

NATIONAL TALENT SEARCH EXAMINATION-2018-19, MAHARASHTRA

MENTAL ABILITY TEST (MAT) HINTS & SOLUTIONS

1.

Sol:

(1)

1. ABDEF

E & F are consecutive letters

2. JKMNX

N & X are not consecutive letters

3. GHJKR

K & R are not consecutive letters

4. IJLMT

M & T are not consecutive letters

2.

Sol:

(3)

1. CEG 18

$C(3) + E(5) + G(7) = 15 + 3 = 18$

2. KMO 42

$K(11) + M(13) + O(15) = 39 + 3 = 42$

3. UWY 70

$U(21) + W(23) + Y(25) = 69 + 3 \neq 70$

4. RTV 63

$R(18) + T(20) + V(22) = 60 + 3 = 63$

3.

Sol:

(3)

By observation

4.

Sol:

(4)

By observation

5.

Sol:

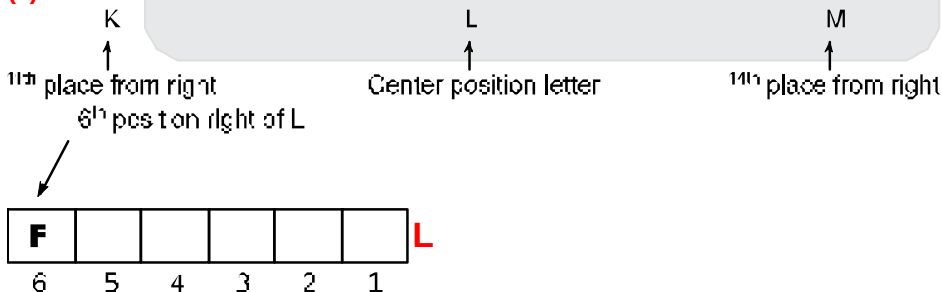
(2)

By observation

6.

Sol:

(2)



7.

Sol:

(1)

$$25 : 100 \rightarrow 5^2 \times (5 - 1) = 25 \times 4 = 100$$

$$81 : 648 \rightarrow 9^2 \times (9 - 1) = 81 \times 8 = 648$$

8.

Sol: (3)
By observation

9.
Sol: (2)
By observation

10.
Sol: (4)
By observation

11.
Sol: (2)
 $13 + 10 = 23$
 $23 + 20 = 43$
 $43 + 40 = 83$
 $83 + 80 = 163$
 $163 + 160 = 323$

12.
Sol: **Doubt**
 $12 + 3 = 15$
 $15 + 6 = 21$
 $21 + 3 = 24$
 $24 + 6 = 30$
 $30 + 3 = 33$
 $33 + 6 = 39$
 $39 + 3 = 42$

13.
Sol: (2)
 $16 \times 2.5 = 40, 40 \times 2.5 = 100, 100 \times 2.5 = 250, 250 \times 2.5 = 625.$

14.
Sol: (3)
 $23 + (2 \times 3) = 29$
 $29 + (2 \times 9) = 47$
 $47 + (4 \times 7) = 75$
 $75 + (5 \times 7) = 110$

15.
Sol: (1)
M is opposite to E
∴ Not adjacent

16.
Sol: (2)
By observation

17.

Sol: (1)



Clockwise, so in the given not

18.

Sol: **Bonus**

$$\sqrt{18 \times 8 \times 9 \times 16} = 144$$

$$\sqrt{22 \times 9 \times 33 \times 6} = 198$$

$$\sqrt{24 \times 12 \times 18 \times 16} = 288$$

19.

Sol: (4)

$$4^3 + 7^3 + 3^3 = 434$$

$$6^3 + 5^3 + 2^3 = 125$$

$$\text{So } 8^3 + 2^3 + 4^3 = 584$$

20.

Sol: (4)

By observation

21.

Sol: (4)

By observation

22.

Sol: (1)

$$13 \times 8 = 104$$

$$8 \times 8 = 64$$

$$8 + 13 + 64 = 85 \text{ similarly}$$

$$14 \times 14 = 196,$$

$$X \times 14 = 154$$

$$X + 14 + 196 = 221 \quad \text{so, } X = 11$$

23.

Sol: (4)

$$21 \times 15 = 315$$

$$X = 15 \times 15, \text{ and } 15 + 21 + X = 261 \quad \text{so, } x = 225$$

24.

