CLASS X – MATHEMATICS

ANSWER KEY

(SET–10)

✳ SECTION – A (1 × 20 = 20 Marks)

Q1. HCF of 128 and 160
= **32** ✓ (b)

Q2. 25x – 100 = 0
x = 4 ✓ (c)

Q3.
2x – 3y = 7
4x – 6y = 14
Second equation is multiple of first
⇒ **Infinitely many solutions** ✓ (c)

Q4. a = 1, d = 3
a_{40} = a + 39d
= 1 + 117
= **118** ✓ (b)

Q5. Even numbers on die = {2,4,6}
Probability = 3/6 = **1/2** ✓ (c)

Q6. sin 60° = **√3/2** ✓ (b)

Q7. Distance = $\sqrt{(8^2 + 15^2)}$
= $\sqrt{(64 + 225)}$
= $\sqrt{289}$ = 17 ✓ (d)

Q8. x^2 – 10x + 25
D = 100 – 100 = 0
⇒ **Real & equal** ✓ (b)

Q9. Area = πr^2
= 22/7 × 1225
= **3850 cm^2** ✓ (a)

Q10. Mean = (10+20+30+40+50)/5
= 150/5
= **30** ✓ (c)

Q11. Area ratio = $(5/12)^2$ = **25:144** ✓ (b)

Q12. Tangent ⊥ **Radius** ✓ (c)

Q13. Volume = $\pi r^2 h$
= 22/7 × 49 × 30
= **4620 cm^3** ✓ (a)

Q14. cos θ = 0
θ = **90°** ✓ (d)

Q15. Median = (6+8)/2
= **7** ✓ (b)

Q16. Mode = **2** ✓ (b)

Q17. $1 + \tan^2\theta$ = **$\sec^2\theta$** ✓ (b)

Q18. Surface Area = $6a^2$
= 6 × 144
= **864 cm^2** ✓ (b)

Q19. Both true but R not explanation ✓ (b)

Q20. A true, R false ✓ (c)

✳ SECTION – B (2 × 5 = 10 Marks)

Q21. HCF by Euclid's Division Algorithm (2 Marks)

867 = 306 × 2 + 255
306 = 255 × 1 + 51
255 = 51 × 5 + 0

∴ HCF = **51**

Q22. 50th Term of AP (2 Marks)

a = 2, d = 4

$a_{50} = a + 49d$
$= 2 + 196$
$= \mathbf{198}$

Q23. Solve $x^2 – 15x + 56 = 0$ (2 Marks)

$(x – 7)(x – 8) = 0$

$\therefore x = 7, 8$

Q24. Mean (2 Marks)

Mean = (12+24+36+48+60)/5
= 180/5
= **36**

Q25. Area of Sector (2 Marks)

$= (60/360) \times \pi \times 42^2$
$= 1/6 \times 5544$
$= \mathbf{924\ cm^2}$

✳ SECTION – C (3 × 6 = 18 Marks)

Q26. Solve Linear Equations (3 Marks)

3x + 5y = 19
2x – y = 3

Multiply second by 5:

10x – 5y = 15

Add:

13x = 34
x = 34/13

Substitute:

2(34/13) – y = 3
y = 29/13

Solution = (34/13 , 29/13)

Q27. Diagonals of Parallelogram Bisect Each Other (3 Marks)

In parallelogram ABCD, diagonals AC and BD intersect at O.

AO = OC and BO = OD

Hence proved.

Q28. Median (3 Marks)

Total N = 50
N/2 = 25

Median class = 20–30

l = 20
f = 15
cf = 18
h = 10

Median = 20 + [(25–18)/15] × 10
= 20 + 4.67
= **24.67**

Q29. Horizontal Distance (3 Marks)

tan 30° = 150/x

$1/\sqrt{3} = 150/x$

$x = 150\sqrt{3}$
= **259.8 m**

Q30. Sum of 80 Terms (3 Marks)

a = 3, d = 6

$S_{80} = 80/2\ [6 + 79\times6]$
= 40 (6 + 474)

= 40 × 480
= **19200**

Q31. Curved Surface Area of Cone (3 Marks)

$l = \sqrt{(14^2 + 48^2)}$
$= \sqrt{(196 + 2304)}$
$= 50$

$CSA = \pi rl$
$= 22/7 \times 14 \times 50$
$= \mathbf{4400\ cm^2}$

✳ SECTION – D (5 × 4 = 20 Marks)

Q32. Completing Square Method (5 Marks)

$x^2 – 9x + 20 = 0$

$x^2 – 9x = –20$

Add $(9/2)^2 = 81/4$

$(x – 9/2)^2 = 1/4$

$x – 9/2 = \pm 1/2$

$x = 5$ or 4

Q33. Basic Proportionality Theorem (5 Marks)

If a line parallel to one side divides other two sides proportionally,

Then AD/DB = AE/EC

Hence proved.

Q34. Probability (5 Marks)

Total cards = 52

(i) Hearts = 13
P(Heart) = **1/4**

(ii) Face cards (J,Q,K = 12)
P(Face card) = **3/13**

Q35. Sphere into Cubes (5 Marks)

Volume sphere = $4/3\ \pi\ 35^3$
= $179594.67\ cm^3$

Volume cube = $125\ cm^3$

Number = 179594.67 / 125
≈ **1437 cubes**

✳ SECTION – E (Case Study)

Q36. Circular Park

Radius = 84 m

(i) Circumference = $2\pi r$
= **528 m**

(ii) Area = πr^2
= **$22176\ m^2$**

(iii) Cost = 528 × 300
= **₹1,58,400**

Q38. Ladder Problem

Height = 100 sin 45°
= **70.71 m**

Distance = 100 cos 45°
= **70.71 m**

Verification:

$\sin^2\theta + \cos^2\theta = 1$ ✓ Verified
