

## SUMMATIVE ASSESSMENT - 2, 2015-16

CLASS - IX

Sl. No. 4573

MATHEMATICS

TIME - 3 HOURS ]

[ MAX. MARKS - 90

### SECTION - A (संकेत-अ)

Question numbers 1 to 4 carry 1 mark each.

1. Find total surface area of a cone whose radius is  $\frac{r}{2}$  and slant height  $2l$ .
2. Write the name of a quadrilateral ABCD, where  $\angle A \neq 90^\circ$  and  $AB = BC = CD = DA$ .
3. Find the median of the following data — 7, 8, 6, 5, 7, 9, 2, 3, 6
4. In which between two values does lie the probability of an event ?

Question numbers 5 to 10 carry 2 marks each. SECTION - B

5. Measurements of angles of a quadrilateral are  $2x + 35^\circ$ ,  $x + 65^\circ$ ,  $x + 70^\circ$  and  $x - 30^\circ$ . Find the value of  $x$ .
6. Find total surface area of a hemisphere of diameter 7 cm.
7. Find the length of the longest rod that can be placed in a room measuring  $12\text{m} \times 9\text{m} \times 8\text{m}$ .
8. Two cubes have their volumes in the ratio 1:27. Find the ratio of their surface area.
9.  $1\text{cm}^3$  of gold is drawn into a wire 0.1mm in diameter. Find the length of the wire.
10. The height and the slant height of a cone are 21cm and 28 cm respectively. Find the volume of the cone.

Question numbers 11 to 18 carry 3 marks each.

### SECTION - C

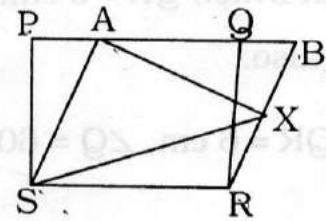
11. The length of a cinema hall is 20m and its width is 16m. The sum of the area of its floor and flat roof is equal to the surface area of its four walls. Find the height and volume of the hall.
12. 1500 families with 2 children were selected randomly and the following data were recorded :

Number of girls in a family	2	1	0
Number of families	475	814	211

Compute the probability of a family, chosen at random, having ;

- (i) 2 girls                      (ii) 1 girl                      (iii) No girl

13. In the figure, PQRS and ABRS are parallelograms and X is any point on side BR.



Show that  $ar(AXS) = \frac{1}{2} ar(PQRS)$

14. Construct an angle of  $90^\circ$  at the initial point of a given ray and justify the construction.
15. Diagonal AC and BD of a quadrilateral ABCD intersects each other at O in such a way that  $ar(AOD) = ar(BOC)$ . Prove that ABCD is a trapezium.
16. In the given figure, ABCD is a cyclic quadrilateral in which AC and BD are its diagonals. If  $\angle DBC = 55^\circ$  and  $\angle BAC = 45^\circ$ , find  $\angle BCD$ .

17. The following numbers of goals were scored by a team in a series of 10 matches. Find the mean, median and mode of these scores.  
2, 3, 4, 5, 0, 1, 3, 3, 4, 3



18. Construct a triangle PQR in which  $QR = 6$  cm,  $\angle Q = 60^\circ$  and  $PR - PQ = 2$  cm. Write steps of construction also.

### SECTION - D      Question numbers 19 to 28 carry 4 marks each.

19. The distance (in km) of 40 engineers from their residence to their place of work were found as follows :

5, 3, 10, 20, 25, 11, 13, 7, 12, 31, 19, 10, 12, 17, 18, 11, 32, 17, 16, 2, 7, 9,  
7, 8, 3, 5, 12, 15, 18, 3, 12, 14, 2, 9, 6, 15, 15, 7, 6, 12.

Construct a grouped frequency distribution table using class interval as 0-5 (5 not included).

20. Eleven bags of wheat flour, each marked 5 Kg, actually contained the following weights of flour (in Kg) :

4.97, 5.05, 5.08, 5.03, 5.00, 5.06, 5.08, 4.98, 5.04, 5.07, 5.00

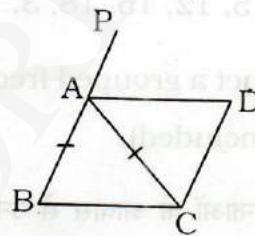
Find the probability that any of these bags chosen at random —

- |                                       |   |
|---------------------------------------|---|
| (i) Contains less than 5 kg of flour. | (iii) Contains more than 5 kg of flour. |
| (ii) Contains exactly 5 kg of flour.  | (iv) Contains 5 kg or more of flour.    |

21. ABC is an isosceles triangle in which  $AB = AC$ , AD bisects  $\angle PAC$  and  $CD \parallel AB$ .

Show that :

- (i)  $\angle DAC = \angle BCA$   
 (ii) ABCD is a parallelogram



22. ABCD is a cyclic quadrilateral whose diagonals intersect at a point E. If  $\angle DBC = 70^\circ$ ,  $\angle BAC = 30^\circ$ , find  $\angle BCD$ . Further, if  $AB = BC$ , find  $\angle ECD$ .

23. Show that the line segment joining the mid points of the opposite sides of the quadrilateral bisect each other.

24. 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.

25. If the non-parallel sides of a trapezium are equal, then prove that it is a cyclic quadrilateral.

26. A company manufactures a soft drink in two types of pack and sells it in different prices.

- (i) A tin can, with a rectangular base of length 5 cm and width 4 cm having a height of 15 cm,  
 (ii) A plastic cylinder with circular base of diameter 7 cm and height 10 cm.  
 (a) Which container has greater capacity and by how much ?

- (b) Which mathematical concept is used in the above problems ?
- (c) What is its value ?

27. Draw a frequency polygon (with a histogram) for the following data :

Age ( in Years ) उम्र ( वर्षों में )	No. of persons व्यक्तियों की संख्या
0-4	3
4-8	6
8-12	8
12-16	10
16-20	8
20-24	5
24-28	3

28. 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/m<sup>2</sup>, find the

- (i) Inside surface area of the dome, (ii) Volume of the air inside the dome.