

CHENNAI SAHODAYA SCHOOL COMPLEX
PRE-BOARD COMMON EXAMINATION - 2020
BASIC MATHEMATICS - SET - III

Class : X Std

Total Marks : 80

Time : 3 Hrs.

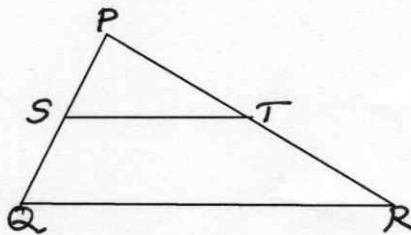
General Instructions.

- All questions are compulsory.
- The question paper containing 40 questions is divided into four sections - A , B , C & D.
- Section - A : Comprises of 20 questions of 1 mark each.
- Section - B : Comprises of 6 questions of 2 marks each.
- Section - C : Comprises of 8 questions of 3 marks each.
- Section - D : comprises of 6 questions of 4 marks each.
- All the questions in Section - A are to be answered in one word, one sentences or as per the exact requirement of the question.

Section - A

Direction for Q 1 to 5 : Fill in the blanks to make the statement true.

1. The rational number $\frac{13}{2^6 \cdot 5^{10}}$ terminates after _____ decimal places.
2. The degree of the polynomial $x + 40$ is _____
3. A point x is on the y -axis at a distance of 7 units from the origin. The co-ordinates of x are _____
4. In the figure $ST \parallel QR$, $PS = 2.4\text{cm}$, $PT = 3.2\text{cm}$, $TR = 4.8\text{cm}$, then $PQ =$ _____



5. The sixth term of the A.P : 6 , 2 , -2 , -6 ,is _____
- Directions for Q.6 to Q.10 :State true or false for the statements giving with reasons.**
6. The distance of a point (a,b) from the origin is $\sqrt{a^2 + b^2}$
 7. Two cubes when joined end to end form a larger cuboid.
 8. If the length of the shadow of a pole is equal to the height of the pole, then the angle of elevation is 60° .
 9. Infinite tangents can be drawn at a point on the circle.
 10. The number $31 \times 45 \times 46 + 45 \times 3$ is a prime number.

Directions for Q.11 to Q.15 : Choose the correct option.

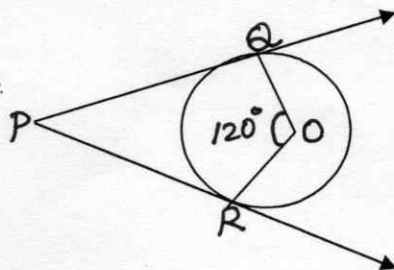
11. The equation $3x - 5y - 4 = 0$ and $6x - 9y + 4 = 0$ have _____
 (a) No solution (b) Infinite solution
 (c) Unique solution (d) None of the above
12. In $\triangle ABC$, right angled at B, if $\sin A = \frac{5}{13}$ then $\sin C$ is _____
 (a) $\frac{12}{13}$ (b) $\frac{5}{12}$ (c) $\frac{12}{5}$ (d) $\frac{13}{12}$
13. The 4th term of an A.P whose nth term is $5-2n$ is _____
 (a) 3 (b) -3 (c) 4 (d) -4
14. Read the statements A and B given below, then choose the correct option that follow :
 A (Assertion) : The equation $10x^2 - 7x + 1 = 0$ has real and distinct roots.
 B (Reason) : $ax^2+bx+c=0$ has real and distinct roots if $b^2-4ac=0$
 (a) Both A and B are correct and B is the correct explanation for A.
 (b) Both A and B are correct but B is not the correct explanation for A.
 (c) A is true and B is false.
 (d) B is true and A is false.
15. The probability of a sure event is _____
 (a) 0 (b) 1 (c) can't define (d) None of these

Directions for Q.16 to Q.20 : Answer the questions very shortly.

