Cosmo School

**Work Sheet – 08 (Mathematics)
for class – Nine (29.10.2020)
Chapter - Sixteen, Exercise - 16.4
Mensuration
Creative Questions:**

1. **The outer measurement of a rectangular wooden box are 9 cm, 7 cm and 5 cm respectively. The area of the whole inner surface is 142 square cm and the thickness of wood of the box is uniform on all sides. On the other hand, the volume of a cylinder is equal to the outer volume of the box and the height of the cylinder is twice of its radius. [My.B.- 20]**
   a) Find the length of the diagonal of the box.
   b) Find the thickness of wood of the box.
   c) Find the area of the curved surface of the cylinder and the area of its whole surface.

2. **The lengths of two parallel sides of a trapezium are 54 cm and 84 cm. The inner and outer diameter of an iron pipe is 12 cm and 15 cm and height of the pipe is 6 cm.   [Dj.B.- 20]**
   a) Find the area of the circle with diameter 20 cm.
   b) Find the weight of the iron of the pipe where weight of 1 cm^3 iron is 7.2 gm.
   c) Find the area of the trapezium where the lengths of two other sides are 12 cm and 18 cm respectively.

3. **Volume of a cylindrical pillar is 180π cubic metre and radius of base is 9π square metre. A ladder of 6m length is kept against the pillar forming 30° angle with ground. The foot of the ladder is shifted x metre initial   position towards the pillar then it makes 45° angle with the ground.   [D.B.- 19]**
   a) If area of a rhombus is 160 square cm and length of a diagonal is 20 cm then

determine the length of another diagonal.
   b) Determine the area of carved surface of the pillar.
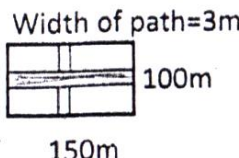   c) Find the value of x.

4.
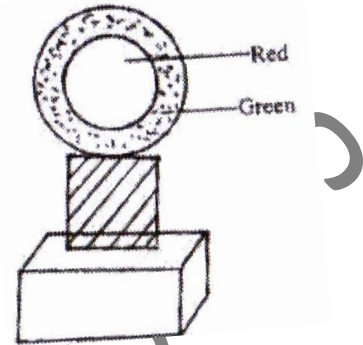
   A trophy is shown in the figure. The shape of its upper part is circular, shape of middle part is squared and lower part is a rectangular solid. The outer circumference of upper part is 22 cm and the perimeter of middle part is 20 cm. The area of green region is 2 times of red region of the upper part. The ratios of length, width and height of the lower part of the trophy is 5 : 4 : 3 and the length of the diagonal is $10\sqrt{2}$ cm.   [S.B.- 19]
   a) Find the area of the middle part of the trophy.
   b) Find the radius of the red region of the upper part of the trophy.
   c) Find the area of the whole surface of the lower part of the trophy.

5. **The inner and outer diameter of an iron pipe are 14 cm and 16 cm respectively and the height of the pipe is 5 metre. The weight of 1 cubic cm iron is 7.2 gm and circumference of another circle 660 metre.   [Ctg.B.- 19]**
   a) A circle diameter 25 cm then find the area of the circle.
   b) According to the stem determine the area of the inscribed square in the circle.
   c) Find the weight of the iron pipe.

6. **The inner and outer diameter of an iron pipe are 14 cm and 16 cm respectively and the height of the pipe is 5 metre. The weight of 1 cubic cm iron is 7.2 gm.** **[R.B.- 17, Ctg.B.- 17]**
  a) What is the outer volume of the iron pipe?
  b) What is the weight of the iron pipe?
  c) A solid bar of radius 7 cm is formed by melting the pipe. What is the height of the bar?

7. **The inner and outer diameter of an iron pipe is 8 cm and 10 cm respectively and the height of the pipe is 4 metre. The weight of 1 cubic cm iron is 7.2 gm.** **[C.B.- 17]**
  a) Find out the thickness of the pipe in cm.
  b) Find the area of the outer curved surface of the pipe.
  c) Find the weight of the iron used in the pipe in kilogram.

8. **The length of a garden is 80 metre and the breadth is 60 metre. A pond is dug inside the garden.** **[Dj.B.- 17]**
  a) Find the perimeter and area of the garden.
  b) If the area of the bank of the pond is 804 square metre then find the length and breadth of the pond.
  c) If the depth of the pond is 2.75 metre then at the rate of Tk. 325 per cubic metre how much money will be needed to dig the pond?

9. **When the length of each side of an equilateral triangle is increased by 2 metres, its area is increased by $5\sqrt{3}$ square metre.** **[D.B.- 16]**
  a) Write down the area of the triangle in respect to x when the length of each side of the triangle is x metre.
  b) Find the area of the triangle.
  c) Determine the volume of a right circular cylinder of which height and radius are equal to the height and radius are equal to the height and length of a side of the given triangle respectively.

10. **Area of a rectangular region is 160 square metre. If the length is reduced by 6 metre it becomes a square region.** **[B.B.- 16]**
  a) Determine two equations assuming the length and breadth of the rectangular region are x and y metre respectively.
  b) Find the length of a diagonal of the rectangular region.
  c) If the rectangular region is revolved around the greater side of it, a solid is formed. Determine the area of its whole surface and the volume.

11. **(i) The diagonal of a face of a cube is $8\sqrt{2}$ cm.**
  (ii) The inner and outer diameter of an iron pipe is 12 cm and 14 cm respectively and the height of the pipe is 5 metre.
  (iii) Figure -

Width of path=3m
100m
150m

  a) Find the diagonal and volume of a cube.
  b) Find the weight of iron pipe if the weight of 1 cc of iron is 7.2 gm.
  c) From the figure determine the area of the path and how many bricks of 25 cm length and 12.5 cm width will be required to make the path metaled?

12. **The area of the curved surface of a right circular cylinder is 100 square cm and its volume is 150 cubic cm.**
  a) How many surfaces are there in a right circular cylinder?
  b) Find the radius of the cylinder.
  c) Find the height and area of the whole surface of the cylinder.