

KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION
SAMPLE PAPER 03 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

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MAX. MARKS : 80
DURATION : 3 HRS

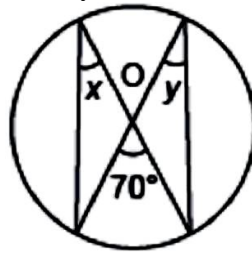
General Instruction:

- (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. Simplify: $\sqrt{72} + \sqrt{800} - \sqrt{18}$
2. Find the value of the polynomial $p(y) = y^2 - 5y + 6$ at (i) $y = 2$ (ii) $y = -2$
3. A rabbit covers y metres distance by walking 10 metres in slow motion and the remaining by x jumps, each jump contains 2 metres. Express this information in linear equation.
4. In the given figure, find the value of x and y where O is the centre of the circle.



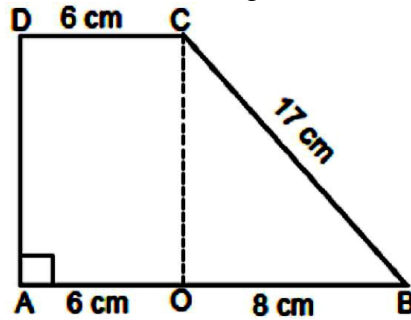
5. Find the area of an equilateral triangle with side $2\sqrt{3}$ cm.
6. Find the height of cone, if its slant height is 34 cm and base diameter is 32 cm.

SECTION – B

Questions 6 to 12 carry 2 marks each.

7. Simplify $\frac{6-4\sqrt{3}}{6+4\sqrt{3}}$ by rationalising the denominator.
8. Using suitable identity, evaluate $(-32)^3 + (18)^3 + (14)^3$
9. If angles A, B, C and D of the quadrilateral ABCD, taken in order, are in the ratio 3 : 7 : 6 : 4, then name the type of quadrilateral ABCD.
10. Diagonals AC and BD of a quadrilateral ABCD intersect each other at P. Show that $\text{ar}(\text{APB}) \times \text{ar}(\text{CPD}) = \text{ar}(\text{APD}) \times \text{ar}(\text{BPC})$

11. Calculate the area of trapezium as shown in the figure:



12. How many square metres of canvas is required for a conical tent whose height is 3.5 m and the radius of whose base is 12 m?

SECTION – C

Questions 13 to 22 carry 3 marks each.

13. Find the value of a and b, if $\frac{2-\sqrt{5}}{2+3\sqrt{5}} = a\sqrt{5} + b$

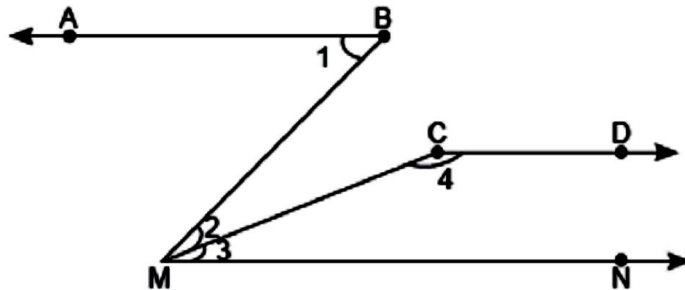
OR

Write the value of $\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$

14. If $2x + 3y = 12$ and $xy = 6$, find the value of $8x^3 + 27y^3$.

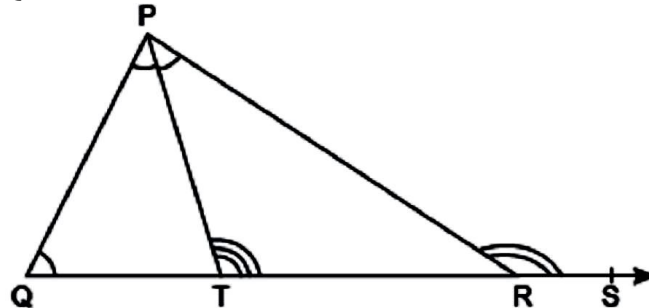
15. Draw the graph of the linear equation $x + 2y = 8$ and find the point on the graph where abscissa is twice the value of ordinate.

16. In the given figure, $\angle 1 = 55^\circ$, $\angle 2 = 20^\circ$, $\angle 3 = 35^\circ$ and $\angle 4 = 145^\circ$. Prove that $AB \parallel CD$.



OR

Side QR of $\triangle PQR$ is produced to a point S as shown in the figure. The bisector of P meets QR at T. Prove that $\angle PQR + \angle PRS = 2 \angle PTR$.

