

# CLASS IX GUESS PAPER MATHEMATICS

**Time: 3 hours**

**Max.Marks:80**

**General Instructions :**

1. All questions are compulsory.
2. The question paper consists of 20 questions divided into three sections A, B and C.
3. Section A contains 8 questions of 3 marks each, Section B is of 8 questions of 4 marks each and Section C is of 4 questions of 6 marks each.
4. There is no overall choice. However, internal choice has been provided in two questions of three marks each, two questions of four marks each and one question of six marks.
5. In question on construction, the drawing should be neat and exactly as per the given measurements.

**SECTION A**

1. If  $x = 2 + \sqrt{3}$ , find the value of  $x - \frac{1}{x}$
2. Find the value of K if  $x^3 + 6x^2 + 4x + K$  is exactly divisible by  $x+2$
3. Represent  $\sqrt{8}$  on the number line

**OR**

Express  $0.\overline{134}$  as a rational number.

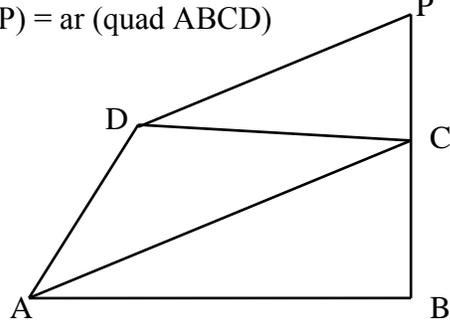
4. Two coins are tossed simultaneously. The outcomes of getting tails are recorded.

Number of tails	0	1	2
Outcomes	22	16	12

Calculate the probability of getting (a) exactly 1 tail (b) no tail (c) at least 1 tail

5. Find the value of a and b such that the following equations may have (3, -2) as a solution  
 $5x + ay = 8$ ;  $7x + by = 4b$

6. ABCD is a quadrilateral. A line through D parallel to AC meets BC produced in P. Prove that  $\text{ar}(\triangle ABP) = \text{ar}(\text{quad ABCD})$



7. Locate the following points on the Cartesian plane  
 (i) (3,-4)      (ii) (2,1)      (iii) (1,0)      (iv) (-2,-4)
8. Determine the median of 24, 23, a, a-1, 12, 16 where a is the mean of 10, 20, 30, 40 and 50

**OR**

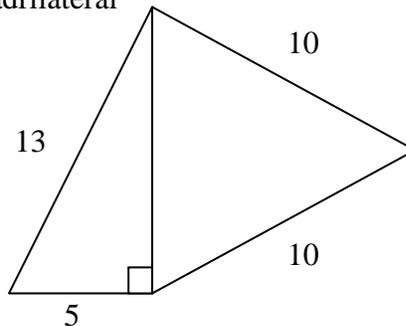
The average score of boys in an exam of a school is 71 and that of girls is 73. If the average score of the whole school is 71.8, find the ratio of number of boys to that of girls who appeared for the examination

**SECTION B**

9. Draw the graph of the equation  $2x + y = 4$ . From the graph, find the value of y when  $x = 2$
10. If V be the volume and S be the surface area of a cuboid of dimensions a,b and c,

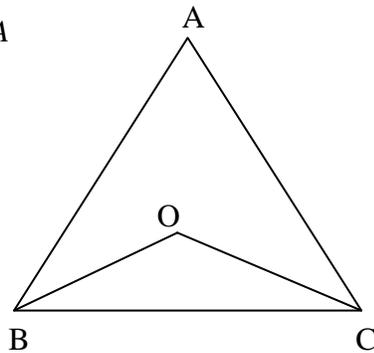
prove that 
$$\frac{1}{V} = \frac{2}{S} \left( \frac{1}{a} + \frac{1}{b} + \frac{1}{c} \right)$$

11. Find the area of the following quadrilateral



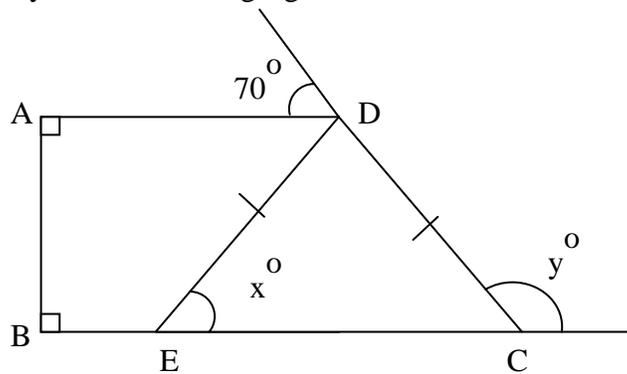
12. In the following figure, BO and CO are bisectors of  $\angle ABC$  and  $\angle ACB$  respectively.

