KENDRIYA VIDYALAYA NO. 1 ROORKEE

HOLIDAYS HOME WORK X MATHEMATICS

1. A survey was conducted by a group of students as a part of their environment awareness programmed in which they collected the following data regarding the number of plants in 20 houses in a locality. Find the mean number of plants per house.

No. of plants	100-150	150-200	200-250	250-300	300-350
No. of houses	4	5	12	2	2

2. The following table shows the ages of the patients admitted in a hospital during a year:

Age (in years)	5-15	15-25	25-35	35-45	45-55	55-65
No. of participants	6	11	21	23	14	5

Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency.

3. The distribution below gives the weights of 30 students of a class. Find the mean weight of the students.

Weight in kg	40-45	45-50	50-55	55-60	60-65	65-70	70-75
No. of students	2	3	8	6	6	3	2

4. The following distribution gives the daily income of 50 workers of a factory.

Daily income (in Rs.)	100-120	120-140	140-160	160-180	180-200
No. of workers	12	14	8	6	10

Find mean and mode.

5. The following table gives production yield per hectare of wheat of 100 farms of a village.

Production yield (in kg/ha)	50-55	55-60	60-65	65-70	70-75	75-80
No. of farms	2	8	12	24	38	16

Find mean and mode.

6. 2 cubes each of volume 64 cm3 are joined end to end. Find the surface area of the resulting cuboid.
7. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1 cm and the height of the cone is equal to its radius. Find the volume of the solid in terms of π.

8. Find the area of the sector of a circle with radius 14cm and angle 30°.
9. Find the area of minor segment of quadrant of a circle of radius 7cm.
10. : A quadrilateral ABCD is drawn to circumscribe a circle .Prove that AB + CD = AD + BC
11. **: Prove that the parallelogram circumscribing a circle is a rhombus**
12. : From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20 m high building are 45° and 60° respectively. Find the height of the tower.
13. From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45°. Determine the height of the tower.
14. In Δ ABC, right-angled at B, AB = 24 cm, BC = 7 cm. Find: sin A, cosA.
15. Evaluate $2 \tan^2 45° + \cos^2 30° – \sin^2 60°$
16. : If sin (A – B) = 1/2 cos (A + B) = 1/ 2 where $0° < A + B \leq 90°$, A > B, find A and B
17. Prove that :

$(\text{cosec}\ \theta – \cot \theta)^2 = 1 - \cos \theta / 1 + \cos\theta$

18. Show that the points (1, 7), (4, 2), (–1, –1) and (– 4, 4) are the vertices of a square.
19. : Find the length of all the sides of a triangle whose vertices are (1, –1), (– 4, 6) and (–3, –5).
20. State and prove Basic Proportionality Theorem