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**Sample Question Paper 05**  
**Class -IX Mathematics**  
**Summative Assessment – II**

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**Time: 3 Hours**

**Max. Marks: 90**

**General Instructions:**

- (i) All questions are compulsory.
  - (ii) The question paper consists of **31** question divided into five **section A, B, C, D and E**. Section-A comprises of **4** question of **1 mark** each, **Section-B** comprises of **6** question of **2 marks** each, **Section-C** comprises of **8** question of **3 marks** each and **Section-D** comprises of **10** questions of **4 marks** each. **Section E** comprises of **two questions of 3 marks each** and **1 question of 4 marks from Open Text theme**.
  - (iii) There is no overall choice.
  - (iv) Use of calculator is not permitted.
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**SECTION-A**

Question number **1** to **4** carry **one** mark each.

1. If the radius of a sphere is double what will happen to its surface area?
2. If the class marks in frequency distribution are 19.5, 26.5, 33.5, 40.5, then find the class corresponding to the class mark 33.5.
3. There are 500 tickets of a lottery out of which 10 are prize winning tickets. A person buys one ticket. Find the probability that he gets a prize winning ticket.
4. PQRS is a square. PR and SQ intersect at O. State the measure of  $\angle POQ$ .

**SECTION-B**

Question number **5** to **10** carry **two** marks each.

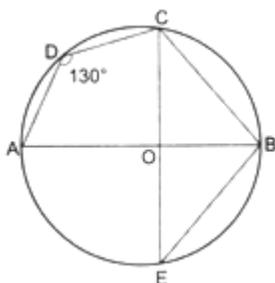
5. Solve for x:  $5(4x + 3) = 3(x - 2)$
6. How many solution(s) of the equation  $3x + 2 = 2x - 3$  are there on the:
  - (i) Number line?
  - (ii) Cartesian plane?
7. Prove that cyclic parallelogram is a rectangle.
8. D, E, F are respectively the mid-points of the sides BC, CA and AB of  $\triangle ABC$  Prove that 
$$(\triangle DEF) = \frac{1}{4} ar(\triangle ABC)$$
9. Let y varies directly as x. If  $y = 12$  when  $x = 4$ , then write a linear equation. What is the value of y when  $x = 5$ ?

10. If the mean of 5 observation  $x, x + 4, x + 8, x + 12, x + 16$  is 13, find the mean of the observations?

### SECTION-C

Question numbers **11** to **18** carry **three** marks each.

11. In the liner equation  $y = 4x + 12$ , if  $x$  is the number of hours a labourer is on work and  $y = 4x + 13$ , if  $x$  is the number of hours a labourer is on work and  $y$  are his wages in rupees then draw the graph. Also find the wages when work is done for 6 hrs.
12. Find the solution of the linear equation  $x + 2y = 8$  which represents a point on
- the  $x$  - axis
  - the  $y$  - axis
  - the line parallel to  $x$  - axis and at a distance of 3 units above it
13. In given figure,  $\angle ADC = 130^\circ$  and chord  $BC =$  chord  $BE$ . Find  $\angle CBE$ .



14. A field is 70 m long and 40 m broad. In the corner of the field, a pit which is 10 m long, 8 m broad and 5 m deep, has been dug out. The earth taken out of it is evenly spread over the remaining part of the field. Find the rise in the level of the field.
15. A conical tent is 10m high and the radius of its base is 24 m. Find
- slant height of the tent, and
  - cost of the canvas required to make the tent, if the cost of  $1 \text{ m}^2$  canvas is Rs **70**.
16. The volume of two spheres are in the ratio 64: 27. Find the ratio of their surface areas.
17. The means of 100 items was found to be 300. If at the time of calculation two items were wrongly taken as 32 and 12 instead of 23 and 11, find the correct mean.
18. A tyre manufacturing company kept a record of the distance covered before a tyre needed to be replaced. The table shows the result of 1000 cases.

Distance	Less than 4,000	4,000 to 9,000	9,001 to 14,000	More than 14,00
Frequency	20	210	325	445

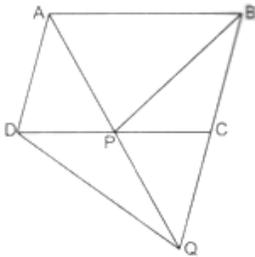
If someone buys a tyre of this company, what is the probability that:

- it will need to be replaced before it has covered 4000 km?
- it will last more than 9000 km?
- it will need to be replaced after it has covered somewhere between 4000 km and 14000 km?

### SECTION-D

Question numbers **19** to **28** carry **four** marks each.

19. Construct an equilateral triangle, given its side and justify the construction.
20. Construct an angle of  $45^\circ$  at the initial point of a given ray.
21.  $OP \perp AB$ ,  $OQ \perp CD$ ,  $AB \parallel CD$ .  $AB=6\text{cm}$  and  $CD = 8\text{ cm}$ , Determine PQ, of circle of radius 5 cm.
22. A metal cube of edge 12 cm is melted and formed into three similar cubes. If the edge of two smaller cubes is 6cm and 8cm, find the edge of the third smaller cube (Assuming that there is no loss of metal during melting).
23. Half the perimeter of a rectangular garden is 36m. Write a linear equation which satisfies this data. Draw the graph for the same.
24. How many bricks, each measuring 18cm by 12cm by 10cm will be required to build a wall 15m long 6m wide and 6.5m high when  $\frac{1}{10}$  of its volume is occupied by mortar? Please find the cost of the bricks to the nearest rupees, at Rs1100 per 1000 bricks.
25. In Fig. 3.23, ABCD is a parallelogram and BC is produced to point Q such that  $BC = CQ$ . If AQ intersects DC at P. Show that  $ar(\triangle BPC) = ar(\triangle DPQ)$ .



26. Prove that if the diagonals of a quadrilateral are equal and bisect each other at right angles then it is a square.
27. If  $x_1, x_2, \dots, x_n$  are  $n$  values of a variable  $x$  such that  $\sum_{i=1}^n (x_i - 2) = 110$  and  $\sum_{i=1}^n (x_i - 5)$ . Find the value of  $n$  and the mean.

28. The marks obtained by 30 students is given in the following table:

Marks	70	58	60	52	65	75	68
No. of Students	3	5	4	7	6	2	3

Find the Probability that a student secures

- (i) 60 marks      (ii) 75 marks      (iii) Less than 60 marks

### SECTION-E (10 Marks)

#### (Open Text from Chapter-8 Quadrilaterals)

(\*Please ensure that open text of the given theme is supplied with this question paper.)

29. OTBA Question
30. OTBA Question
31. OTBA Question