



NTSE (Level - 1) MAT Solutions (Tamil Nadu)

1. $19, 24, 31, 42, 55, 72, \underline{\quad} ?$

Diff. is $+5, +7, +11, +13, +17, +19$

$$72 + 19 = 91$$

Option : 3

2. $10, 58, 105, \underline{\quad} ?, 196, 240$

$$+48 \quad +47 \quad +46 \quad +45 \quad +44$$

$$105 + 46 = 151$$

\Rightarrow Option : 2.

3. Z, W, R, K $\underline{\quad} ? \underline{\quad}$.

$$\begin{array}{ccccccc} 26, & 23, & 18, & 11, & \underline{\quad} ?, & 2 \\ -3 & -5 & -7 & -9 & & = B \end{array}$$

Option : 1

4. $1, 4, 13, 40, 121, \underline{\quad} ?$

$$\times 3+1 \quad \times 3+1 \quad \times 3+1$$

$$121 \times 3 + 1 = 364$$

\Rightarrow Option : 2

5. $0, 1, 2, 3, 6, 11, 20, \underline{\quad} ?$

Sum of the '3' numbers

$$0 + 1 + 2 = 3$$

$$1 + 2 + 3 = 6$$

$$3 + 6 + 11 = 20$$

$$6 + 11 + 20 = 37$$

Option : 3

6. $6, 7, 10, 18, 16, 15, 26, 23, 42, 38, 68$

$$\text{Alternative sum} = 23 + 38 = 61$$

\Rightarrow Option : 1.

7. $5 \times 6 = 30 + 9 - 2 = 37$

$$11 \times 6 = 66 + 3 - 7 = 62$$

$$17 \times 5 + 10 - 7 = 88$$

Option : 4

8. PEN : WRITING :: CYCLE : RIDING
Option : 3
9. EYE : FACE :: KNOB : DOOR
10. WING : BEAK : PLUTO : VENUS
11. ROOM : HOUSE : ROOF : BUILDING
12. $5 \times 6 - 1 \Rightarrow 6 \times 7 - 1 \Rightarrow 6$
Option : 2
13. CANADA : DOLLOR :: GERMANY : DEUTSCHE Mark
14. CARBOHYDRATE : POTATO : FAT : GHEE
15. DAVIS CUP : LAWNTENNIS : DEODHAR TROPHY : CRICKET

16. $P_1 \quad P_2 \quad P_3 \quad P_4$
 $7 \quad 11 \quad 13 \quad 17$

Answer the five data

$$p_1 \times p_2 \times p_3 = 1001 = 7 \times 11 \times 13$$

$$p_2 \times p_3 \times p_4 = 2431 = 11 \times 13 \times 17$$

\therefore ANs is 17 i.e., least number

17. Here the remainders resame, so that first we have to subtract with one and another, then will take H.C.F. of resultant numbers.

$$\begin{array}{ccc} 237 - 132, & 132 - 62, & 237 - 62 \\ \downarrow & \downarrow & \downarrow \\ 105 & 70 & 175 \end{array}$$

H.C.F of 105, 70, 175 is 35

18. Here we just take L.C.M of the given number

$$\begin{array}{l} 12 \overline{) 48, 12, 108} \\ 3 \overline{) 4, 6, 9} \\ 2 \overline{) 4, 2, 3} \\ \quad \overline{) 2, 1, 3} \end{array}$$

$$12 \times 3 \times 2 \times 2 \times 1 \times 3$$

$$= 432 \text{ sec}$$

$$= 7 \text{ min and } 12 \text{ sec}$$

\therefore It will rings at 7 : 07 : 12

19. $1 : 2 = 60$
 $20 : 40 \Rightarrow 20$
right wrong

20. $\frac{1}{5} - \frac{1}{25} = \frac{20}{125} = \frac{4}{25} = 0.16$

21. $\frac{2x}{1 + \frac{x}{1-x}} = \frac{2x}{1 + \frac{1}{1-x+x}} = \frac{2x}{1 + \frac{1}{1-x}} \Rightarrow \frac{2x}{1+1-x} = 3$

$$5x = 6 \Rightarrow x = \frac{6}{5}$$

22. $36 + 18 \div 9 - 3 \times 26$
 $36 \div 18 - 9 \times 3 + 26$
 $2 - 27 + 26 \Rightarrow 28 - 27 = 1$

23. Total students = x
 half the children got 16 books each

$$\Rightarrow \frac{x}{2} = 16 \Rightarrow x = 32 \Rightarrow \text{Total} = 32 \times 16 = 512$$

