CLASS X – MATHEMATICS

MODEL QUESTION PAPER

(SET- 2)

Time Allowed: 3 Hours **Maximum Marks:** 80

Section A (1 × 20 = 20 Marks)

Q1–Q18 MCQs

Q1.

LCM of 72 and 120 is:
(a) 240
(b) 360
(c) 480
(d) 600

Q2.

The zero of polynomial 7x + 21 is:
(a) –3
(b) 3
(c) 7
(d) –7

Q3.

The pair of linear equations 3x – 2y = 5 and 6x – 4y = 12 has:
(a) Unique solution
(b) No solution
(c) Infinitely many solutions
(d) Exactly two solutions

Q4.

The 12th term of AP: 2, 6, 10, ... is:
(a) 46

(b) 48
(c) 50
(d) 52

Q5.

Probability of getting a number greater than 4 when a die is thrown:
(a) 1/6
(b) 1/3
(c) 1/2
(d) 2/3

Q6.

Value of sin 60° is:
(a) 1/2
(b) $\sqrt{3}/2$
(c) 1
(d) 0

Q7.

Distance between (–1,2) and (3,5) is:
(a) 5
(b) $\sqrt{25}$
(c) $\sqrt{34}$
(d) $\sqrt{29}$

Q8.

Nature of roots of $x^2 – 6x + 9 = 0$ is:
(a) Real & distinct
(b) Real & equal
(c) Not real
(d) Irrational

Q9.

Area of circle of radius 21 cm is:
(a) 1386 cm^2
(b) 1320 cm^2
(c) 1400 cm^2
(d) 1470 cm^2

Q10.

Mode of data: 4, 5, 6, 5, 8, 5, 9 is:
(a) 4
(b) 5
(c) 6
(d) 8

Q11.

If two similar triangles have sides in ratio 3:5, then ratio of their areas is:
(a) 3:5
(b) 5:3
(c) 9:25
(d) 25:9

Q12.

The angle between radius and tangent at point of contact is:
(a) 0°
(b) 45°
(c) 60°
(d) 90°

Q13.

Volume of cube of side 5 cm is:
(a) 125
(b) 150
(c) 100
(d) 75

Q14.

If $\cos \theta = 0$, then $\theta =$
(a) 0°
(b) 45°
(c) 60°
(d) 90°

Q15.

Mean of first 8 natural numbers is:
(a) 4
(b) 4.5
(c) 5
(d) 3.5

Q16.

Median of 3, 7, 9, 11, 13, 15 is:
(a) 9
(b) 10
(c) 11
(d) 12

Q17.

Value of tan 45° is:
(a) 0
(b) 1
(c) $\sqrt{3}$
(d) 1/2

Q18.

Total surface area of sphere of radius r is:
(a) $2\pi r^2$
(b) $4\pi r^2$
(c) πr^2
(d) $3\pi r^2$

Q19–Q20 Assertion–Reason

Q19.

Assertion (A): The sum of first n natural numbers is n(n+1)/2.
Reason (R): Natural numbers form an AP with a = 1 and d = 1.

(a) Both true & R correct explanation
(b) Both true but R not explanation
(c) A true R false
(d) A false R true

Q20.

Assertion (A): If discriminant is zero, roots are equal.
Reason (R): Discriminant is $b^2 - 4ac$.

(a) Both true & R correct explanation
(b) Both true but R not explanation
(c) A true R false
(d) A false R true

Section B (2 × 5 = 10 Marks)

Q21.

Find HCF of 144 and 180 using Euclid's Division Algorithm.

Q22.

Find 18th term of AP: 4, 9, 14, ...

Q23.

Solve quadratic equation:
$x^2 – 7x + 12 = 0$.

Q24.

Find mean of data:
6, 12, 18, 24, 30.

Q25.

Find area of sector of circle radius 14 cm, angle 90°.

Section C (3 × 6 = 18 Marks)

Q26.

Solve pair of equations:
$2x + 3y = 13$
$3x – y = 5$

Q27.

Prove that diagonals of rectangle are equal.

Q28.

Find median of grouped data:

Class	Frequency
0–10	6
10–20	10
20–30	15

Class Frequency

30–40 9

40–50 5

Q29.

From top of building 50m high, angle of depression is 45°. Find distance from building.

Q30.

Find sum of first 25 terms of AP: 3, 7, 11, ...

Q31.

Find curved surface area of cone radius 7 cm height 24 cm.

Section D (5 × 4 = 20 Marks)

Q32.

Solve quadratic equation by completing square method:
$x^2 – 8x + 15 = 0$.

Q33.

Prove Basic Proportionality Theorem.

Q34.

A card is drawn from deck of 52 cards. Find probability of getting:
(i) King
(ii) Red card

Q35.

A solid sphere of radius 7 cm is melted to form cylinders of radius 1 cm and height 7 cm. Find number of cylinders formed.

Section E (Case Study Based) (4 × 3 = 12 Marks)

Q36.

A circular ground has radius 28 m.
(i) Find circumference (1)

(ii) Find area (1)
(iii) Cost of fencing at ₹75 per metre (2)

Q37.

Grouped data of marks given.
Find mean using step deviation method.

Q38.

A ladder 15m long makes 60° angle with ground.
(i) Find height reached (1)
(ii) Distance from wall (1)
(iii) Verify $\tan\theta = \sin\theta / \cos\theta$ (2)