16. If $\cot A = \frac{2}{3}$ Find $\cos A$.
17. What is the HCF of $a^2 b^4$ and $a^3 b$
18. Solve the Quadratic equation : $x^2 - 5x + 4 = 0$
19. What is the ratio of volumes of a cone and a cylinder of same heights and base diameter.
20. The length of the tangent to a circle from a point P is 12cm. If O is the centre of the circle of radius 5cm, find the length of PQ.

Section - B

21. Which term of the AP 3,8,13,18.....is 78.
22. S and T are the points on sides PR and QR of $\triangle PQR$ such that $\angle P = \angle RTS$. Show that $\triangle RPQ \cong \triangle RTS$
 (Or)
 $\triangle ABC$ is an isosceles triangle with $AC = BC$. If $AB^2 = 2AC^2$. Prove that it is a right triangle.
23. In the given figure, O is the centre of the circle. PQ and PR are the tangents to the circle. If $\angle QOR = 120^\circ$. Find $\angle QPR$



24. The ladder of length 10 feet leans against a wall. If the angle of elevation of the ladder with the ground is 60° . Find the distance between the foot of the ladder and the wall.
25. If a sphere fits exactly inside a cubical box of side S units, what is the volume of sphere (write the answer in Π).
26. Find the median class of the given data.

Score	Frequency
0 - 10	10
10 - 20	12
20 - 30	8
30 - 40	22
40 - 50	30
50 - 60	10

Section - C

27. On a morning walk, three persons steps off together and their step measure 40cm , 42cm, 45cm respectively. What is the minimum distance each should walk so that each can cover same distance in complete steps.

(Or)

Use Euclid's division algorithm to find HCF of 441, 567 and 693.

28. Find the zeroes of the polynomial $x^2 + 4x - 21$ by factorisation method. Verify the relation between the zeroes and the coefficients of x.
29. The cost of 4 pens and 4 pencil boxes is ₹100. Three times the cost of a pen is ₹ 15 more than the cost of a pencil box. Form the pair of linear equations for the above situation. Find the cost of a pen and a pencil box.

(Or)

Use cross multiplication method solve the pair of equation.

$$3x - 4y - 20 = 0$$

$$x - 3y - 15 = 0$$

30. If the first term of an A.P. is 5 and its 101th term is -995. Find 51st term.
31. Find the co-ordinates of the points which trisect the line joining (0,-5) and (-3,4)
32. If $3\cot\theta = 4$, Find the value of $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 3\cos\theta}$

(Or)

Prove that

$$(\sin A + \operatorname{cosec} A)^2 + (\cos A + \operatorname{Sec} A)^2 = 7 + \tan^2 A + \operatorname{Cot}^2 A$$

33. A triangular field of side 20m each, has a cow tied at each of its three corners. If the length of each rope is 7m. Find the area in which the three cows can graze.

34. The marks obtained by some students in an exam are given below :
Find mean marks scored.

Marks	No. of Students
10 - 20	7
20 - 30	12
30 - 40	18
40 - 50	13

Section - D

35. Find the value of K for which $x = 3$ is a solution of the quadratic equation $(K + 2)x^2 - kx + 6 = 0$, thus find the other root of the equation.

(Or)

Find the roots of the equation using quadratic formula

$$9x^2 - 15x + 6 = 0$$

36. A flag post stands on the top of a building. The angles of elevation of the top and bottom of the flag post are 60° and 45° respectively. From a point 8m away from the foot of the building. What is the height of flag post and that of building.
37. Prove that the lengths of the tangents, drawn from an external point to a circle are equal.
38. Draw a ΔABC with side $BC = 6\text{cm}$, $AB = 5\text{cm}$ and $\angle ABC = 60^\circ$. Then construct a triangle, whose sides are $\frac{3}{4}$ of the corresponding sides of the ΔABC .

(Or)

Draw a circle of radius 3cm. From a point 5cm away from its centre, construct the pair of tangents to the circle and measure their length.

39. Prove that in a right angled triangle, the square of the hypotenuse is equal to the sum of the squares on the other two sides.
40. A card is drawn from a well-shuffled pack of playing cards. Find the probability that the card drawn is
- a queen or a king.
 - a black card.
 - neither a king nor a queen.
 - not getting an ace.

*****All the Best****