

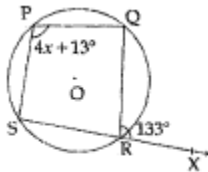
#### General Instructions:

1. All questions are compulsory.
2. The question paper consists of 32 questions divided into five sections A, B, C, D and E. Section – A comprises of 4 questions of 1 mark each, Section – B comprises of 6 questions of 2 marks each, Section – C comprises of 10 questions of 3 marks each and Section – D comprises of 11 questions of 4 marks each. Section – E comprises of one question from Open Text theme of 10 marks.
3. There is no overall choice.
4. Use of calculator is not permitted.

#### SECTION – A

Question numbers 1 to 4 carry one mark each.

1. Write the linear equation representing a line which is parallel to the y – axis and is at a distance of 2 units on the positive side of x – axis.
2. Cost of a pen is Rs. 10 less than twice the cost of a notebook. Represent this situation as a linear equation in two variables.
3. O is the centre of a circle that passes through P, Q, R and S, as shown in the figure. SR is produced to X. If  $\angle QRX = 133^\circ$ , find  $x$ .



4. A beam 9 m long, 40 cm wide and 20 cm high is made up of iron which has a density 50 g per cubic centimeter. Find the mass of the beam in kg.

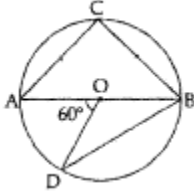
#### SECTION – B

Question numbers 5 to 10 carry two marks each.

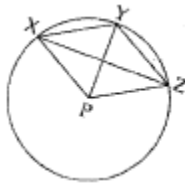
5. In the figure, P and Q are the mid – points of the sides AB and AC respectively of a triangle ABC. Also D and E are the mid – points of AP and AQ respectively. If DE = 2.3 cm, then find the length of BC.



6. In the given figure, O is the centre of the circle. AC and BC are two equal chords of the circle. If  $\angle AOD = 60^\circ$ , find the measures of  $\angle CBD$ .



7. In the given figure, P is the centre of the circle. Prove that  $\angle XPZ = 2(\angle XZY + \angle YXZ)$ .

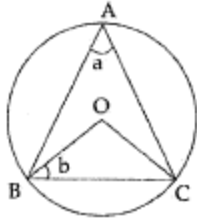


8. If the circumference of the base of a solid right circular cone is 236 cm and its slant height is 12 cm. Find its curved surface area.
9. The class mark of a particular class is 6.5 and its class size is 3. Write the next 3 classes, if they are continuous.
10. A survey of 300 students was conducted to check the opinion of students about the topic “Mensuration.” It was found that 165 students did not like mensuration. Find the probability that the student chosen at random likes Mensuration.

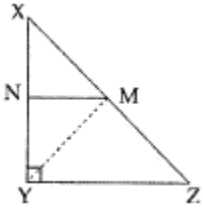
### SECTION – C

**Question numbers 11 to 20 carry three marks each.**

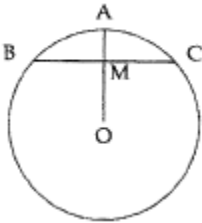
11. Find three solutions of linear equation  $15x + 12y = 27$  in two variables. Also draw its graph.
12. Write the equation  $\frac{x}{2} + \frac{3y}{5} = -1$  in the standard form and draw its graph.
13. WXYZ is a parallelogram. E, F, G and H are the mid – points of sides WX, XY, YZ and ZW. Show that  $\text{ar}(\text{EFGH}) = \frac{1}{2} \text{ar}(\text{WXYZ})$ .
14. Construct triangle QRS, if its perimeter is 10 cm and base angles are  $\angle R = 45^\circ$  and  $\angle S = 105^\circ$ .
15. In the figure, O is the centre of the circle, BC is its chord and A is any point on the circle. If  $\angle BAC = a$  and  $\angle OBC = b$ , find  $a+b$ .



16. In the figure, XYZ is a triangle, right angled at Y. A line is drawn through the mid – point M of hypotenuse XZ and parallel to YZ to intersect XY at N. Show that:
- N is the mid – point of XY.
  - $YM = XM = \frac{1}{2} XZ$



17. In the given figure, BC is a chord of a circle with centre O. A is a point on the circle such that  $\widehat{AB} = \widehat{AC}$ . Prove that OA is the perpendicular bisector of BC.