Sol: (2)

$$3 \times 3 = 9$$

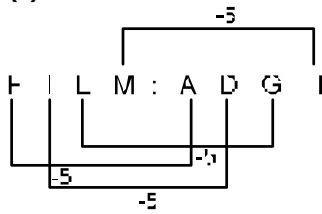
$$27 \times 3 = x$$

$$3 + 27 + 9 = 39 \quad \text{so, } x = 81$$



25.

Sol: (4)



Similarly MILK : HDGF

26.

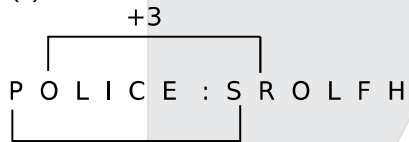
Sol.: Bonus

$$MK = \frac{13^2}{1311} = \frac{169}{121}$$

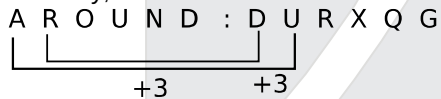
$$\text{So, } JH = \frac{10^2}{8^2} = \frac{100}{64}$$

27.

Sol.: (2)



Similarly,



28.

Ans. (2)

29.

Ans. (3)

30.

Ans. (3)

28. – 30.

Sol.: MEENA

↓

–

–

Champak
Mogra

SARIKA

↓

Marigold
Jai
Champak
Mogra

GEETA

↓

Marigold
Jai
Champak
–

NEETA

↓

–

Jai
Champak
Mogra

31.

Sol.: (1)

By observation

32.

Sol.: (3)

By observation

33.

Sol.: (1)
By observation

34.

Sol.: (1)
 $3 \times 2 = 29$
 $4 \times 5 = 74$
 $7 \times 3 = 58$
 $6 \times 8 =$
 $23 + (3 \times 2) \quad 54 + (4 \times 5) \quad 37 + (7 \times 3) \quad 86 + (8 \times 6)$
 $23 + 6 \quad 54 + 20 \quad 37 + 21 \quad 86 + 48$
 $29 \quad 74 \quad 58 \quad 134$

35.

Sol.: (3)
 $11+5 = 36$
 $22+6 = 58$
 $33+7 = 82$
 $44+8 = 108$
 $55+9 = 136$

36.

Sol.: (4)
By observation

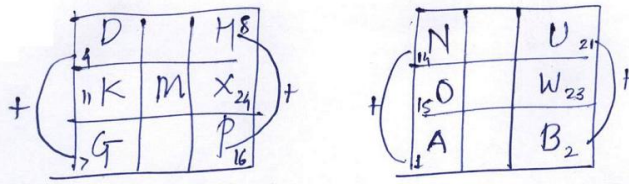
37.

Sol.: (1)
By observation

38.

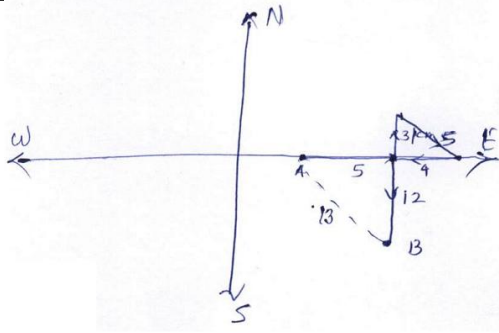
Sol.: Bonus
AD $1+4^2 = 17$ $3+6^2 = 39$ CF
BP $2+16^2 = 258$ $8+10^2 = 108$ HJ
GH $7+8^2 = 71$ $12+13^2 = 181$ LM

39.

Sol.: (1)

 $X_{(24)} - K_{(11)} = 13_{(M)}$ $W_{23} - O_{15} = 8_{(H)}$

40.

Sol.: (1)



41.

Sol.: (2)

42.

Sol.: (2)

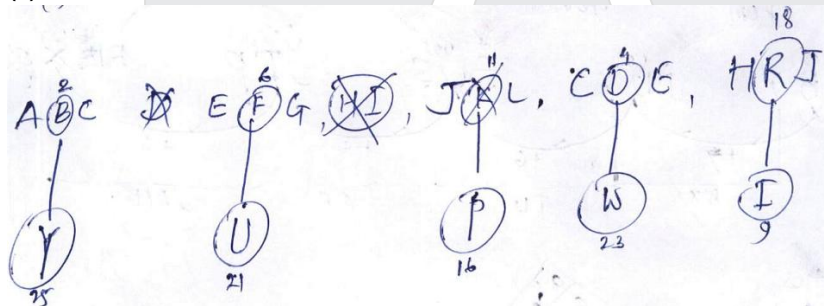
It is obvious

43.

Sol.: (3)

44.