24. $x = \frac{\sqrt{5} + \sqrt{4}}{\sqrt{5} - \sqrt{4}} \Rightarrow \frac{(\sqrt{5} + \sqrt{4})}{\sqrt{5} - \sqrt{4}} \times \frac{(\sqrt{5} + \sqrt{4})}{\sqrt{5} + \sqrt{4}} = (\sqrt{5} + \sqrt{4})^2 = 9 + 2\sqrt{20}$

$$\Rightarrow y = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}} = \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} + \sqrt{4}} \times \frac{\sqrt{5} - \sqrt{4}}{\sqrt{5} - \sqrt{4}} = (\sqrt{5} - \sqrt{4})^2 = 9 - 2\sqrt{20}$$

$$x^2 + y^2 = (x + y)^2 - 2xy = (9 + 2\sqrt{20} + 9 - 2\sqrt{20})^2 - 2(9 + 2\sqrt{20})(9 - 2\sqrt{20})$$

$$= (18)^2 - 2(81 - 4 \cdot 20) = 324 - 2 = 322$$

25. $\sqrt{1.3} + \sqrt{1300} + \sqrt{0.013} = \sqrt{\frac{130}{100}} + \sqrt{1300} + \sqrt{\frac{130}{10000}}$

$$= \frac{11.4}{10} + 36.05 + \frac{11.7}{100} = 1.14 + 36.05 + 0.014 = 37.304$$

26. $\frac{1}{\sqrt{9} - \sqrt{8}} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} - \frac{1}{\sqrt{5} - \sqrt{4}}$

After rationalizing, we got

$$\sqrt{9} + \sqrt{8} - \sqrt{8} - \sqrt{7} + \sqrt{7} + \sqrt{6} - \sqrt{6} - \sqrt{5} + \sqrt{5} + \sqrt{4} = \sqrt{9} + \sqrt{4} = 5$$

27. $\sqrt{\frac{(0.03)^2 + (0.21)^2 + (0.065)^2}{(0.03)^2 + (0.021)^2 + (0.0065)^2}}$

$$= \sqrt{\frac{\left(\frac{3}{100}\right)^2 + \left(\frac{21}{100}\right)^2 + \left(\frac{650}{100}\right)^2}{\left(\frac{3}{1000}\right)^2 + \left(\frac{21}{1000}\right)^2 + \left(\frac{650}{1000}\right)^2}} = \sqrt{\frac{\left(\frac{3}{100}\right)^2 + \left(\frac{21}{100}\right)^2 + \left(\frac{650}{100}\right)^2}{\frac{1}{100} \left[\left(\frac{3}{100}\right)^2 + \left(\frac{21}{100}\right)^2 + \left(\frac{650}{100}\right)^2\right]}}$$

$$= \sqrt{\frac{1}{\frac{1}{100}}} = 10$$

28. Height of pencil = 28 cm, outer radius = 3 mm, inner radius = 1 mm

$$R = \frac{3}{10} = 0.3 \text{ cm} \quad r = 0.1 \text{ cm}$$

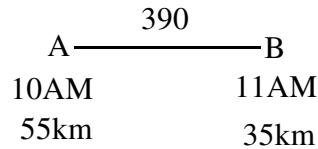
$$\begin{aligned} \text{Volume} &= \pi h (R^2 - r^2) = \frac{22}{7} \times 28 \times ((0.03)^2 - (0.1)^2) \\ &= 22 \times 4 \times (0.09 - 0.01) \\ &= 22 \times 4 \times 0.08 = 7.04 \text{ cm}^3 \end{aligned}$$

29. $10x + y - 10y - x$
 $9x - 9y = 36$

$$x - y = \frac{36}{9} \Rightarrow x - y = 4$$

30. $\frac{-65}{325} \frac{325}{100} = 3.25$ hr after "11"

i.e., 11hrs + 3.25 hr => 2 : 15 pm.



31. where, r = h

$$\frac{1}{3} \pi r^2 h : \frac{2}{3} \pi r^3 : \pi r^2 h$$

$$\frac{1}{3} r^{\cancel{2}} : \frac{2}{3} r^{\cancel{3}} : r^{\cancel{2}} h$$

$$\frac{1}{3} : \frac{2}{3} : 1 \Rightarrow 1 : 2 : 3$$

32. d = 24
 a = 20

$$\begin{aligned} d_1^2 + d_2^2 &= 4a^2 \\ &= 1600 + 576 \end{aligned}$$

$$\boxed{d_1 = 32} \Rightarrow \frac{1}{2} d_1 \times d_2 = \frac{1}{2} \times 24 \times 32 = 384 \text{ cm}^2$$

33. E + K = 4 + 10 = 14 = N + 1 = 0

34. B + 4 = 1 + 20 = 21 = U + 1 = V

35. A + C + F = 0 + 2 + 5 = 7 = G + 1 = H

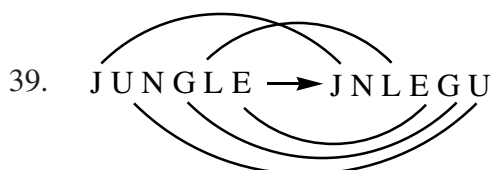
36. L - 5 = 11 - 18 = -7 + 26 = 19 = S + 1 = T

37. -D - P = -3 - 15 = -18 + 26 = 8 = H + 1 = I

38. $\begin{matrix} +3 & +3 \\ \text{good} & \rightarrow \text{JRRG} \end{matrix}$

JACK → MDFN

$$\begin{matrix} +3 & +3 & +3 & +3 & +3 \\ \text{FRUIT} & & & & \rightarrow \text{IUXLW} \end{matrix}$$

