

UPPSC LT Grade Maths Teacher Practice Set PDF – 100+ MCQs with Answers & Solutions (PYQ Based)**Syllabus Covered:**

- Number System
- Algebra
- Geometry
- Trigonometry
- Mensuration
- Statistics & Probability

Note: All questions are Maths-only; no GS/GK questions included. PYQ years are mentioned where applicable.

SECTION A – Number System (15 Questions)

Q1. [PYQ 2019] If the sum of squares of two consecutive integers is 365, find the integers.

- A) 12, 13
- B) 13, 14
- C) 14, 15
- D) 15, 16

Answer: B) 13, 14

Solution: Let integers be n and $n+1$.

$$n^2 + (n+1)^2 = 365 \rightarrow n^2 + n^2 + 2n + 1 = 365 \rightarrow 2n^2 + 2n - 364 = 0 \rightarrow n^2 + n - 182 = 0 \rightarrow n = 13$$

Q2. [PYQ 2020] The greatest number that divides 455, 572, and 637 leaving remainder 5 in each case is:

- A) 35
- B) 34
- C) 36
- D) 33

Answer: A) 35

Solution: Subtract remainder: 450, 567, 632. HCF of 450, 567, 632 = 35

Q3. LCM of 12, 15, and 20 is:

- A) 60
- B) 90
- C) 120
- D) 180

Answer: C) 60

Solution: LCM = $2^2 \times 3 \times 5 = 60$

Q4. [PYQ 2018] Find the HCF and LCM of 48 and 180.

Answer: HCF=12, LCM=720

Q5. If the product of two numbers is 2025 and HCF is 9, find LCM.

Answer: LCM = $2025/9 = 225$

Q6. [PYQ 2021] Find the sum of first 50 natural numbers.

Answer: $n(n+1)/2 = 50*51/2 = 1275$

Q7. The remainder when 2^{40} is divided by 7 is:

Answer: 2

Q8. Find the sum of first 20 even numbers.

Answer: $20*(2+40)/2 = 420$

Q9. If a number leaves remainder 3 when divided by 5 and remainder 2 when divided by 7, find the number < 50 .

Answer: 17

Q10. [PYQ 2017] Find the sum of squares of first 10 natural numbers.

Answer: $n(n+1)(2n+1)/6 = 385$

Q11. The unit digit of 7^{99} is:

Answer: 3

Q12. Find HCF of 84, 126, 210.

Answer: 42

Q13. The smallest number divisible by 8, 12, and 18 is:

Answer: 72

Q14. [PYQ 2016] Find the middle term of the arithmetic progression 3, 7, 11,..., 99.

Answer: 51

Q15. If $3/4$ of a number is 36, find the number.

Answer: 48

SECTION B – Algebra (20 Questions)

Q16. Solve $2x^2 - 5x + 2 = 0$

Answer: $x=1/2, 2$

Q17. [PYQ 2020] Sum of three consecutive odd numbers is 51.

Answer: 15,17,19

Q18. If $x^2 - 5x + 6 = 0$, find x.

Answer: $x=2,3$

Q19. Factorize $x^2 + 7x + 12$

Answer: $(x+3)(x+4)$

Q20. [PYQ 2019] Solve for y: $y^2 - 9y + 20 = 0$

Answer: $y=4,5$

Q21. Simplify: $(x^2 - 9)/(x+3)$

Answer: $x-3$

Q22. If $x+y=10$, $xy=21$, find x^2+y^2 .

Answer: $x^2+y^2=(x+y)^2 - 2xy = 100-42=58$

Q23. [PYQ 2018] Solve: $3x^2 - 2x - 1 = 0$

Answer: $x=1, -1/3$

Q24. Find roots of $4x^2 - 12x + 9 = 0$

Answer: $x=3/2$ (double root)

Q25. Solve: $x^2 + 5x + 6=0$

Answer: $x=-2,-3$

Q26. [PYQ 2021] A number is such that its square is 144 more than 5 times the number. Find it.

Answer: $x^2=5x+144 \rightarrow x^2-5x-144=0 \rightarrow x=16$ or -9

Q27. If $(x+1)(x+2)=6$, find x.

Answer: $x^2+3x+2=6 \rightarrow x^2+3x-4=0 \rightarrow x=1,-4$

Q28. Solve $x^2 - 10x + 21=0$

Answer: $x=3,7$

Q29. [PYQ 2017] Solve: $2x^2 + x - 3=0$

Answer: $x=1,-3/2$

Q30. Factorize $x^2 + 4x + 4$

Answer: $(x+2)^2$

Q31. Solve $x^2 - 7x + 10=0$

Answer: $x=2,5$

Q32. Solve $x^2 + x - 6=0$

Answer: $x=2,-3$

Q33. If $x^2 + 3x - 18=0$

Answer: $x=3,-6$

Q34. [PYQ 2016] If $x^2 - 6x + 5=0$, find roots

Answer: $x=1,5$

Q35. Solve $x^2 - 2x - 15=0$

Answer: $x=5,-3$

Q36. Solve $5x^2 + x - 6=0$

Answer: $x=1,-6/5$

Q37. Solve $3x^2 - x - 2 = 0$

Answer: $x = 1, -2/3$

Q38. Solve $x^2 + 2x - 8 = 0$

Answer: $x = 2, -4$

Q39. Solve $x^2 - 9 = 0$

Answer: $x = 3, -3$

Q40. Solve $x^2 - 4x + 3 = 0$

Answer: $x = 1, 3$

SECTION C – Geometry (15 Questions)

Q41. Sum of interior angles of polygon is 1080° , find number of sides.

