

CBSE Board**Class X Mathematics (Standard)****Sample Paper - 4****Term 2 - 2022****Time: 2 hours****Total Marks: 40****General Instructions:**

1. The question paper consists of 14 questions divided into 3 sections A, B, C.
2. All questions are compulsory.
3. Section A comprises of 6 questions of 2 marks each. Internal choice has been provided in two questions.
4. Section B comprises of 4 questions of 3 marks each. Internal choice has been provided in one question.
5. Section C comprises of 4 questions of 4 marks each. An internal choice has been provided in one question. It contains two case study based questions.

Section A**Q1 – Q6 are of 2 mark each.**

1. Find the 20th term from the last term of the AP 3, 8, 13,, 253

OR

Check whether – 150 is a term of the AP 11, 8, 5, 2,...

2. The difference of squares of two numbers is 180. The square of the smaller number is 8 times the larger number. Find the two numbers.
3. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.
4. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of Rs 500 per m².
5. 100 surnames were randomly picked up from a local telephone directory and the frequency distribution of the number of letters in the English alphabets in the surnames was obtained as follows:

Number of letters	1 - 4	4 - 7	7 - 10	10 - 13	13 - 16	16 - 19
Number of surnames	6	30	40	6	4	4

Find the mean number of letters in the surnames.

6. Sum of the areas of two squares is 468 m^2 . If the difference of their perimeters is 24 m, find the sides of the two squares.

OR

The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.

Section B

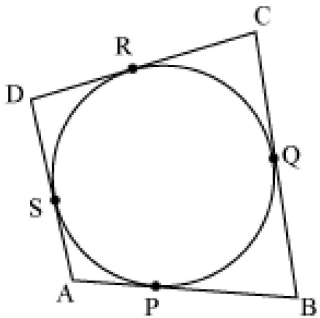
Q7 - Q10 are of 3 mark each.

7. Find the following tables gives the distribution of the life time of 400 neon lamps:

Life time (in hours)	Number of lamps
1500 - 2000	14
2000 - 2500	56
2500 - 3000	60
3000 - 3500	86
3500 - 4000	74
4000 - 4500	62
4500 - 5000	48

Find the median life time of a lamp.

8. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$.



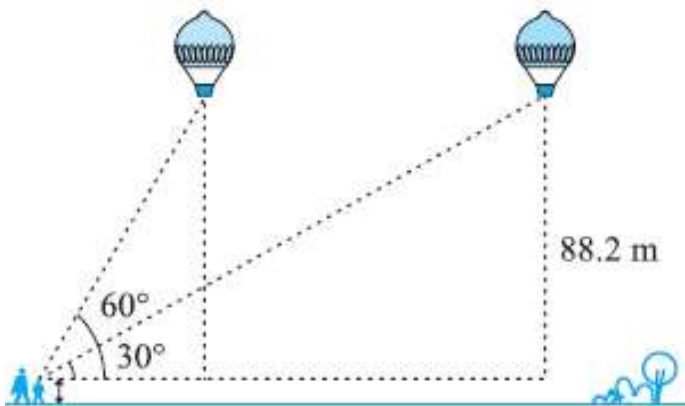
9. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the mode of the data.

Monthly consumption (in units)	Number of consumers
65 – 85	4
85 – 105	5
105 – 125	13
125 – 145	20
145 – 165	14
165 – 185	8
185 – 205	4

10. As observed from the top of a 75 m high lighthouse from the sea-level, the angles of depression of two ships are 30° and 45° . If one ship is exactly behind the other on the same side of the lighthouse, find the distance between the two ships.

OR

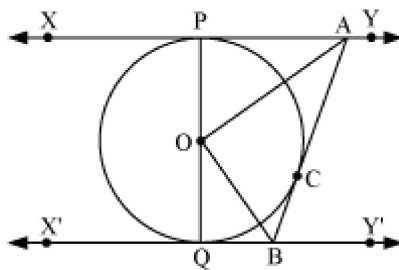
A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60° . After some time, the angle of elevation reduces to 30° . Find the distance travelled by the balloon during the interval.



Section C

Q11 – Q14 are of 4 mark each.

- 11.** A solid consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.
- 12.** In the given figure XY and $X'Y'$ are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY and $X'Y'$ at A and B . Prove that $\angle AOB = 90^\circ$.



OR

Prove that the parallelogram circumscribing a circle is a rhombus.

- 13.** Harsh is standing between two buildings having height 10m and 15m. Now the angle of elevation from the point where harsh is standing, to the top of 10m building is 45° . Whereas the angle of elevation from the same point to the top of 15m building is 60° . Using the given data, answer the following questions.
- Draw a labelled figure on the basis of the given information and find the distance between Harsh and the 10m building.
 - Find the distance between Harsh and the 15m building.
- 14.** Shaurya wants to participate in a 200m race. He can currently run that distance in 51 seconds and with each day of practice, it takes him 2 seconds less. But he want to complete that distance in 31 seconds. Based on the above information, answer the following questions.
- Form an AP using the given data and find how many minimum number of days he needs to practice till his goal is achieved.
 - Find the total number of seconds he ran till his goal was achieved.