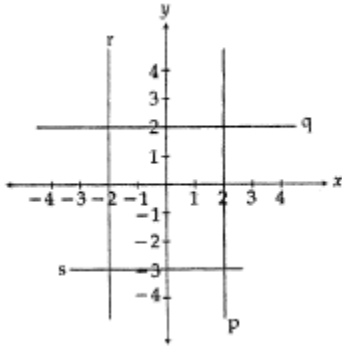
18. If the total surface area of solid sphere is  $98.56 \text{ cm}^2$ , then find the radius of the sphere.
19. In a bottle there are 7 red buttons, 5 green buttons and 8 purple buttons. What is the probability that randomly drawn button from the bottle is a purple button? If one extra green button is put inside the bottle, what will be the probability that randomly drawn button is purple?
20. Find the mean monthly expenditure of 80 families in a locality for the following tables?

| Monthly expenditure (in Rs.) | No. of families |
|------------------------------|-----------------|
| 5000                         | 22              |
| 6000                         | 18              |
| 7000                         | 15              |
| 8000                         | 10              |
| 9000                         | 8               |
| 10,000                       | 7               |

## SECTION – D

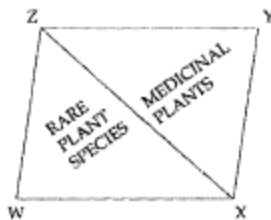
**Question numbers 21 to 31 carry four marks each.**

21. In a class, number of girls is  $x$  and that of boys is  $y$ . Also, the number of girls is 10 more than the number of boys. Write the given data in the form of a linear equation in two variables. Also, represent it graphically. Find graphically the number of girls, if the number of boys is 20.
22. Write the equations of the lines drawn in the following graph:

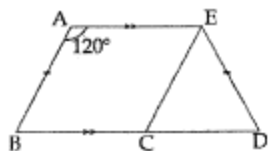


Also, find the area enclosed between these lines.

23. 'Green Club' of a school supports and works for 'GO GREEN DRIVE' started by an NGO in the city. Along with plantation of trees in the locality and other places in the city, students of club decide to maintain a small botanical garden in the school premises. To support this cause, school authorities provide a parallelogram shaped piece of land to students. A part of the provided land will be used to grow some of the rare plants which can grow in the climate and soil of the city and the rest of land is used to grow medicinal plants as shown in the figure.
- Show that area used for planting medicinal plants is equal to that of the area used for growing rare plant species.
  - Do you think such campaigns and initiative by students be supported and encouraged?



24. Draw a line segment  $PQ = 8.4$  cm. Divide  $PQ$  into four equal parts using ruler and compass.
25. In the given figure,  $AE = BC$  and  $AE \parallel BC$ . If  $AB = ED$  and  $\angle A = 120^\circ$ , then find  $\angle B$ ,  $\angle ECD$ ,  $\angle CED$  and  $\angle AED$ .



26. (a) State Angle Sum Property of triangle.  
 (b) Is it possible to construct triangle ABC, if perimeter of the triangle is 11 cm, base angles  $\angle A = 60^\circ$  and  $\angle B = 70^\circ$ .  
 (c) Is it possible to construct triangle EFG, if  $EF + FG + GE = 11$  cm,  $\angle E = 105^\circ$  and  $\angle F = 90^\circ$   
 (d) Is it possible to construct triangle XYZ, if perimeter is 12.5 cm,  $\angle X = 75^\circ$  and  $\angle y = 30^\circ$ .
27. A cylindrical block is formed by placing coins of same size one above the other. The volume of block is  $49.28 \text{ cm}^3$ . If the radius of each coin 1.4 cm and thickness 0.2 cm, then find the number of coins arranged in block. ( $\pi = \frac{22}{7}$ )
28. A pipe empties a hemispherical tank full of water at the rate of  $3\frac{4}{7}$  litres per second. How much time will it to take to empty half the tank, if radius of tank is 1.5 m?
29. The total surface area of a sphere and cube is same. Show that the ratio of the volume of the cube to that of sphere is  $\sqrt{\pi}:\sqrt{6}$
30. The table shows the number the number of people visiting the Good – Living Pavilion in a trade fair during different times of the day.

| Time             | Number of people |
|------------------|------------------|
| 9 a.m. – 11 a.m. | 175              |
| 11 a.m. – 1 p.m. | 125              |
| 1 p.m. – 3 p.m.  | 225              |
| 3 p.m. – 5 p.m.  | 200              |
| 5 p.m. – 7 p.m.  | 120              |

Find the probability that the randomly chosen person visited the pavilion.

- After 1 p.m. but before 5 p.m.
- Between 9 a.m. to 1 p.m.
- After 5 p.m.
- Between 3 p.m. and 5 p.m.

31. The given frequency tables show the rate at which the heart beats of an athlete running on a treadmill at a constant speed:

| Time (in seconds) | Heart beat rate |
|-------------------|-----------------|
| 0 – 60            | 85              |
| 60 – 120          | 100             |
| 120 – 180         | 120             |
| 180 – 240         | 110             |
| 240 – 300         | 110             |

Draw a frequency polygon and histogram.

### SECTION – E

**32. Theme – II (Adventure Camp) (2+2+3+3)**

- How were days passed by the students in adventure camp?
- From the adventure group of students one student is selected at random. Find the probability that the
  - Selected student's name has appeared in the open text.
  - Student is of Class IX B.
- On reaching the camp, welcome drink was served in cylindrical glasses which were filled two – third. Give quantity of welcome drink required in litres for serving all the students and teachers.
- For making all the tents, find the length of the canvas required if its width is 1.5 m.