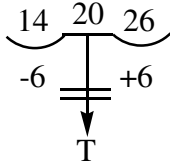


FOREST → FRSTEO

40. A E I O U
Eliminate
10 + 3 = M

41. $E \cancel{C} \cancel{O} \cancel{N} \cancel{D} MY$
 $\cancel{S} \cancel{E} \cancel{C} \cancel{O} \cancel{N} D \Rightarrow MY$

42. N & Z



43. Pessimism is

44. HUNGER is feeling

45. Labourer is belongs to a part from the kingdoms

46. WESTBENGAL

47. By the observation option 1 follows

48. Option '3'

49. Option '1'

50. Option '4'

51. Option '2'

52. Option '1'

53. Option '3'

54. Option '1'

55. Option '2'

56. Option 1

57. Option 3

58. Option 2

59. Option 4

60. Option 4

61. Option 4

62. Option 3

63. Option 1

64. Option 2

65. MONK : Brother hood : : letters : Jumble

66. 'K' $\begin{matrix} N \\ \text{Current Events} \end{matrix}$ = $\begin{matrix} L \\ \text{Art\&Culture} \end{matrix}$ - $\begin{matrix} K \\ \text{Sports} \end{matrix}$

$\begin{matrix} J \\ X \end{matrix}$ - $\begin{matrix} M \\ X \end{matrix}$

- 67. L
- 68. 'N'
- 69. 'L'
- 70. J, L, M



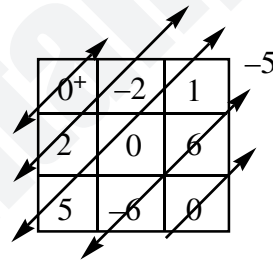
71. A⁺ --- F⁻

uncle Option 2

- 72. Option : 4
- 73. Option : 3
- 74. You will get '66' option 1
- 75. Zero (0) option 2

76. $5 \times 7 = 35$ $x = 35$
 $6 \times 3 = 18$ $y = 3$
 Option : 2

77. Sum of diagonal is '0'
 $5 + 0 - 5 = 0$
 $= -5$



78. a b a a b a a b a a b a a b a
 Opstion : 2 b b a b

- 79. APPLE 79 → Add
- 80. TRUTH → T R U T H
- 81. $A > B, C < B, D = C$
 then $C < A \rightarrow C \Delta A$
 Option 1
- 82. $A \neq C; C < B, B = A$
 then $A > C \Rightarrow A \square C$
 Option : 4

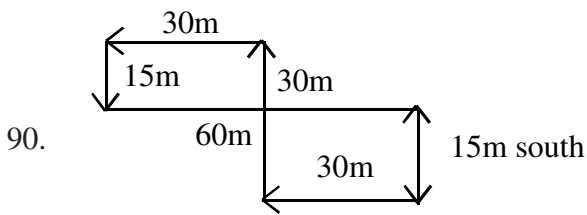
83. $A \Delta C, B \square C$ and $B \odot E$
 $A < C, B > C$ & $B = E$
 $A < E \Rightarrow A \Delta E$
 Option : 2

84. $A > 0$ & $AB > AC$ then
 If $A = 1$
 $1 > 0 \Rightarrow B > C$
 If 'D' value is same for both then
 $(B + D) > (C + D)$
 Option : 3

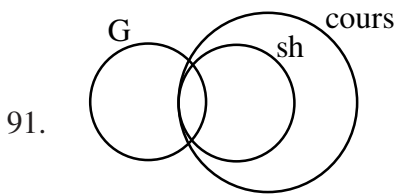
85. $S^+ = u^-$
 \downarrow
 $R^+ - T^-$
 \downarrow
 $Q^+ - P^+$

T & U Option 2

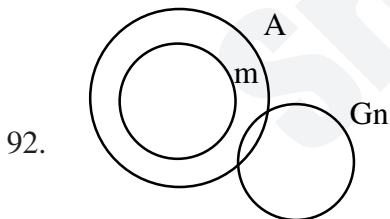
- 86. Husband Option : 1
- 87. Brother Option : 3
- 88. Option 1 \Rightarrow S, R, Q, P
- 89. 'R' Option : 2



Option : 4



Option : 2



Only II Follows
 Option : 3.

- 93. '10' Small triangles
 Option : 1
- 94. By observation option '4' satisfy
- 95. Option '1' satisfies
- 96. Option : 2
- 97. Option : 1
- 98. Option : 4

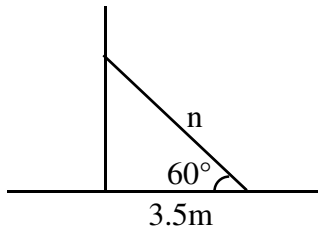
99. 6 : 45 AM

$$(5x - y) \times 6 \pm \frac{y}{2}$$

$$(30 - 45) 6 \pm 22 \frac{1}{2}^\circ$$

$$90 - 22 \frac{1}{2} = 67.5^\circ$$

100.



$$\cos 60^\circ = \frac{3.5}{x}$$

$$\frac{1}{2} = \frac{3.5}{x}$$

$$x = 7$$

Option : 1

