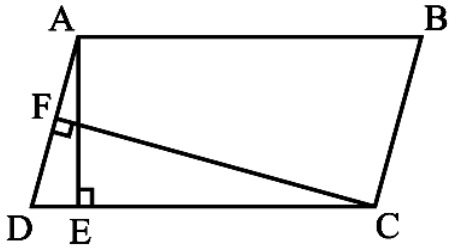
8. Show that 1.272727… can be expressed in the form of $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.

9. Find the value of $x^3 + y^3 + 15xy - 125$ if $x + y = 5$.

10. The angles of quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.

11. Find the area of a triangle two sides of which are 18cm and 10cm and the perimeter is 42cm.

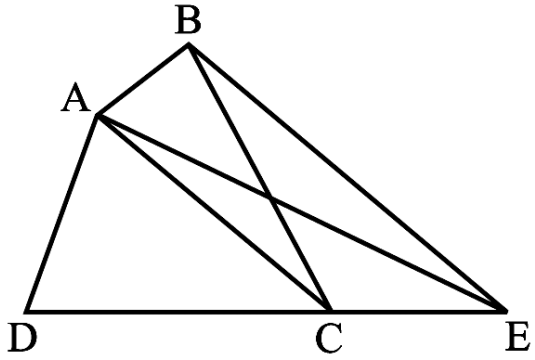
12. In the below figure, ABCD is a parallelogram, AE $\perp$ DC and CF $\perp$ AD. If AB = 16 cm, AE = 8 cm and CF = 10 cm, find AD.



SECTION – C

Questions 13 to 22 carry 3 marks each.

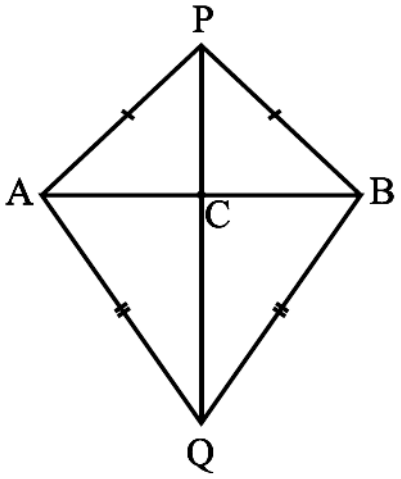
13. In the below figure, ABCD is a quadrilateral and BE || AC and also BE meets DC produced at E. Show that area of Δ ADE is equal to the area of the quadrilateral ABCD.

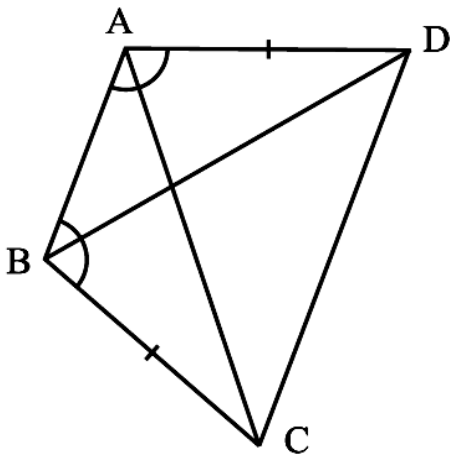


OR

Show that a median of a triangle divides it into two triangles of equal areas.

14. AB is a line-segment. P and Q are points on opposite sides of AB such that each of them is equidistant from the points A and B (see below left figure). Show that the line PQ is the perpendicular bisector of AB.





OR

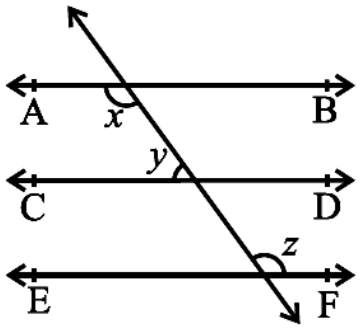
ABCD is a quadrilateral in which AD = BC and $\angle$DAB = $\angle$CBA (see the above right sided figure). Prove that (i) Δ ABD $\cong$ Δ BAC (ii) BD = AC (iii) $\angle$ABD = $\angle$BAC.

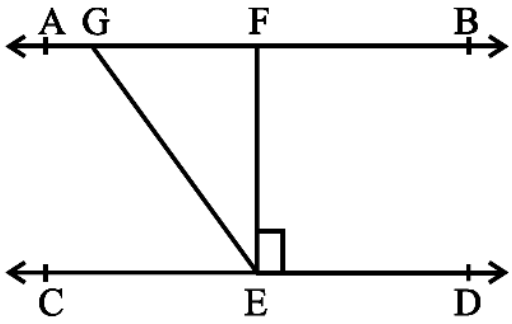
15. A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7 cm. If the bowl is filled with soup to a height of 4 cm, how much soup the hospital has to prepare daily to serve 250 patients?

16. Factorise $x^3 - 23x^2 + 142x - 120$.

17. A floral design on a floor is made up of 16 tiles which are triangular, the sides of the triangle being 9 cm, 28 cm and 35 cm. Find the cost of polishing the tiles at the rate of 50p per cm^2.

18. In the below left figure, if AB || CD, CD || EF and y : z = 3 : 7, find x.





OR

In the above right sided figure, if AB || CD, EF $\perp$ CD and GED = 126°, find $\angle$AGE, $\angle$GEF and $\angle$FGE.

19. 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.

20. Solve the equation 2x + 1 = x – 3, and represent the solution(s) on (i) the number line, (ii) the Cartesian plane.

21. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.

22. Find the value of a and b in $\frac{5+2\sqrt{3}}{7+4\sqrt{3}} = a + b\sqrt{3}$

OR

Simplify $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}} + \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ by rationalizing the denominator.

SECTION – D

Questions 23 to 30 carry 4 marks each.

23. Prove that "The sum of either pair of opposite angles of a cyclic quadrilateral is 180º."

OR

Prove that "The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle."

24. A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the (i) inside surface area of the dome, (ii) volume of the air inside the dome.

OR

Monica has a piece of canvas whose area is 551 m^2. She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2, find the volume of the tent that can be made with it.

25. Construct a triangle XYZ in which $\angle Y = 30°$, $\angle Z = 90°$ and XY + YZ + ZX = 11 cm.

26. Find the value of $\frac{4}{(216)^{\frac{-2}{3}}} + \frac{1}{(256)^{\frac{-3}{4}}} + \frac{2}{(243)^{\frac{-1}{5}}}$

27. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.

28. Plot the points A (4, 4) and (–4, 4) on a graph sheet. Join the lines OA, OB and BA. What figure do you obtain.

29. The taxi fare in a city is as follows: For the first kilometre, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

30. If $x^3 + ax^2 + bx + 6$ has (x – 2) as a factor and leaves a remainder 3 when divided by (x – 3), find the values of a and b.

OR

Without actual division, prove that $2x^4 – 6x^3 + 3x^2 + 3x – 2$ is exactly divisible by $x^2 – 3x + 2$.