PRE-BOARD SAMPLE PAPER 2018-19

CLASS-X

BLUEPRINT

Chapters	1mark	2marks	3marks	4marks	total
real numbers		1	1		5
Polynomials	1		1		**4**
Linear equations		1		1	**6**
quadratic equation		1		1	6
A.P.				1	**4**
Triangles	1		1	1	8
Circles	1		1		4
constructions				1	4
Trigonometry	1	1	2		9
App. Of trigonometry			1		3
coordinate geometry	1	1	1		6
Area related to circles				1	4
Surface area & volume		1		1	6
Statistics			1	1	7
Probability	1		1		4
	6(6m)	**6(12m)**	**10(30m)**	**8(32m)**	30(80m)

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CLASS-X

MATHEMATICS

Time: 3 HOURS   **Maximum Marks: 80**

General Instructions:
1. All Questions are compulsory.
2. The question paper consists of 30 questions divided into four sections A, B, C and D.
   Section – A comprises of 6 questions of 1 mark each, Section – B comprises of 6 questions of 2 mark each, Section – C comprises of 10 questions of 3 mark each and Section – D comprises of 8 questions of 4 mark each.
3. Use of calculator is not permitted.
4. An additional 15 minutes time has been allotted to read this question paper only.

SECTION- A

Q1.   If α and β are the zeroes of the quadratic polynomial $f(x) = x^2 + 2x + 1$, then find α + β

Q2.   Δ ABC is such that AB=3 cm, BC= 2cm, CA=2.5cm. If ΔDEF∼Δ ABC and EF=4cm, then find perimeter of ΔDEF.

Q3.   The height of a tower is √3 times of its shadow. Find the angle of elevation of the sun.

Q4.   One die is tossed. Find the probability of getting a prime number.

Q.5   Find the distance between points A(2, 3) and B(4, 1).

Q6.   The length of a tangent from a point A at distance 5cm from the centre of a circle is 4cm, Find the radius of the circle ?

SECTION B

Q7. Use Euclid's Division Algorithm to find HCF of 870 and 225.

Q8. Find the value of k, so that the quadratic equation $kx(x − 2) + 6 = 0$, has two equal roots.

Q9. Find the value of k, so that the pair of linear equation has unique solution:
. $2x + ky = 11$ and $x − 2y = −12$

Q10. Find the ratio in which the segment joining the points (-3,10) and (6,-8) is divided by (-1,6)

Q11. If tan 2A = cot (A - 18°), then find the value of A.

Q12. The perimeter of the base of a cone is 44 cm and the slant height is 25 cm. Find the curved surface area of the cone?

SECTION C

Q13.   Show that $\sqrt{5}$ is irrational.

Q14.   Find the zeroes of $6x^2 – 3 – 7x$, and verify the relationship between the zeroes and the coefficients.

Q15. Find a point on x-axis which is equidistant from the points A (2,-5) and B (-2, 9).

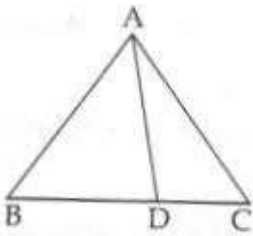**Q16.** Prove that the lengths of tangents drawn from an external point to a circle are equal.

Q17. Prove that $\sqrt{\dfrac{1+\sin x}{1-\sin x}} = \sec x + \tan x$

or

$\dfrac{\cos A}{1-\tan A} + \dfrac{\sin A}{1-\cot A} = \sin A + \cos A$

Q18. Evaluate: $\dfrac{\tan^2 60° + 4\sin^2 45° + 3\sec^2 30° + 5\cos^2 90°}{\csc 30° + \sec 60° - \cot^2 30°}$

Q19. ΔABC is such that $\angle ADC = \angle BAC$. Prove that $CA^2 = CD \times CD$

Q20 If the mean of the following distribution is 50 find the value of p.

Class	0 - 20	20 – 40	40 – 60	60 – 80	80 - 100
Frequency	17	28	32	P	19

Q21 From the top and foot of a tower 40m high, the angles of elevation of the top of a light house are found to be 30° and 60° respectively. Find the height of the light house. Also, find the distance of the top of the light house from the foot of the tower.

Q.22 One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting

(i)   a king of red colour
(ii)   a face card
(iii)   a red face card

SECTION D

Q23. Represent the following system of equation graphically:

$$2x + y = 2, \quad 2y - x = 4$$

Shade the triangular region formed by the lines and the x- axis

Q24. 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.

Q25   If the sum of the first n terms of an A.P. is $4n - n^2$, what is the first term? What is the sum of first two terms? What is the second term? Find the 10th term.

Q26.   State and prove the converse of Pythagoras theorem.

OR

Prove that the ratio of areas of two similar triangles is equal to the square of the ratio of their corresponding sides.

Q27. Draw a right triangle in which the sides (other than hypotenuse) are of lengths 4cm and 3 cm. Then construct another triangle whose sides are $\frac{3}{5}$ times the corresponding sides of the given triangle.

Q28.   For the data given below draw more than type ogive graph. Hence find its Median

Marks	0 – 10	10 – 20	20 - 30	30 – 40	40 - 50	50 – 60
Number of students	5	4	8	10	15	18

Q29. The area of an equilateral triangle is 17320.5 cm$^{2.}$ About each angular point as centre, a circle is described with radius equal to half the length of the side of the triangle. Find the area of the triangle not included in the circles. (Useπ=3.14 and $\sqrt{3}$= 1.73205)

Q30. A container, opened from the top and made up of a metal sheet, is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends are 8 cm and 20 cm, respectively. Find the cost of the milk which can completely fill the container, at the rate of Rs 20 per liter. Also find the cost of metal sheet used to make the container, if it cost Rs 8 per $100 cm^2$.

