

WEST BENGAL BOARD CLASS 10 MATHS SAMPLE PAPER

Mathematics

Class: X

Total Marks: 90

General Instructions:

1. All questions are **compulsory**.
2. **Section A** comprises of **18** questions carrying 1 mark each and **12** questions carrying 2 marks each.
3. **Section B** comprises of **7** questions carrying 3 marks each, **6** questions carrying 4 marks each and **4** questions carrying 5 marks each.
4. Use of a calculator is **not allowed**.

SECTION – A

Total Marks: 36

A) MULTIPLE CHOICE QUESTIONS:

$6 \times 1 = 6$

1. A certain amount of money is deposited in a bank that amount sums to rupees 910 after five years. If the rate of interest is 8 percent per annum then the amount deposited five years back was?

- (a) 600
- (b) 650
- (c) 700
- (d) 750

2. Find the roots of equation $\sqrt{2}x^2 + 4\sqrt{2}x - 6\sqrt{8} = 0$

- (a) $\sqrt{2}, \sqrt{6}$
- (b) 2, 8
- (c) 2, -6
- (d) $\sqrt{2}, \sqrt{8}$

3. A line DE passes through a triangle ABC such that DE is parallel to BC, AB is 46 cm and AD is 11.5cm. Now if AE is 10.5 cm, find the length of EC.

- (a) 34.5
- (b) 31.5
- (c) 41.5
- (d) 42.5

4. Convert 45.1060° into minutes and seconds approximately.

(a) 45° 16 minutes 16 second.

(b) 45° 16 minutes 22 second.

(c) 45° 6 minutes 6 second.

(d) 45° 6 minutes 22 second.

5. A cuboid whose volume is given as 48 cm^3 , such that the length and width of the cuboid are same but its height is less than its length. Find the value of height.

(a) 3cm

(b) 4cm

(c) 5cm

(d) 6cm

6. Five observations were taken in an experiment such that each observation was one more than the previous value. If the mean of all values were 10, what was the third reading?

(a) 8

(b) 9

(c) 10

(d) 12

B) FILL IN THE BLANKS: (Answer any 5 out of 6)

$5 \times 1 = 5$

7. Anjali puts her money in a bank that offers 7% interest that is compounded on half-yearly basis. If she deposited Rs.1000 on 1st February, what would be the gain at the end of the year approximately?

8. Fill in the blank with appropriate answer $\Rightarrow (\text{____}) \times (3 + 2\sqrt{2}) = (18 + 13\sqrt{2})$

9. $\triangle ABC$ and $\triangle DBC$ are two triangles are given such that, A lies on the circumference of triangle and D lies on the center. The given $\triangle ABC$ is isosceles then angle ABC is _____, if angle BDC is 140 degrees.

10. $\cos^2 \theta + \left(\frac{1}{1 + \cot^2 \theta} \right) + \tan \theta = \text{_____}$; if $\tan \theta = \sqrt{2}$ is given

11. The diameter of the largest circle on the surface of a sphere whose surface area = 2464 cm^2 is _____

12. 12, 16, 21, 15, 14, 20, 18 are the age of members of a family. Then mean age of family is _____.

C) CHECK WHETHER THE BELOW STATEMENTS ARE TRUE OR FALSE (Answer any 5 out of 6)

$$5 \times 1 = 5$$

13. Rs. 1200 will amount to Rs. 1812 at an interest of 8.5% if kept in bank for 5 years.

14. The cost of a ball varies directly as the square of its radius. If ball of 5cm radius cost rupees 15 then ball of radius 8cm will cost rupees 38 and 40 paisa?

15. Distance between points $(f, -g)$ and $(-f, g)$ is $2\sqrt{f^2 - g^2}$?

16. If perpendicular of a triangle is 16 and base is 12. Then $\frac{\cos \theta}{\cot \theta} = \frac{4}{5}$?

17. The volume of a right circular cylinder whose diameter is 8 cm and height is 12 cm will be 633.186 cm³?

18. If mean is 15.5 and median is 10.5, then the mode will be 8.7?

D) Answer any 10 questions. Each question carries 2 marks

$$10 \times 2 = 20$$

19. A certain amount of money is deposited in bank need to be compounded for 2 years at 15%. It would have given Rs645 more if interest was payable for every half year than one year. What is the sum of money?