Answer: 8

Q42. [PYQ 2021] Triangle sides ratio 3:4:5, perimeter 36 cm, sides are:

Answer: 9, 12, 15

Q43. Area of triangle with base=10, height=12

Answer: 60

Q44. Circumference of circle with radius 7 cm

Answer: $2\pi r = 44$ cm

Q45. [PYQ 2019] Area of square with side 8 cm

Answer: 64 cm^2

Q46. Diagonal of rectangle 10, breadth 6 \rightarrow length?

Answer: $\sqrt{10^2 - 6^2} = 8$

Q47. Area of trapezium with parallel sides 8, 12 and height 5

Answer: 50

Q48. [PYQ 2018] Radius of circle whose area is 154 cm^2

Answer: $r = 7$ ($\pi = 22/7$)

Q49. Area of parallelogram base 10, height 5

Answer: 50

Q50. Side of cube 5 \rightarrow volume?

Answer: 125

Q51. [PYQ 2020] Perimeter of equilateral triangle with side 7

Answer: 21

Q52. Surface area of sphere radius 7

Answer: 616

Q53. Volume of cylinder radius 5, height 10

Answer: 250π

Q54. [PYQ 2017] Diagonal of cube side 4

Answer: $4\sqrt{3}$

Q55. Area of circle sector radius 7, angle 90°

Answer: $(1/4)\pi r^2 = 38.5$

SECTION D – Trigonometry (15 Questions)

Q56. $\sin^2 A + \cos^2 A = ?$

Answer: 1

Q57. $\sin 30^\circ = ?$

Answer: $1/2$

Q58. [PYQ 2019] $\tan^2 30^\circ + \cos^2 60^\circ = ?$

Answer: 1

Q59. $\cos^2 45^\circ + \sin^2 45^\circ$

Answer: 1

Q60. If $\sin A = 3/5$, $\cos A = ?$

Answer: $4/5$

Q61. $\tan 45^\circ = ?$

Answer: 1

Q62. $\sin 60^\circ = ?$

Answer: $\sqrt{3}/2$

Q63. [PYQ 2020] $\sin^2 30^\circ + \cos^2 30^\circ$

Answer: 1

Q64. $\tan^2 45^\circ + 1$

Answer: 2

Q65. $\sin^2 0^\circ + \cos^2 0^\circ$

Answer: 1

Q66. $\tan 30^\circ * \cot 30^\circ$

Answer: 1

Q67. [PYQ 2018] $\sin^2 A - \cos^2 A = ?$

Answer: $-\cos 2A$

Q68. $1 + \tan^2 A = ?$

Answer: $\sec^2 A$

Q69. $1 + \cot^2 A = ?$

Answer: $\csc^2 A$

Q70. $\sin^2 A / \cos^2 A = ?$

Answer: $\tan^2 A$

SECTION E – Mensuration (20 Questions)

Q71. Area of circle radius 7

Answer: 154

Q72. Volume of sphere radius 7

Answer: 1436

Q73. Surface area of cylinder radius 5, height 10

Answer: 471

Q74. [PYQ 2019] Area of triangle base=8, height=5

Answer: 20

Q75. Volume of cone radius 3, height 4

Answer: 12π

Q76. Area of rectangle 10×5

Answer: 50

Q77. Perimeter of square side 7

Answer: 28

Q78. Volume of cube side 6

Answer: 216

Q79. [PYQ 2018] Surface area of cube side 5

Answer: 150

Q80. Volume of cylinder radius 4, height 7

Answer: 112π

Q81. Area of parallelogram base=8, height=5

Answer: 40

Q82. Area of trapezium $a=6$, $b=10$, $h=5$

Answer: 40

Q83. Surface area of sphere radius 5

Answer: 314

Q84. Diagonal of square side 7

Answer: $7\sqrt{2}$

Q85. Circumference of circle radius 14

Answer: 88

Q86. [PYQ 2020] Area of sector radius 7, angle 60°

Answer: 25.4

Q87. Volume of cube side 3

Answer: 27

Q88. Surface area of cylinder radius 3, height 8

Answer: 198

Q89. Volume of cone radius 3, height 4

Answer: 12π

Q90. Area of rectangle 8×12

Answer: 96

SECTION F – Statistics & Probability (15 Questions)

Q91. Mean of 5, 7, 9, 11, 13

Answer: 9

Q92. [PYQ 2019] Median of 2,5,7,10,12

Answer: 7

Q93. Mode of 3,3,4,5,5,5,6

Answer: 5

Q94. Probability of getting head in a coin toss

Answer: $1/2$

Q95. Mean of 2,4,6,8,10,12

Answer: 7

Q96. [PYQ 2018] Sum of deviations from mean

Answer: 0

Q97. If two dice thrown, probability sum=7

Answer: $6/36 = 1/6$

Q98. Probability of even number on dice

Answer: $3/6 = 1/2$

Q99. Mean of 10,20,30,40,50

Answer: 30

Q100. [PYQ 2021] Variance of 2,4,6,8,10

Answer: 8

Q101. Probability of drawing red card from deck

Answer: $26/52 = 1/2$

Q102. Standard deviation of 5,5,5,5

Answer: 0

Q103. Mean deviation of 2,4,6

Answer: $4/3$

Q104. Probability of prime number on dice

Answer: $3/6 = 1/2$

Q105. [PYQ 2020] Median of 3,6,9,12,15

Answer: 9

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