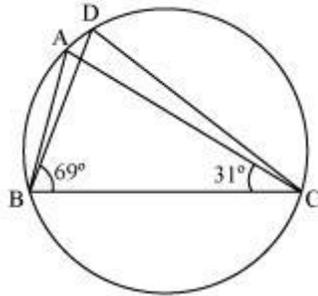




12. The following observations have been arranged in ascending order. If the median of the data is 63, find the value of  $x$ . 29, 32, 48, 50,  $x$ ,  $x + 2$ , 72, 78, 84, 95
13. A chord of a circle is equal to the radius of the circle. Find the angle subtended by the chord at a point on the minor arc and also at a point on the major arc.
14. In the given figure,  $\angle ABC = 69^\circ$ ,  $\angle ACB = 31^\circ$ , find  $\angle BDC$ .



### SECTION – C

15. Give the geometric representation of  $y = 3$  as an equation  
 (I) in one variable  
 (II) in two variables
16. Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?
17. A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm.  
 (i) Inner curved surface area,  
 (ii) Outer curved surface area,  
 (iii) Total surface area. [ Assume  $\pi = 22/7$ ].
18. A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.
19. 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

Also check whether the sum of these probabilities is 1.

20. The following number of goals was scored by a team in a series of 10 matches:  
 2, 3, 4, 5, 0, 1, 3, 3, 4, 3  
 Find the mean, median and mode of these scores.
21. Construct a triangle ABC in which  $BC = 7$  cm,  $\angle B = 75^\circ$  and  $AB + AC = 13$  cm.  
 Or  
 Construct a triangle XYZ in which  $\angle Y = 30^\circ$ ,  $\angle Z = 90^\circ$  and  $XY + YZ + ZX = 11$  cm.
22. If the diagonals of a parallelogram are equal, then show that it is a rectangle.
23. P and Q are any two points lying on the sides DC and AD respectively of a parallelogram ABCD. Show that  $\text{ar}(\triangle APB) = \text{ar}(\triangle BQC)$ .
24. In a triangle ABC, E is the mid-point of median AD. Show that  $\text{ar}(\triangle BED) = \frac{1}{4} \text{ar}(\triangle ABC)$

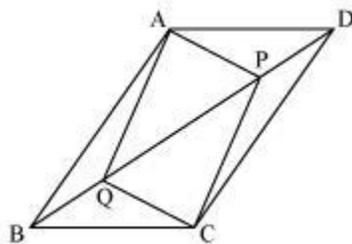
### SECTION – D

25. If two circles intersect at two points, then prove that their centres lie on the perpendicular bisector of the common chord.

26. Prove that parallelograms on the same base and between same parallels have the same area.
27. ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle.
28. The taxi fare in a city is as follows: For the first kilometre, the fares is Rs 8 and 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.
29. If the work done by a body on application of a constant force is directly proportional to the distance travelled by the body, express this in the form of an equation in two variables and draw the graph of the same by taking the constant force as 5 units. Also read from the graph the work done when the distance travelled by the body is (i) 2 units (ii) 0 units
30. A village having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring 20m x 15m x 6m. For how many days will the water of this tank last?  
Give measures which can be taken to avoid the wastage of water.
31. Find:- (i) The lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high.  
(ii) How much steel was actually used, if  $\frac{1}{12}$  of the steel actually used was wasted in making the tank. [ Assume  $\pi = \frac{22}{7}$ ].
32. 100 surnames were randomly picked up from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

Number of letters	Number of surnames
1 – 4	6
4 – 6	30
6 – 8	44
8 – 12	16
12 – 20	4

- (i) Draw a histogram to depict the given information.  
(ii) Write the class interval in which the maximum number of surname lie.
33. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that  $DP = BQ$  (see the given figure). Show that:



- $\triangle APD \cong \triangle CQB$
  - $AP = CQ$
  - $\triangle AQB \cong \triangle CPD$
  - $AQ = CP$
  - APCQ is a parallelogram
34. 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.