Sol.: (1)



$$\text{Sum (B + Y)} = 27$$

$$(F + U) = 27$$

$$(K + P) = 27$$

$$(D + W) = 27$$

$$(R + I) = 9$$

45.

Sol.: (2)

14 20 19
N T S,
53

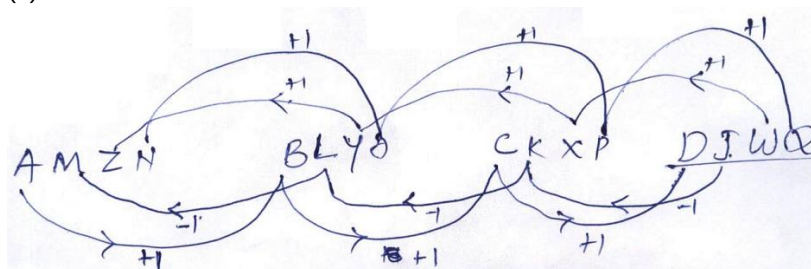
15 21 20
O U T,
56

16	20	19
P	T	S,
55		

17	18	19
Q	R	S
54		

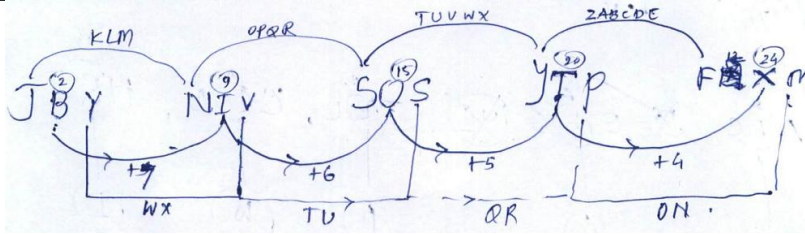
46.

Sol.: (2)



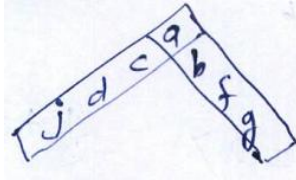
47.

Sol.: (4)



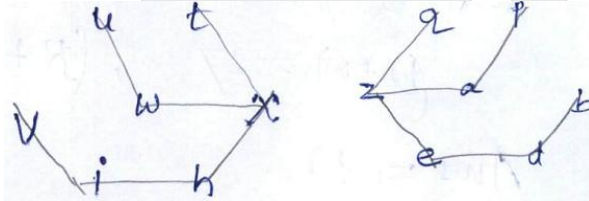
48.

Sol.: (1)



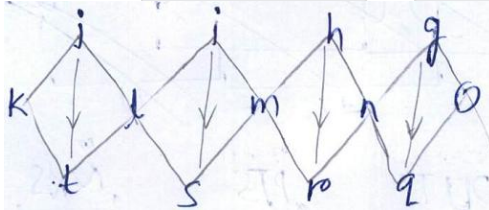
49.

Sol.: (2)



50.

Sol.: (1)



51 – 53.

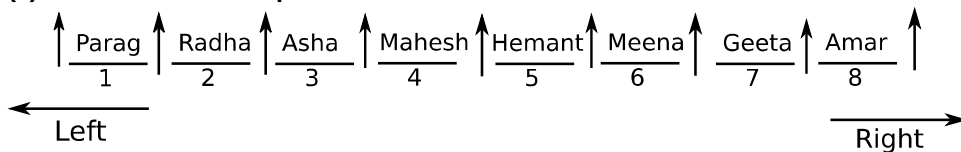
Given: (1) Gita is at third place to right of mahesh

(2) Amar is first place to the right of Geeta

(3) Asha is fourth place to the left of Geeta

(4) Radha is at central place between parag & Asha

(5) Meena is at central place between Geeta & Hemant



51.

Sol. Doubt

52.

Sol. (2) Mahesh

53.

Sol. (2) Asha

54.

Sol. (3)

From observation

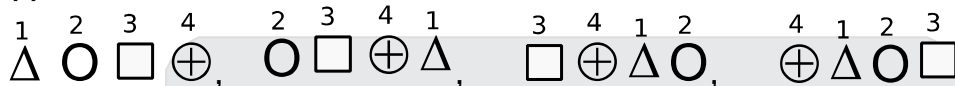
55.

Sol. (1)

From observation

56.

Sol. (2)



57.

Sol. (3)

1 2 3 4 5 5 1 2 3 4 4 5 1 2 3 3 4 5 1 2
α η θ λ, λ α η θ, θ λ α η, f θ λ α η

58-59.