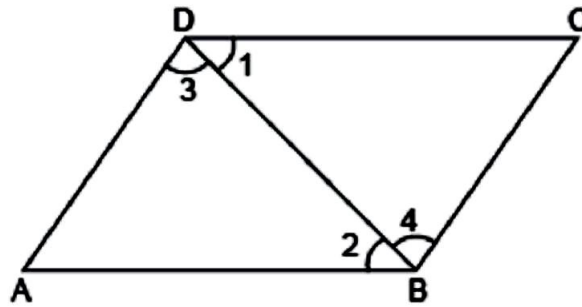


17. If the altitude drawn from the vertices of ABC to the opposite sides are equal, prove that the triangle is equilateral.

OR

Prove that the sum of any two sides of a triangle is greater than the third side.

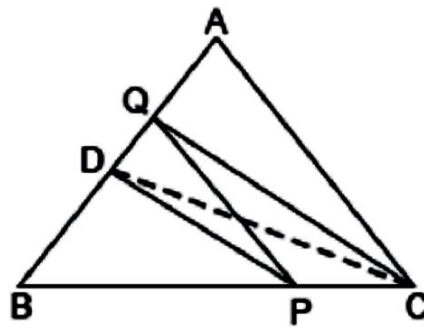
18. In the given figure, it is given that $\angle 1 = \angle 4$ and $\angle 3 = \angle 2$. By which Euclid's axiom, it can be shown that if $\angle 2 = \angle 4$, then $\angle 1 = \angle 3$.



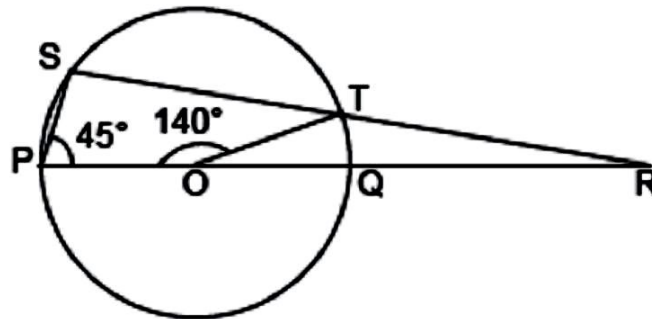
19. ABCD is a parallelogram. E is a point on BA such that $BE = 2EA$ and F is a point on DC such that $DF = 2FC$. Prove that AECF is a parallelogram whose area is one-third of the area of parallelogram ABCD.

OR

In $\triangle ABC$, D is the mid-point of AB and P is any point on BC. If $CQ \parallel PD$ meets AB in Q in the given figure, then prove that $\text{ar}(\triangle BPQ) = \text{ar}(\triangle ABC)$



20. If O is centre of circle as shown in figure, find $\angle RQT$ and $\angle RTQ$



21. The sides of a triangle are in the ratio $13 : 14 : 15$ and its perimeter is 84 cm. Find the area of the triangle.
22. It costs 2,200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of 20 per m^2 , find the radius of the base.

SECTION – D

Questions 23 to 30 carry 4 marks each.

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

24. Plot the points $A(0, 3)$, $B(5, 3)$, $C(4, 0)$ and $D(-1, 0)$ on the graph paper. Identify the figure ABCD and find whether the point $E(2, 2)$ lies inside the figure or not?

25. If $a + b + c = 0$, then prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ca} + \frac{(a+b)^2}{3ab} = 1$

OR

Find the value of m and n so that the polynomial $f(x) = x^3 - 6x^2 + mx - n$ is exactly divisible by $(x - 1)$ as well as $(x - 2)$.

26. In a class, number of girls is x and that of boys is y . Also, the number of girls is 10 more than the number of boys. Write the given data in the form of a linear equation in two variables. Also, represent it graphically. Find graphically the number of girls, if the number of boys is 20.

27. Show that the quadrilateral formed by joining the mid-points of the sides of a square, is also a square.

28. 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.

OR

Prove that the quadrilateral formed (if possible) by the internal angle bisectors of any quadrilateral is cyclic.

29. Construct a triangle PQR, such that sum of its all sides is 10.4 cm, $B = 60^\circ$ and $C = 40^\circ$.

30. A wall 6 m long, 5 m high and 0.5 m thick is to be constructed with bricks, each having length 25 cm, breadth 12.5 cm and height 7.5 cm. Find the number of bricks required to construct the wall, if it is given that cement and sand mixture occupy of the volume of the wall.

OR

A lead pencil consists of a cylinder of wood with solid cylinder of graphite filled into it. The diameter of the pencil is 7 mm, the diameter of the graphite is 1 mm and the length of the pencil is 10 cm. Calculate the weight of the whole pencil, if the specific gravity of the wood is 0.7 g/cm^3 and that of the graphite is 2.1 g/cm^3 .

