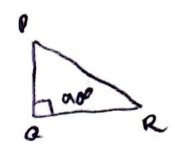


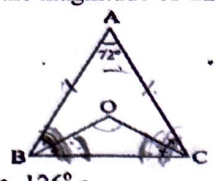


13. In triangle PQR if  $\angle Q = 90^\circ$ , then:  
 a. PQ is the longest side  
 b. QR is the longest side  
 c. PR is the longest side  
 d. None of these
14. The mirror image of the point (-3,-4) in x-axis is:  
 a. (-4,-3)  
 b. (3,-4)  
 c. (3,4)  
 d. (-3,4)
15. If  $p(x) = x + 5$ , then  $p(x) + p(-x) = ?$   
 a. 5  
 b.  $2x$   
 c. 10  
 d. 0
16. ABC is an isosceles triangle ( $AB = AC$ ) in which  $\angle A = 72^\circ$ , the internal bisectors of angles B and C meet in O. Find the magnitude of  $\angle BOC$ .



$p(x) = x + 5$   
 $p(-x) = -x + 5$

Handwritten calculations on the left margin:  
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$   
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$   
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$



$72 + x + x = 180$   
 $2x = 108$   
 $x = 54$

Handwritten calculations in the middle:  
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$

$(-3) + (-5) = -8$   
 $-5 + 5 = 0$

$p(x) = x + 5$   
 $p(-x) = -x + 5$   
 $10$

$p(-5) = -5 + 5 = 0$

17.  $(\frac{1}{169})^{1/2}$   
 a. 14  
 b.  $\frac{1}{14}$   
 c. 13  
 d.  $\frac{1}{13}$
18.  $(\sqrt{5} + 1)(\sqrt{5} - 1) = ?$   
 a. 4  
 b. 1  
 c. 6  
 d. 2

**Assertion:** When the radius of a sphere is doubled, its volume becomes eight times.

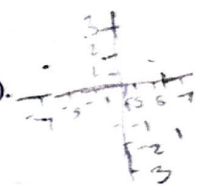
**Reason:** Volume of a sphere is proportional to the cube of the radius.

- a. Both Assertion(A) and reason(R) are correct and reason is the correct explanation for assertion  
 b. Both Assertion(A) and reason(R) are correct and reason is not the correct explanation for assertion  
 c. Assertion(A) is true but the reason(R) is false.  
 d. Assertion (A) is false but reason(R) is true.

**Assertion:** A point whose abscissa is -7 and ordinate is 1 lies in second quadrant.

**Reason:** Points of the type (+, -) lie in the second quadrant

- a. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).  
 b. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).  
 c. Assertion (A) is true but reason (R) is false.  
 d. Assertion (A) is false but reason (R) is true



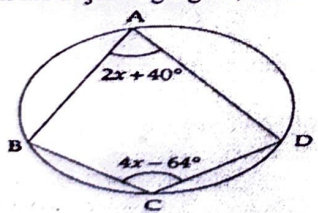
**SECTION - B**

21. A chord of length 10 cm is at a distance of 12 cm from the centre of the circle. Find the radius of the circle.  
 OR

Find x if angles of a triangle are  $(x-40)^\circ$ ,  $(x-20)^\circ$  and  $(\frac{1}{2}x - 10)^\circ$

22. Factorise:  $6x^2 + 7x + 2$

23. In the adjoining figure, ABCD is a cyclic quadrilateral. Find the value of x.



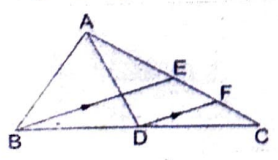
$\frac{3 - \sqrt{5}}{3 + 2\sqrt{5}} \times \frac{3 - 2\sqrt{5}}{3 - 2\sqrt{5}} = \frac{9 - 6\sqrt{5} - 3\sqrt{5} + 50}{9 - 9\sqrt{5} + 50}$

24. Find the surface area of a sphere of radius 7 cm.  
 25. Prove that equal chords of a circle subtend equal angles at centre.

**SECTION - C**

26. If  $\frac{3 - \sqrt{5}}{3 + 2\sqrt{5}} = a\sqrt{5} - \frac{19}{11}b$ , then find the values of a and b.

27. In the given figure, AD and BE are medians of  $\Delta ABC$  and  $BE \parallel DF$ . Prove that  $CF = \frac{1}{4}AC$ .



Handwritten calculations for question 26:  
 $P(5) = 5$   
 $P(x) = 2 + 5$   
 $P(-5) = -5 + 5 = 0$   
 $P(x) = -2 + \frac{1}{4}x$   
 $P(5) = -2 + \frac{1}{4}(5) = -2 + 1.25 = -0.75$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$   
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$   
 $180 - 72 = 108$   
 $108 / 2 = 54$   
 $180 - 54 - 54 = 72$

28. A conical tent is 10 m high and the radius of its base is 24 m. Find:  
 a) Slant height of the tent  
 b) Cost of the canvas required to make the tent, if the cost of 1 m<sup>2</sup> canvas is Rs. 70.

OR

If the non-parallel sides of a trapezium are equal, prove that it is cyclic.

29. The following data on the number of girls (to the nearest ten) per thousand boys in different sections of Indian society are given below.

