

**PM SHRI KENDRIYA VIDYALAYA No 1 AFS GORAKHPUR
(2024-25)**

WINTER BREAK HOLIDAYS HOMEWORK

CLASS: 9

SUB: MATHS

1. Complete your homework till chapter 12. (STATISTICS)
2. Do revision for PT-3 exam going to be conducted after winter vacations.
3. Complete and compile your Portfolio work and submit it after vacations.

4. **WORKSHEET:**

(Do the following questions in your holiday homework notebook):

- i) ABCD is a rectangle in which diagonals BD bisects $\angle B$. show that ABCD is a square.
- ii) If in a parallelogram ABCD, $AB = x+5$ and $BC = x+11$ and perimeter is 40cm. Find x.
- iii) E and F are respectively the mid points of the non-parallel sides AD and BC of a trapezium ABCD. Prove that $EF \parallel AB$ and $EF = \frac{1}{2}(AB + CD)$.
- iv) A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.
- v) If two non- parallel sides of a trapezium are equal, prove that it is cyclic.
- vi) Prove that a cyclic parallelogram is a rectangle.
- vii) A circular park of radius 20 m is situated in a village. Three girls Rita, Sita and Gita are sitting at equal distance on its boundary each having a toy telephone in their hands to talk to each other. Find the length of the string of each phone.
- viii) Find the length of a chord of a circle which is at a distance of 4 cm from the centre of the circle with radius 5 cm.
- ix) 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.
- x) A farmer has a triangular plot of land, and he intends to divide it equally among his three children. The sides of the plot are 50m, 60m, and 70m. Each child will receive a triangular piece of land with a common point. Find the dimensions of the triangular pieces resulting from the division and calculate their areas.

Valiast

M.K. Gupta

Hans

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Darshan Hans
TGT Maths

- xi) A triangular park has sides measuring 45m, 60m, and 75m. Due to increased pollution in the city, the local government decides to double the size of the park while maintaining the shape of the triangle. Calculate the new dimensions of the park and find the increase in area.
- xii) The students in XYZ School decided to set up a triangular garden with a tiled pathway around it. They chose the dimensions of the triangle to be 15 meters, 30 meters, and 35 meters for the sides. The width of the pathway is 1.5 meters.
- Calculate the area of the triangular garden.
 - What will be the new dimensions of the triangle if we include the pathway?
 - Calculate the area of the triangular garden including the pathway.
 - Determine the area covered by tiles for the pathway.
- xiii) In a triangular park, the lengths of the sides are 15 m, 22 m, and 25 m. A smaller triangular flower bed is to be made inside the park with midpoints of each side of the park as vertices. Find the area of the smaller triangular flower bed and the remaining area of the park outside the flower bed.
- xiv) The perimeter of a triangular field is 240 m with two sides 78m and 50m. Now, calculate the length of the altitude on the side of 50m length from its opposite vertex.
- xv) The side of a triangle are in the ratio of 25:14:12 and its perimeter is 510m. Find the greatest side of the triangle and area of given triangle.
- xvi) A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has a base diameter of 40 cm and height 1m. If the outer side of the cone is to be painted and the cost of painting is Rs 12/m². What will be the cost? (Take $\pi = 3.14$ and take $1.04 = 1.02$)
- xvii) To maintain the beauty of the monument, the students of the school cleaned and painted the dome of the monument. The monument is in the form of a hemisphere. From inside, it was white washed by the students whose area is 249.48 m². Find the volume of the air inside the dome.
- xviii) A right triangle of hypotenuse 13 cm and one of its sides 12 cm is made to revolve taking side 12 cm as its axis. Find the volume and curved surface area of the solid so formed.
- xix) A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 5 cm. Find the volume of the solid so obtained. If it is now revolved about the side 12 cm, then what would be the ratio of the volumes of the two solids obtained in two cases?

- xx) A gulab jamun contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulab jamuns each shaped like a sphere of diameter 2.8 cm.
- xxi) In a grinding mill, 5 types of mills were installed. These mills used spherical shaped steel balls of radius 5 mm, 7 mm, 10 mm, 14 mm, 16 mm respectively. For repairing purposes the mill needs 10 balls of radius 7 mm and 20 balls of radius 3.5mm. The workshop had 20000mm^3 steel which was melted and 10 balls of radius 7mm and 20 balls of radius 3.5 m were made and the remaining steel was stored for future use.
- What was the volume of 10 balls of radius 7mm?
 - How much steel was kept for future use?
 - What was the surface area of one ball of radius 7mm?
- xxii) A class teacher brings some clay in the classroom to teach the topic mensuration. First she forms a cone of radius 10 cm and height 5 cm and then she moulds that cone into a sphere.
- Find the volume of the conical shape.
 - Find the radius of the sphere.
 - Find the volume of the sphere the teacher made.
- xxiii) Monica has a piece of canvas whose area is 551 m^2 . She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately 1 m^2
- Find the slant height of the conical tent so formed.
 - Find the height of the conical tent so formed.
 - Find the volume of the conical tent?
- xxiv) Assertion: if a ball is in the shape of a sphere has a surface area of 221.76cm^2 then it's diameter is 8.4 cm

Reason: if the radius of the sphere be r then the surface area, $S=4\pi r^2$

- both Assertion and reason are correct and reason is correct explanation for Assertion
- both Assertion and reason are correct but reason is not correct explanation for Assertion
- Assertion is correct but reason is false
- both Assertions and reason are false