Sol. Get Ramesh = x years

Suresh = y year

Before 10 years $\frac{x-10}{y-10} = \frac{1}{5} \Rightarrow 5x - y = 40 \dots\dots(1)$

After 10 years $\frac{x+10}{y+10} = \frac{3}{5} \Rightarrow 5x - 3y = 20 \dots\dots\dots(2)$

By solving equation 1 & 2

x = 14 and y = 30

58.

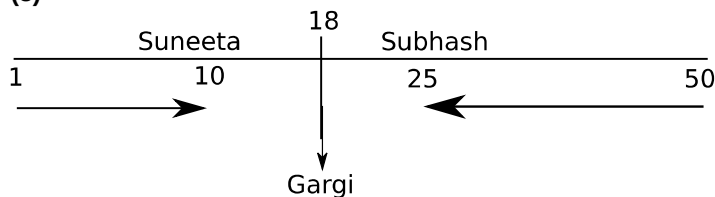
Sol. (1)

59.

Sol. (4)

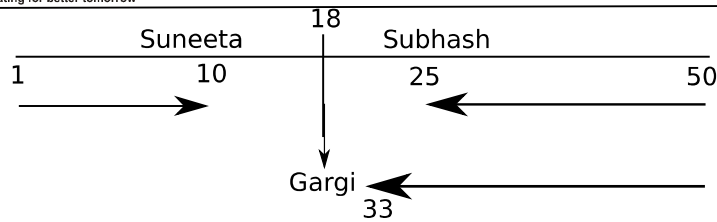
60.

Sol. (3)



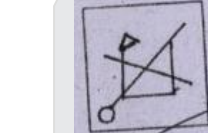
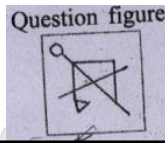
61.

Sol. (3)



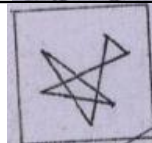
62.

Sol. (4)



63.

Sol. (1)



64.

Sol. (3)

$$\begin{aligned} (60 - 37) \times 2 &= 46 \\ (158 - 121) \times 2 &= 74 \\ (269 - 318) \times 2 &= 98 \end{aligned}$$

65.

Sol. (2)

$$\begin{aligned} 3 \times 5 + 7 \times 3 &= 36 \\ 6 \times 4 + 2 \times 7 &= 38 \\ 4 \times 3 + 5 \times 8 &= 52 \end{aligned}$$

66.

Sol. (3)

J G D A Z W T Q U R O L L I F C
 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3

67.

Sol. (4)

A G M D J P H N T K Q W
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 +6 +6 +6 +6 +6 +6 +6 +6

68.

Sol.

(2)
 BF YU GK TP FJ UQ DH WS
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
 +4 -4 +4 -4 +4 -4 +4 -4

69.

Sol.

(3)
 $(4 + 3 + 2 + 1) \times 4 = 40$

70.

Sol.

(4)
 $4 \times 6 = 24$
 $4 \times 6 = 24$
 $2 \times 4 = 8$
 $1 \times 4 = 4$
 $1 \times 2 = 2$
 Total = $24 + 24 + 8 + 4 + 2 = 62$

71-73.

Sol.

(1) PACK = TEGO (+4, +4, +4, +4)
 (2) PACK = MXZH (-3, -3, -3, -3)
 (3) PACK = VFGO (+6, +5, +4, +4)
 (4) PACK = QDHR (+1, +3, +5, +7)

71.

Sol.

(2)
 (2) PACK = MXZH (-3, -3, -3, -3)

72.

Sol.

(4)
 (4) PACK = QDHR (+1, +3, +5, +7)

73.

Sol.

(1)
 (1) PACK = TEGO (+4, +4, +4, +4)

74.

Sol. Bonus

75. By observation

Sol.

(2)

76.

Sol:

(1)
 a b c c a b b c a a b c
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

77.

Sol: (4)
a b b a b a a b a b a b a a b

78.

Sol: (3) 36
By observation
 $6 \times 6 = 36$

79.

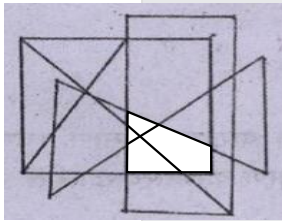
Sol: (3)
Ans. 15

80.

Sol: (1) 3
By observation

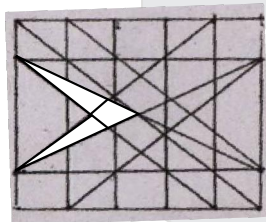
81.

Sol: (3)



82.

Sol: (4)



83.

Sol: (3)
Descending Order:
78 > 24 > 4
54 > 28 > 4
26 > 32 > 4
- 6

84.

