

CBSE SAMPLE PAPERS-1

Class-X

Max.Marks-80

Time – 3 hours

Subject-Mathematics

General Instruction

- I. All the question are compulsory.
- II. This question paper consists of 25 question divided into three sections A, B, and C.
Section A contains 7 questions of 2 marks each,
Section B contains 12 questions of 3 marks each,
Section C contains 6 questions of 5 marks each.
- III. Internal choices have been provided for some question .you have to attempt only one of the choices in such question
- IV. Write correct serial number of the question before attempting it.
- V. In the question on construction, the drawing should be neat and exactly as per given measurements.
- VI. Use of Calculator s is not permissible. However you may ask for mathematical tables.

SECTION :A

1. Solve for x and y:

$$\frac{x}{a} + \frac{y}{b} = a + b, \quad \frac{x}{a^2} + \frac{y}{b^2} = 2$$

OR

Solve for x and y

$$x+y = a+b$$

$$ax-by = a^2-b^2$$

2. The H.C.F of two polynomials $p(x) = (x-3)(x^2+x-2)$ and $q(x) = x^2-5x+6$ is $x-3$ Find the L.C.M of $p(x)$ and $q(x)$.
3. Solve for x: $\frac{1}{x+1} + \frac{2}{x+2} = \frac{4}{x+4}$ ($x \neq -1, x \neq -2, -4$)
4. Determine the A.P whose 3rd term is 16 and the difference of 5th term from 7th term is 12.
5. Ram borrowed a sum of money and returned it in three equal quarterly installments of Rs/- 17576 each. Find the sum borrowed if the rate of interest charged was 16% per annum compounded quarterly. Find also the total interest charged.
6. The perimeters of two triangles are 36cm and 48cm respectively. If one side of the first triangle is 9cm, then find the length of the corresponding side of the other triangle.

OR

Prove that cyclic parallelogram is a rectangle

7. A card is drawn from a well shuffled deck of playing cards. Find the probability of drawing
(i) a face card (ii) a red face card.

SECTION B

8. Solve the following system of linear equation graphically

$$2x-3y=5$$

$$3x+4y+1=0$$

9. If $a = \frac{x}{x+y}$, $b = \frac{y}{x-y}$ show that $\frac{ab}{a+b} = \frac{xy}{x^2+y^2}$
10. Rs.1200 were distributed equally among a certain number of students. Had there been 8 more students, each would have received Rs. 5 less. Find the number of students.
11. Find the sum of all three digit numbers each of which leave the remainder 3 when divided by 5

OR

How many terms of the AP 78,71, 64 are needed to give the sum 468? Also find the last term of this AP

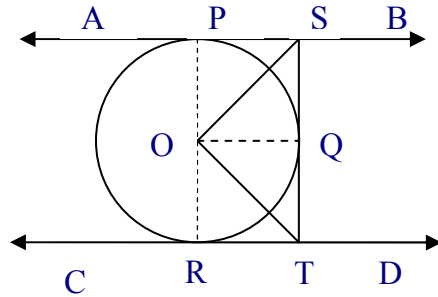
12. A room heater is sold for rupees 440 cash or for Rs/- 200 cash down payment together with rupees 244 to be paid after a month. Find the rate of interest charged in the installment scheme.
13. Construct a quadrilateral ABCD in which AB=3cm AD=2.7cm DB=3.6cm $\angle B=110^\circ$ and BC=4.2cm. Construct another quadrilateral $A'BC'D'$ similar to the quadrilateral ABCD such that diagonal $BD' = 4.8cm$.
14. Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$

OR

Without using trigonometric tables, evaluate the following:

$$\left(\frac{\tan 20^\circ}{\operatorname{cosec} 70^\circ}\right)^2 + \left(\frac{\cot 20^\circ}{\sec 70^\circ}\right)^2 + 2 \tan 15^\circ \tan 37^\circ \tan 53^\circ \tan 60^\circ \tan 75^\circ.$$