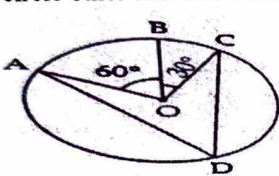
S.No.	Section	Number of girls per thousand boys
1.	Scheduled Caste (SC)	940
2.	Scheduled Tribe (ST)	970
3.	Non SC/ST	920
4.	Backward districts	950
5.	Non-backward districts	920
6.	Rural	930
7.	Urban	910

Represent the information above by a bar graph.

30. The volumes of two spheres are in the ratio 64:27. Find difference in their surface areas if sum of their radii is 7 cm.  
 31. Plot the points (5, -3), (0, -1) and (4.5, 3) in Cartesian plane on a graph paper. Also mention the quadrant/axis in which it lies.

**SECTION - D**

32. a. 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 circle.  
 b. A, B and C are three points on a circle with centre O, such that  $\angle BOC = 30^\circ$  and  $\angle AOB = 60^\circ$ . If D is a point on the circle other than the arc ABC, find  $\angle ADC$ .



33. The following table gives the distribution of students of two sections according to the marks obtained by them:

Section A		Section B	
Marks	Frequency	Marks	Frequency
0-10	3	0-10	5
10-20	9	10-20	19
20-30	17	20-30	15
30-40	12	30-40	10
40-50	9	40-50	1

Represent the marks of the students of both the sections on the same graph by two frequency polygons. From the two polygons, compare the performance of the two sections.

OR

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:

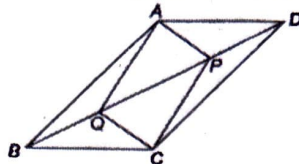
Number of letters	Number of surnames
1 - 4	6
4 - 6	30
6 - 8	44
8 - 12	16
12 - 20	4

- a. Draw a histogram to depict the given information.  
 b. Write the class interval where the maximum number of surnames lies.
34. Twenty seven solid iron spheres, each of radius  $r$  and surface area  $S$  are melted to form a sphere with radius  $r'$  and surface area  $S'$ . Find the:  
 a. radius  $r'$  of the new sphere  
 b. ratio of  $S$  and  $S'$

27 SOLID SPHERES, EACH OF RADIUS 'R' AND SURFACE AREA 'S' ARE MELTED TO FORM A SPHERE WITH RADIUS R' AND SURFACE AREA S'. FIND-

Handwritten calculations:  $27 \times \frac{4}{3}\pi r^3 = \frac{4}{3}\pi r'^3$ ,  $27r^3 = r'^3$ ,  $r' = 3r$ ,  $27 \times 4\pi r^2 = 4\pi r'^2$ ,  $27r^2 = r'^2$ ,  $r' = 3r$

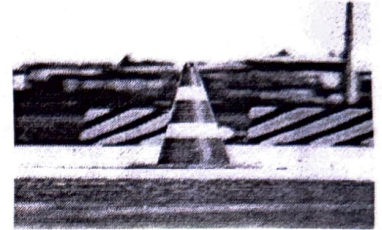
35. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that DP = BQ (see figure). Show that:



- (i)  $\triangle APD \cong \triangle CQB$  (ii)  $AP = CQ$   
 (iii)  $\triangle AQB \cong \triangle CPD$  (iv)  $AQ = CP$   
 (v)  $APCQ$  is a parallelogram.

**SECTION - E**

36. Traffic cones are used outdoor during road work in various situations such as traffic redirection, advance warning of hazards or the prevention of traffic. A traffic cone has the radius of 21 cm and height 20 cm. Answer the following questions based on this information.



- a) What is the slant height of this traffic cone?  
 b) What is the curved surface area of this cone?  
 c) Find the cost required to paint 20 such cones at the rate of Rs. 2/cm<sup>2</sup>.

OR

Find the volume of this traffic cone.

37. Given below is the data found on a group of school going students. Study the data and answer the questions that follow:



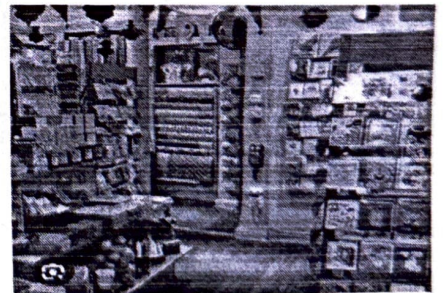
Height Intervals(in cms)	No. of students(F)
130-140	1
140-150	7
150-160	5
160-170	9
170-180	9
180-190	10
Total	41

- a) What is the class size of the fourth class interval?  
 b) What is the upper limit of the fifth class interval?  
 c) What is the class mark of the second class interval?

OR

How many students have their height less than 180 cm?

38. One day Rohit and Ankur go to a stationery shop to purchase some stationery. The shopkeeper tells them that the cost of notebook is four times the cost of a pen.



Based on the above information, answer the following questions:

- a) If the cost of a notebook is Rs. x and that of pen is Rs. y, then write the linear equation in two variables to represent the given situation.  
 b) If the cost of 1 notebook is Rs. 12, then find the cost of 1 pen.  
 c) Find two solutions of the linear equation  $x - 4y = 0$

OR

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

Handwritten mathematical work showing solutions for the linear equation  $x - 4y = 0$ . It includes the equation  $x = 4y$ ,  $4x - y$ , and several arithmetic calculations such as  $4 \times 2 = 8$ ,  $4 \times 3 = 12$ , and  $4 \times 4 = 16$ .