Sol: (3)
 $738 \Rightarrow 9^3 + 9 = 729 + 9 = 738$
 $4930 \Rightarrow 17^3 + 17 = 4913 + 17 = 4930$
 $2210 \Rightarrow 13^3 + 13 = 2197 + 13 = 2210$
Ans $\Rightarrow 6^3 + 6 = 216 + 6 = 222$

85.

Sol:

(4)

$$6^2 + 5 = 41$$

$$4^2 + 5 = 21$$

$$8^2 + 5 = 69$$

$$10^2 + 5 = 105$$

86.

Sol:

(4)



87.

Sol:

(4)



88.

Sol:

(2)

9 4 7 5 8 0

↓ ↓ ↓ ↓ ↓ ↓

S T A P L E

89.

Sol:

(2)

By observation

90.

Sol.

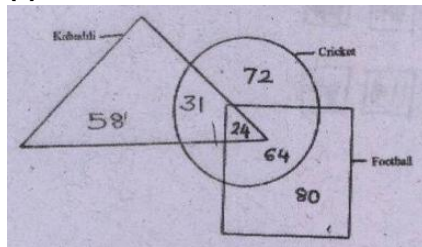
(3)

By observation.

91.

Sol:

(4) 31



92.

(4)

Sol: Kabadi + Cricket + Foot ball (Only one game)

$$58 + 72 + 80 = 210$$

93.

Sol:

(2) 58

By Observation

94.

Sol: (3) 6

$$3 \times 5 - 18 \div 3 \times + 3$$

$$3 \times 5 - 6 \times 2 + 3$$

$$15 - 12 + 3$$

$$15 - 9$$

$$6.$$

95.

Sol: (3) 17

$$4 \div 8 - 2 + 5 \times 7$$

$$\div \rightarrow +$$

$$4 + 8 \div 2 \times 5 - 7$$

$$+ \rightarrow \times$$

$$4 + 4 \times 5 - 7$$

$$\times \rightarrow -$$

$$4 + 20 - 7$$

$$- \rightarrow \div$$

$$24 - 7 = 17.$$

96.

Sol: (3)

By Observation

8 7 4 6 0 5 3

↓ ↓ ↓ ↓ ↓ ↓ ↓

? ! () ^ % \$

97.

Sol: (2)

By observation.

(% ! \$ `) Δ #

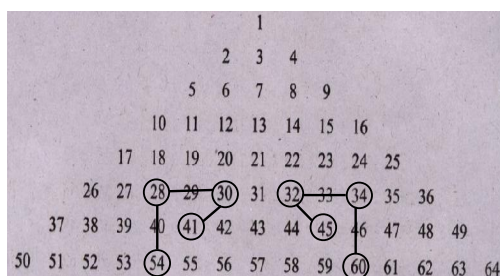
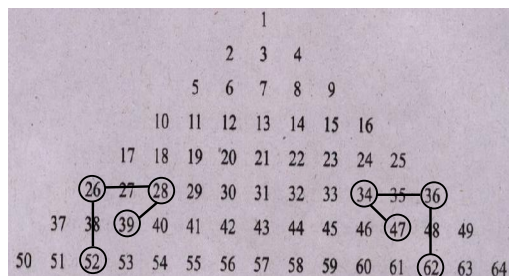
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

4 5 7 3 9 6 1 2

98.

Sol: (1)

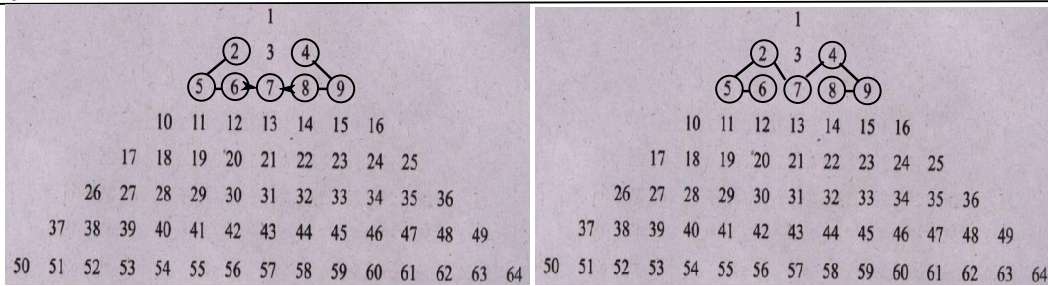
Make the pyramid (solution)



99.

Sol: (3)

By observing pattern



100.

Sol: (4)

By pattern