Prove that  $\angle BOC = 90 + \frac{1}{2}\angle A$

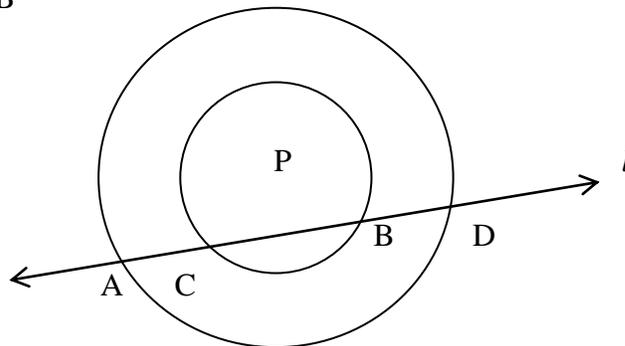


**OR**

Find the values of  $x$  and  $y$  in the following figure:



13. In the figure,  $l$  is a line which intersects two concentric circles with centre P at points A, C, D and B, Prove that  $AC = DB$

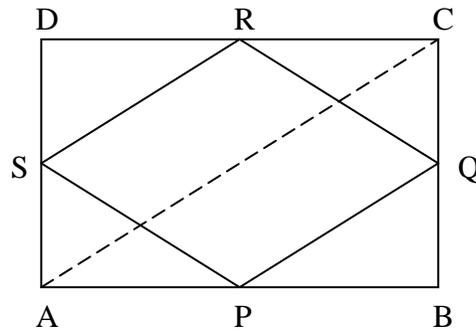


14. If  $(x^2-1)$  is a factor of  $ax^4 + bx^3 + cx^2 + dx + e$ , show that  $a + c + e = b + d = 0$

**OR**

If  $x+a$  is a factor of  $x^2 + px + q$  and  $x^2 + mx + n$ , show that  $a = \frac{n-q}{m-p}$

15. Prove that the figure formed by joining the mid points of the pairs of consecutive sides of a rectangle is a rhombus



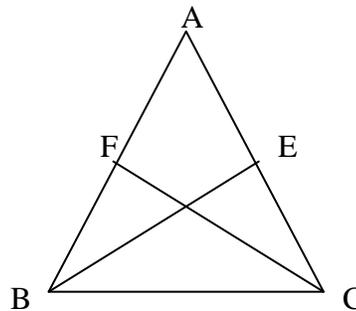
16. Construct a triangle with base of length 5cm, sum of two sides 7.7cm and one of the angles of the base as  $60^\circ$ .

### SECTION C

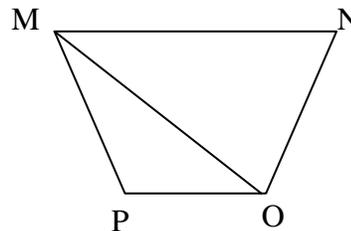
17. Factorize the following expressions:

(a)  $27x^3 + y^3 + z^3 - 9xyz$   
 (b)  $x^3 - 5x^2 - 5x - 6$

18. (a) In the following figure,  $AB = AC$ ,  $BE$  and  $CF$  are bisectors of  $\angle B$  and  $\angle C$ . Prove that  $\triangle EBC \cong \triangle FCB$



- (b) In the adjoining figure, prove that  
 (i)  $MN + NO + OP + PM > 2 MO$   
 (ii)  $M + NO + OP > PM$



19. A tent of height 77dm is in the form of a right circular cylinder of diameter 36m and height 44dm surmounted by a right circular cone. Find the cost of canvas required at Rs.3.50 per  $m^2$ .

**OR**

A solid wooden toy is in the shape of a right circular cone surmounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm, find the volume of the wooden toy.

20. Draw a histogram and a frequency polygon to represent the following data which shows the monthly cost of living index of a city in a period of 2 years.

Cost of living index	No.of months
440-450	2
460-470	4
480-490	3
500-510	5
520-503	3
540-550	2
560-570	1
580-590	4

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