CLASS X MATHS 2018-19
MARKING SCHEME
PRE BOARD SAMPLE PAPER

Q.1 $\alpha+\beta=-2$ 1 Mark

Q.2 perimeter =15cm   1 Mark

Q.3 Angle of elevation =60^0 1 Mark

Q.4 Probability=1/2   1 Mark

Q.5 distance =$2\sqrt{2}$ 1 Mark

Q.6 r=3cm   1 Mark

Q.7 870=225x3+195

225=195x1+30

195=30x6+15

30=15x2+0

HCF=15   1½+ 1/2

Q.8 $KX^2-2KX+6=0$ ½ Mark

   $4K^2-24K=0$

4k(k-6)=0   ½ Mark

 K=6   1 Mark

Q.9 For correct condition   1 Mark

    k≠-4   1 Mark

Q.10 for correct formula and steps   ½ Mark each

Ratio=7:2   1 Mark

Q.11 cot(90-2A) = cot (A - 18°)   ½ Mark

    90-2A=A-18   ½ Mark

A=36   1 Mark

Q.12 2πr=44   ½ Mark

r=7   ½ Mark

CSA =πrl   ½ Mark

CSA= 550cm^2 ½ Mark

Q.13 For correct proof   3Marks

Q.14 α=-1/3 & β= 3/2   1 Mark

α+β= 7/6=-b/a   1 Mark

αβ=-1/2=c/a   1 Mark

Q.15 Let the point on x-axis be (x,0)   ½ Mark

For correct formula   ½ Mark

Point is (-9,0)   2 Mark

Q.16 For given   ½ Mark

To prove   ½ Mark

For correct figure   ½ Mark

For correct proof   1½ Mark

Q.17 For correct proof   3 Mark

Q.18 For correct values   2 Mark

For correct answer =9   1 Mark

Q.19 In △ABC and △DAC

∠BAC = ∠ADC

∠C = ∠C

△ABC ~ △DAC (AA)   2 mark

$$\frac{CB}{CA} = \frac{CA}{CD}$$

$$\Rightarrow CA^2 = CB \times CD \qquad\qquad\qquad\qquad\qquad\qquad \text{1 mark}$$

Q.20 For correct table   1mark

mean=∑fixi/∑fi= (4320+70p)/96+p = 50   1mark

p=24   1mark

Q.21 For correct figure   1mark

tan30=h/x   ½ mark

tan60=(40+h)/x

√3x= 40 +h   ½ mark

 h=20m and x= 20√3m   1 mark

Q.22(i)king of red colour =2

Probability = no. of favourable outcome /no. of total outcome   1/2 Mark

   =2/52   =1/26   1/2mark

(ii)face card =12

Probability 12/52 =3/12   1mark

(iii)a red face card=6

Probability=6/52=3/26   1mark

Q. 23 for correct table   1 mark

  for correct graph   2 mark

  For correct shading   1 mark

 Q.24 $x^2-y^2=180$ 1 mark

   $y^2=8x$

   $x^2-8x-180=0$ ½ mark

x= -10, x=18   1½ mark

numbers are 18 & 12   1 mark

Q.25 $S_n = 4n - n^2$

$S_{1} = 3$ ½ mark

$S_{2} = 4$ ½ mark

$a_{2} = S_{2} - S_{1} = 1$ 1 mark

$a_{10} = S_{10} - S_{9} = -15$ 2 mark

Q 26. For given   ½ mark

   To prove   ½ mark

   For figure   ½ mark

   For construction   ½ mark

   For proof   2 marks

Q 27. For correct right triangle   1 mark

   For similar triangle   2 marks

   For steps of construction   1 mark

Q 28.   1 mark for the table

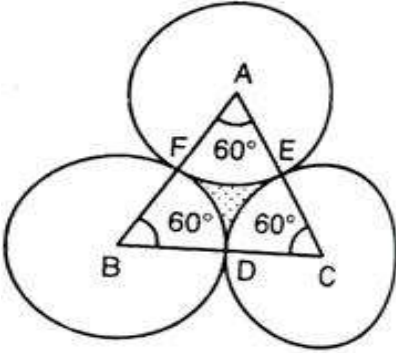| Marks obtained	No. of students
More than or equal to 10	60
More than or equal to 20	55
More than or equal to 30	51
More than or equal to 40	43
More than or equal to 50	33
More than or equal to 60	18

For correct ogive   2 marks

   Median = 42.66   1 mark

Q29).

Area of a Δ = 17320.5 cm^2 1

$\Rightarrow$ $\sqrt{3}/4$ side^2 = 17320.5

$\Rightarrow$ side^2 = 173205/10 X 4/$\sqrt{3}$

       = 173205/10 X 4/1.73205

Side = 2X100=200cm.   1 Mark

$\therefore$ radius = 200/2 = 100 cm.   1/2

$\therefore$ Area of shaded portion = area of Δ – 3x area of sectors

                 = 17320.5 – 3x (60/360 x 3.14 x 100 x 100)

                 = 17320.5-15700

                 = 1620.5 cm^2 1 1/2

Q30.   Here h= 16cm ; r = 20 cm ; R = 8cm   1

V of the milk = v of frustum

         = 1/3 (3.14) (16) (20^2 + 8^2 + 20 x 8) = 10449.92/100liters   1

Cost of milk = Rs 209 (approx)

Surface area of frustum shaped container open at the top = $\pi\,(r+r)l + \pi r^2$ = 1959.36 cm^2 1

Cost of metal sheet = 1959.36 x 8/100=Rs 156.75

                                      1