SAMPLE PAPER – 2009
CLASS – IX
SUBJECT – MATHEMATICS

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 contains 10 questions of 1 mark each, Section B contains 5 Questions of 2 marks each, Section C contains 10 questions of 3 marks each and section D contains 5 questions of 6 marks each.

(iii) There is no overall choice. However, an internal choice has been Provided in one question of two marks each, three questions of three marks each and two questions of six marks each.

(iv) Use of calculator is not permitted.

SECTION A (10 x 1 = 10 marks)

1) Express 1.324 in the form p/q.

2) The angles of a quadrilateral are in the ratio 2 : 4 : 5 : 7. Find all the angles.

3) Find the remainder when $4x^3 - 3x^2 + 2x - 4$ is divided by $x+1/2$

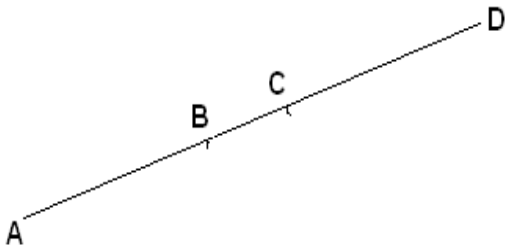
4) Factorize: $5x^2+16x+3$

5) Is (2,1) a solution of $2x+5y=9$? Why?

6) Plot the following points on a graph paper (2, 4), (-5, 3) (-1, -3), (2, 0), (0, 4), (5, -1) (4, 7) (-7, -6)

7) The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2.Find the diameter of the base of the cylinder.

8) In the given figure, if AC = BD, then prove that AB = CD.



9) Find the arithmetic mean of first 10 natural numbers.

10) Two coins are tossed simultaneously. Find the probability of getting one or more tail.

SECTION – B (5 x 2 = 10 marks)

11) Factorise: x^3-3x^2-9x-5 by using remainder theorem.

12) In a parallelogram if a diagonal bisects one angle prove that it also bisects the opposite angle.

13) Prove that the sum of the angles of a triangle is 180^0.

OR

Prove that if a side of a triangle is produced, then the exterior angle so formed is equal to the sum of the two interior opposite angles.

14) A toy is in the form of a cone of radius 3.5cm mounted on a hemisphere of same radius. The total height of the toy is 15.5cm. Find the total surface area of the toy.

15) A metallic sphere of radius 10.5 cm is melted and then recast into smaller cones, each of radius 3.5cm and height 3cm. How many cones are obtained?

SECTION – C (10 x 3= 30 marks)

16) Simplify: (a) $(x + y + z)^2 + (x + y- z)^2$ (b) $(2x+ 3p)^3 + (2x - 3p)^3$

OR

Factorise each of the following:

(i) $8a^3 + b^3 + 12a^2 b + 6ab^2$ (ii) $8a^3 - b^3 - 12a^2 b + 6ab^2$

17) How many spherical bullets can be made out of a solid lead whose edge measures 44cm each and bullet being 4cm diameter.

(18) A solid composed of a cylinder with hemi spherical ends.The whole height of the solid is 19cm and the radius of the cylinder is 3.5cm.Find the weight of the solid if $1cm^3$ of the metal weighs 4.5g.

19) Three unbiased coins are tossed. What is the probability of getting a) two heads b) at least two heads c) at most two heads d) one head or 2 heads.

20) Find the median.

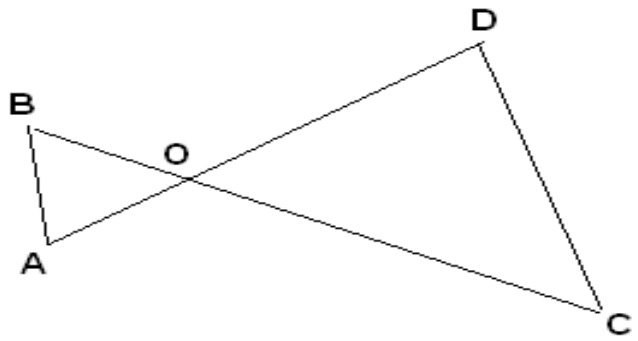
C.I.	10-20	20-30	30-40	40-50	50-60

MARKS	5	6	4	2	3

21) Show that in a right angle triangle hypotenuse is the largest side.

OR

In the given figure, $\angle B < \angle A$ and $\angle C < \angle D$. Show that AD < BC.



22) Prove that the figure formed by joining the midpoints of the sides of a quadrilateral is a parallelogram.

OR

BE and CF are two equal altitudes of a triangle ABC. Using RHS congruence rule, prove that the triangle ABC is isosceles.

23) Find the mean by using short cut method.

Class	0-30	30-40	40-50	50-60	60-70	70-100
frequency	10	15	30	32	8	5

(24) A triangle and a parallelogram have the same base and the same area. If the sides of the triangle are 26cm,28cm,30cm and the parallelogram stands on the base 28cm find the height of the parallelogram.

25) A park, in the shape of a quadrilateral ABCD,has$\angle C=90^0$, AB = 9 m, BC = 12 m, CD = 5 m and AD = 8 m. How much area does it occupy?

SECTION – D (5 x 6 = 30 marks)

26) Draw a histogram and frequency polygon of the following.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No: of students	3	5	8	10	7	2

27) A right triangle ABC with sides 5cm,12cm,13cm is revolved about The side 12cm.Find the volume of the solid so obtained .If the triangle is revolved about side 5cm find volume of the solid so obtained. Also find the ratio of both the volumes.

OR

A hemispherical bowl of internal radius 9cm contains a liquid. The liquid is to be filled in to cylindrical shaped small bottles of diameter 3 cm and height 4 cm. how many bottles arte required to empty the bowl?

28) Draw the graph of 2x+5y=13.Find the points where the line meets the X-axis and Y-axis.

29) Prove that the parallelograms on the same base and between the same parallel lines are equal in area.

OR

Show that the line segments joining the mid – points of two sides of a triangle is parallel to the third side and half of it.

30) Find the value of P if the mean of the following distribution is 20.

x	15	17	19	20+P	23
f	2	3	4	5P	6