DELHI PUBLIC SCHOOL, DURGAPUR

QUESTION BANK & REVISION SHEET FOR FINAL TERM (2017-18)

CLASS-IX

SUB:MATHEMATICS

SURFACE AREA AND VOLUME

1. A copper sphere of diameter 6 cm is melted and drawn into 36 cm long wire of uniform circular cross section. Find its radius.

2. A hollow cylindrical pipe has inner circumference 44 dm and outer circumference 45 dm. Find the cost of painting it from inside as well as outside at Rs . 4 per sq. m.,if its length is 3·5 m.

3. The curved surface area of a cylinder is 264 cm^2 and its volume is 924 cm^3. Find the height of the cylinder.

4. The radii of two right circular cylinders are in the ratio 2:3 and their heights are in the ratio 5:4 . Calculate the ratio of their curved surface areas and also the ratio of their volumes .

5. If the radius of a sphere is increased by 10%. Prove that its volume will be increased by 33.1 percent.

6. A semi - circular thin sheet of metal of diameter 28 cm is bent and an open conical cup is made. Find the capacity of the cup.

7. The interior of a building is in the form of a cylinder of diameter 4·3 m and height 3·8 m , surmounted by a cone whose vertical angle is a right angle . Find the area of the surface and the volume of the building. (Take $\pi = 3{\cdot}14$)

8. . A circus tent is cylindrical to a height of 3 m and conical above it. If its diameter is 105 m and the slant height of the conical portion is 53 m, calculate the length of the canvas 5 m wide to make the required tent.

9. A hollow spherical shell is made of a metal of density 4·9 gm/cm^3. If its internal and external diameters are 10 cm and 12 cm respectively , find the weight of the shell. (Take $\pi = 3{\cdot}1416$)

10. The largest sphere is curved out of a cube of side 7 cm. Find the volume of the sphere.

11. Water flows through a cylindrical pipe of internal diameter 7 cm at the rate of 5 m / s . Calculate : (i) the volume (in litres) of water discharged by the pipe in one minute , (ii) the time (in minutes) the pipe would take to fill an empty rectangular tank of dimensions 4m ×3m×2·31m.

12. A building is in the form of a cylinder surmounted by a hemispherical vaulted dome and contains $41\frac{19}{21}$ m^3 of air. If the internal diameter of the building is equal to its total height above the floor , find the height of the building .

13. If h , S and V denote respectively the height , curved surface area and volume of a right circular cone , then prove that $3\pi Vh^3 - S^2h^2 + 9V^2$.

14. A cylindrical tub of radius 12 cm contains water to a depth of 20 cm . a spherical ball is dropped into the tub and thus the level of water is raised by 6·75 cm . What is the radius of the ball?

CO-ORDINATE GEOMETRY

15.If x = -1 , y = 2 is a solution of the equation 3x + 4y = k , find the value of k .

16. Draw a graph of the line x – 2y = 3 . From the graph , find the co ordinates of the point when x = -5 and y = 0

17. The taxi fare in a city is as follows : For the first Km , the fare is Rs. 8 , for the subsequent distance it is Rs. 5 per Km .Taking the distance covered as x Km and total fare as Rs. y , write a linear equation for this information and draw its graph.

18. Draw the graph of linear equation x + 2y = 8. From the graph, check whether (-1, -2) is a solution this equation.

19. Draw the graphs of the equation x – y = 1 and 2x + y = 8 . Shade the area bounded by these two lines and y axis . Also determine this area .

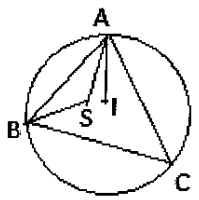
GEOMETRY

20. PQ and RS are two parallel chords of a circle whose centre is O and radius is 10 cm. PQ = 16 cm and RS = 12 cm Find the distance between PQ and RS , if they lie : (i) on the same side of the centre O (ii) on the opposite side of the centre O .

21. Two circles of radii 5 cm and 3 cm intersect at two points and the distance between their centres is 4 cm. Find the length of the common chord.

22. If I and S are the in-center and circum-center respectively of a triangle ABC .

Prove that $\angle SAI = \frac{1}{2}(\angle C - \angle B)$



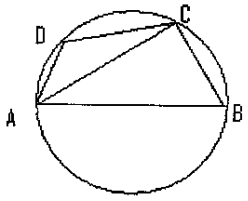
23. A circular park of radius 20 m is situated in a colony. Three boys are sitting at equal distance on its boundary each having a toy telephone on his hands to talk each other. Find the length of the string of each phone.

24.Prove that the middle points of the sides of a triangle and the foot of the perpendiculars drawn from the vertex to the opposite side lie on a circle.

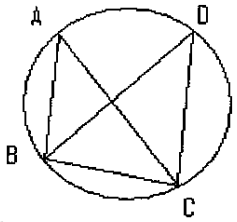
25.The altitude AD of the triangle ABC is produce to cut the circum-circle in K. Prove that HD = DK, where H is the ortho-center.

26. If two equal chords of a circle intersect within the circle, prove that the line joining the point of intersection to the centre makes equal angles with the chords.

27.Find $\angle$ CAB , if $\angle ADC = 130°$ and AB is the diameter .



28. Find $\angle$ DCB, if $\angle$ BAC = 50° , $\angle$ DBC = 70°.



29. A chord PQ is produced to R so that QR= radius of the circle. Through R the diameter RAB is drawn cutting the circle in A and B. Prove that arc BP= 3 arc AQ

30. If AD and BC are equal chords of a circle show that AB is parallel to CD.

31.Two chords AB and CD intersect within a circle O, Prove that they include an angle which is half the sum of angles which the arcs AC and BD subtend at the center.

32. Two circles with centers A and B intersect in P and Q so that $\angle APB = 90^0$. If AB cuts the circles in D and C respectively (between A and B). Show that $\angle PCQ + \angle PDQ = 3rt.angles$.

STATISTICS

1. Find mean of the following data:

Marks:	10	11	12	13	14	15
Number of students:	6	3	4	5	7	5

2. The points scored by a basket-ball team in a series of matches are as follows:

17, 2, 7, 27, 25, 5, 14, 18 , 10, 24, 10, 8, 7, 10

Find mean, median and mode for the data.

3. Draw a histogram and frequency polygon for the following data:

Class interval	Frequency
12-16	22
17-21	25
22-26	15
27-31	42
32-36	30
37-41	10

4. Construct a histogram and frequency polygon for the following frequency distribution: Find the mode of the following data by using the histogram.

weight (in kg):	40-45	45-50	50-55	55-60	60-65	65-70
Number of persons:	15	25	28	15	12	5

5. Find the mean of the following data by Short cut, by assumed mean method and by step deviation method.

C.I	35-40	40-45	45-50	50-55	55-60
Freq.	7	6	9	5	3

VALUE BASED QUESTION

1. A man hired an auto for 5 km . The fare was Rs 10 for first Km and Rs 3 for every subsequent Km . He paid Rs 50 , to which the auto driver said that its not the correct amount.

(a) Calculate the correct amount

(b) Which value is being promoted by the auto driver .

2. . On the occasion of Independence Day celebration , out of 1500 students, 1470 students took part in this celebration .(i) Find the probability of student participation . (ii)What does this activity represent

SYLLABUS: WHOLE BOOK