20. H, G, J raise Rs 52,000 for a business. The amount given by H is equal to the sum of amount G and J put together. G is 5000 more than J. Out of a total profit of Rs. 26,000, how much should H receive?

21. Solve for t , $\frac{(t^2-10)}{(t+2)} + (t-4) = (t-3)$?

22. Find the value of $\frac{(4x-2y)}{(5x-3y)}$ if $\frac{x}{y} = \frac{5}{6}$

23. P, R, and T are the mid-points of the sides FG, GH and HF respectively of triangle FGH. Prove that area of PTGR is half the area of triangle FGH.

24. In a circle with center at O, the $\angle OMT = 20^\circ$ and $\angle ONT = 60^\circ$ where M, N, and T are the points on the circle periphery. Then value of $\angle MON$ is?

25. Area of a parallelogram PQRS is given as 600 cm² and perimeter is 140 cm, if the smaller side (QR and PS) is 30 cm smaller than the longer side of parallelogram. Find the angle PSR?

26. Find the value of $\frac{5}{4} \tan^2 30^\circ + 6 \cos^2 60^\circ + 4 \sec^2 60^\circ - \frac{4}{3} \cot^2 45^\circ$

27. A hot air balloon is flying at a height of 20 meters above the ground. A boy standing on the ground saw the balloon at an angle of elevation 60° . After some time, when he notices the balloon, again the angle of elevation changed to 30° . What is the distance covered by the balloon if it moves in a straight path. {Let $\sqrt{3} = 1.7$ }

28. 60 fishes can swim in a rectangular water tank filled with water to the brim. If each fish needs 12 m³ of water to breathe and length of tank is 20m, breadth is 9m what will be the height of the tank?

29. What is total surface area of a cone if the lateral area is twice as big as the base area of a cone and height of the cone is 12.

30. Draw a 'less than' ogive for the data given below which gives the marks of 55 students.

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	4	6	10	10	25

SECTION- B

TOTAL MARKS: 54

E) ANSWER THE FOLLOWING QUESTIONS:

31.

a) In what time will Rs.12500 amount to Rs.13797.6, if it compounded half yearly at a rate of 5%pa?

[5]

Or

b) Arun, Bharat and Chandu start a business and their shares of deposit are in the ratio $\frac{1}{3} : \frac{1}{2} : \frac{1}{4}$. After 3 months, Bharat takes out half of his investment and after 12 months, a profit of Rs.53000 is divided among them. What is Arun's share?

32.

a) Solve equation $(\ln x + 5)(7\ln x - 2) = 5\ln x + 214$ to find value of $\ln x$.

[3]

Or

b) Solve the equation $4(t - 1)^{\frac{4}{3}} + 6(t - 1)^{\frac{2}{3}} + 4 = 0$ and find value of t.

33.

a) In a particular medium the mass of a bullet is directly proportional to the square root of its speed. If speed is 169 cm/s then mass of bullet is 12 g. Find the ratio of speed of 36 g and 48 g bullets in the same medium. [3]

Or

b) $\sqrt{2x} + 1 = \sqrt{3x} + 6$ convert the surd of equation to the order of 6.

34.

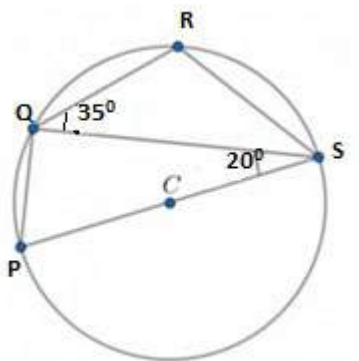
a) There are certain 50 rupee, 20 rupee and 10 rupee notes in a purse that are in the ratio 6 : 30 : 5, these notes together amount to Rs.2850. Find the number of notes of each type. If certain notes are damaged and the denomination of all damaged notes is same, the amount that can be used now is 2450. Find the notes that are damaged. [3]

Or

b) A number is given that is greater than a number by 30% and another number is 60% greater than the same number. What will be the ratio of the two numbers?