15. In the fig AB and CD are two parallel tangents touching the circle at Q. Show that $\angle SOT = 90^\circ$



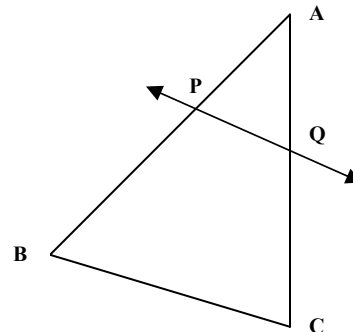
16. Using co-ordinate geometry, Prove that diagonals of a rectangle bisect each other and are equal.
17. The radius and the height of a cylinder are in the ration 2:7 if the volume if the cylinder is 704 cm^3 , Find the total surface are of cylinder
18. Find the Coordinates of the points which divide the line segment joining the points $(-4, 0)$ and $(0, 6)$ in four equal parts.
19. If one day the sales (Rs) of different items of a baker's shop are given below.

Ordinary bread	Rs 260
Fruit bread	Rs 40
Cakes & Pastries	Rs 100
Biscuits	Rs 60
others	Rs 20

Draw a pie chart representing the above sales.

SECTION: C

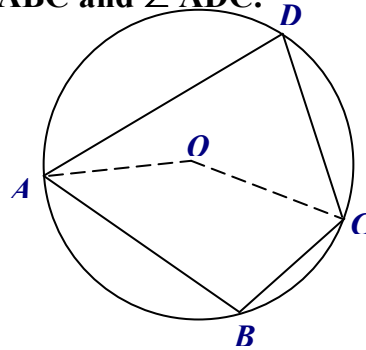
20. Annal income of Mrs Promila, Who is a senior citizen is Rs 4,10, 000. She Rs 30,000 to Prime Minister's Relief Fund (100% exemption) and Rs 20,000 to a charitable society (50% exemptions). She contributes Rs. 60, 000 towards PPF annually and pays a quarterly premium of Rs 4, 500 towards life insurance. She also purchases NSCs for Rs 30, 000. Find the amount she has to pay towards income tax for the financial year.
21. Prove that, "If a line in drawn parallel to one side of triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ration".



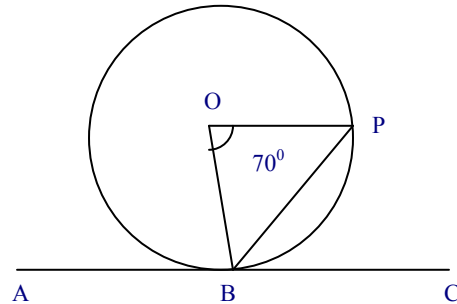
In the figure $PB \parallel BC$ and $AP=1.5\text{cm}$, $AQ=1.3\text{cm}$ $PB=3\text{cm}$ then find AC

OR

Prove that the angle subtended by an arc of a circle at its centre is double the angle subtended by it at any point on the remaining part of the circle. In adjoining figure, O is the centre of the circle and measure of arc ABC is 120° . Determine $\angle ABC$ and $\angle ADC$.



22. Prove that If a chord is drawn through the point of contact of a tangent to a circle then the angle which this chord makes with the given tangent are equal respectively to the angle formed in the corresponding alternate segments. Using the above the result solve the following in given fig ABC is tangent to circle at B and BP is chord If $BOP=70^\circ$. Then find $\angle PBC$.



23. A Container made up of a metal sheet is in the form of a frustrum of a cone of height 16cm with radii of its lower and upper ends as 8cm and 20cm respectively. Find the cost of milk which can completely fill the container at the rate of rupees 15 per liter and the cost of metal sheet used. if it costs $\text{Rs } 5/-$ per 100cm^2
24. Find the value of 'p' if the mean of following observation is 28 .

Marks	0-10	10-20	20-30	30-40	40-50	50-60
Number of students	12	18	p	20	17	6

25. A man on a cliff observes a boat at angle of depression of 30° . Which is approaching the shore to the point immediately beneath the observer with a uniform speed 6 minute later the angle of depression of the boat is found to be 60° . Find the time taken by the boat to reach the shore.

OR

A man standing on the deck of a ship, which is 10m above the water level observes the angle of elevation of the top of a hill was 60° and the angle of depression of the base of the hill as 30° . Calculate the distance of the hill from the ship and the height of the hill.