35.

a)

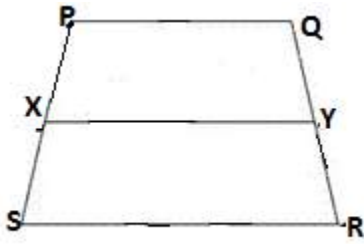


In the above given figure find the angle of $\angle QSR$?

[5]

Or

b)



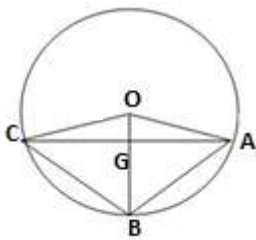
In the above given trapezium PQ parallel to XY parallel to SR. Prove that $\frac{PX}{XS} = \frac{QY}{YR}$.

36.

a) There is a triangle RST and a line segment passes RS at A and RT at B. RA=3.5, AS=6.3, RB=7.5, and BT= 13.5, find if AB is parallel to ST.? [3]

Or

b)



In the above figure $\angle COG$ are equal $\angle AOG$ are equal if CB= 20 cm and OC = 20 cm and GB= 8 cm. find area of ΔOAC .

37.

a) Draw a parallelogram KITE, with angle KIT = 60°, KI= 7cm, and IT=5cm. Then divide it into two triangles KIT and KET with diagonal KT and draw a triangle BNM similar triangle KIT with ratio $\frac{2}{5}$? [5]

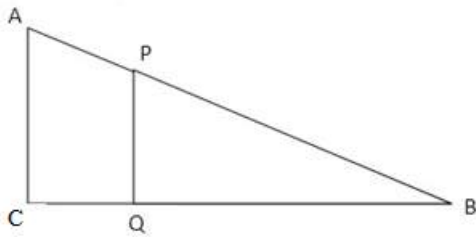
Or

b) Construct a circle of radius 5cm and then draw two tangents to the circle from a point 15 cm away from center.

Answer any 2 out of 3

$2 \times 3 = 6$ Marks

38.



Find the area of triangle PQR (use trigonometric ratios) given $AC = 15, AB = 30, PQ = 8$.

39. Without using trigonometric table solve the following

$$\frac{\cos 2}{\sec 88} + \frac{\cos 14}{\sec 76} + \frac{\cos 21}{\sec 69} + \frac{\sin 48}{\csc 42}$$

40. $\cos^2 60^\circ - \sin^2 45^\circ = x \cos 30^\circ$ what is the value of x ?

41.

a) Two bikes are moving on the road on the two sides of a building. The angle of elevation of the top of the building is observed from the bikes are 60° and 45° respectively. If the building is 1000 m high, what is the distance between the bikes are? [5]

Or

b) Find the angle of elevation of the sun, if length of the shadow of a tower is

(i) Equal to the actual height of the tower

(ii) Twice the actual height of the tower

(ii) Half the actual height of the tower

Answer any 2 out of 3:

$2 \times 4 = 8$ Marks

42. A tank is in the form of a cylinder of radius 12m. The water depth of the tank varies uniformly from 5m at one end and 10m at the other end. How much time will it take for a pipe to fill the tank given diameter of the pipe is 12 cm and flow of water is 6m/sec?

43. A wax cone with volume 1500π has been melted and formed into a sphere of same radius as cone. What is the surface area of sphere? {Given ratio of radius: height = 3:4}

44. Find the volume and surface area of a prism whose value of length and breadth of base is 6 cm and 10 cm respectively, when the height of prism is 8cm.

Answer any 2 out of 3

$2 \times 4 = 8$ Marks

45. A boy took five observations in an experiment such that the readings were 3 more than the previous value, but the boy took third reading wrong and all readings after that were wrong as they are 3 more than the previous reading that was wrong, if the new mean 14 is one more than previous one. What is the value of wrong reading and what is the value of actual reading that was taken? **[4]**

46. Find the mean for the given table.

Class interval	Frequency
2-4	16
4-6	20
6-8	22
8-10	26

47. Make a more than ogive graph and find the median for the table below.

Class interval	Frequency
0-10	45
10-20	48
20-30	58
30-40	65