

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:

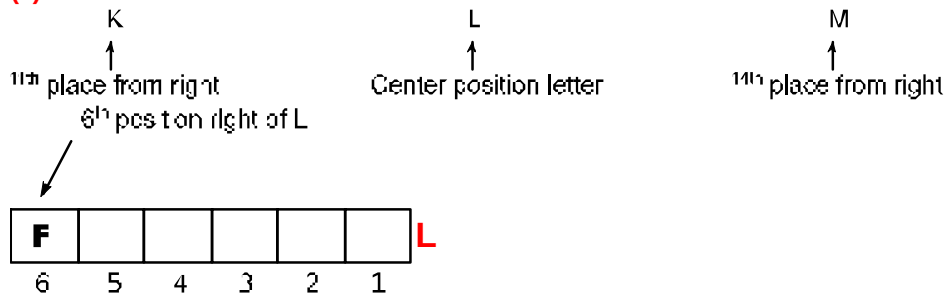
(2)

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
 $\therefore$ 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)

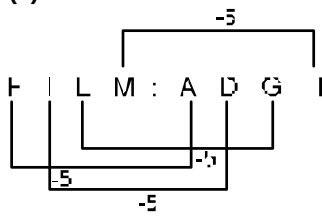
$$3 \times 3 = 9$$

$$27 \times 3 = x$$

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

25.

Sol: (4)



Similarly MILK : HDGF

26.

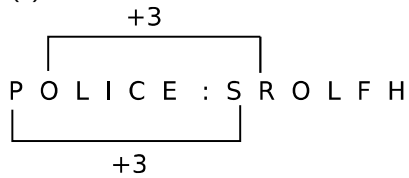
Sol.: Bonus

$$MK = \frac{13^2}{11^2} = \frac{169}{121}$$

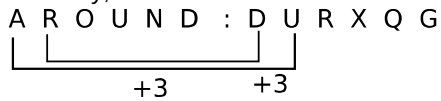
$$\text{So, } JH = \frac{10^2}{8^2} = \frac{100}{64}$$

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

Sol.: (1)
By observation

34.

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

35.

Sol.: (3)
 $11+5 = 36 \quad \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{array}{l} +22 \\ +24 \\ +26 \\ +28 \end{array}$
 $22+6 = 58$
 $33+7 = 82$
 $44+8 = 108$
 $55+9 = 136$

36.

Sol.: (4)
By observation

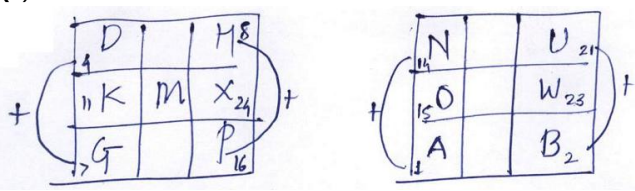
37.

Sol.: (1)
By observation

38.

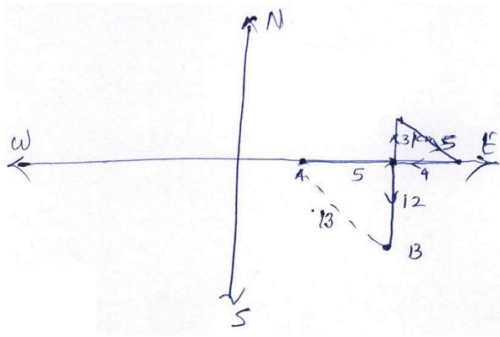
Sol.: Bonus
AD $1 + 4^2 = 17$ $3 + 6^2 = 39$ CF
BP $2 + 16^2 = 258$ $8 + 10^2 = 108$ HJ
GH $7 + 8^2 = 71$ $12 + 13^2 = 181$ LM

39.

Sol.: (1)

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

40.

Sol.: (1)



41.

Sol.: (2)

42.

Sol.: (2)

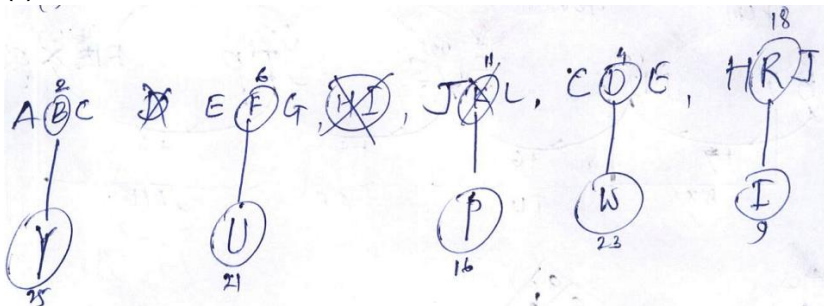
It is obvious

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)

$$\begin{array}{ccc} 14 & 20 & 19 \\ N & T & S, \\ \hline & 53 & \end{array}$$

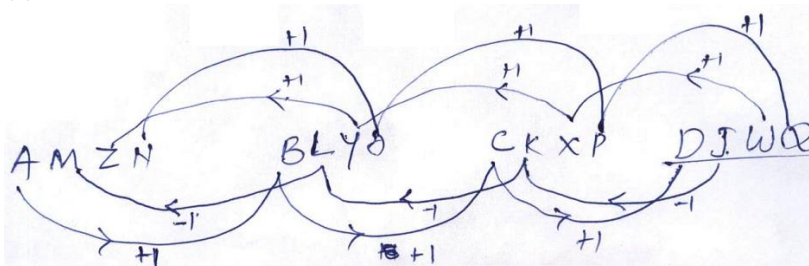
$$\begin{array}{ccc} 15 & 21 & 20 \\ O & U & T, \\ \hline & 56 & \end{array}$$

$$\begin{array}{ccc} 16 & 20 & 19 \\ P & T & S, \\ \hline & 55 & \end{array}$$

$$\begin{array}{ccc} 17 & 18 & 19 \\ Q & R & S \\ \hline & 54 & \end{array}$$

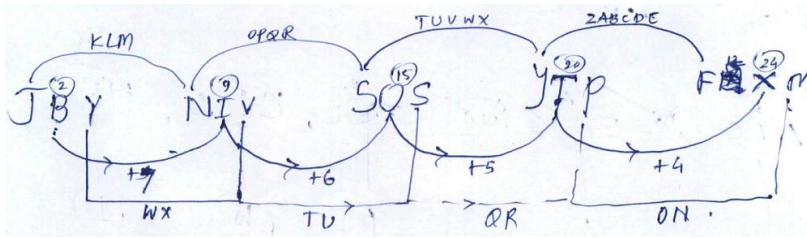
46.

Sol.: (2)



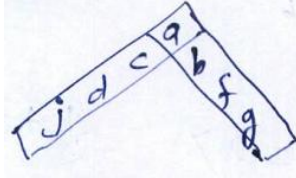
47.

Sol.: (4)



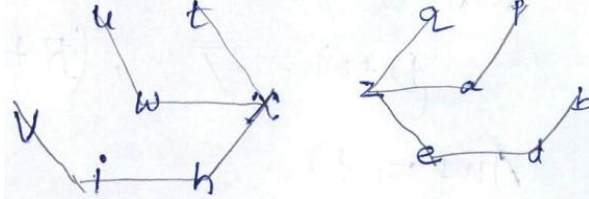
48.

Sol.: (1)



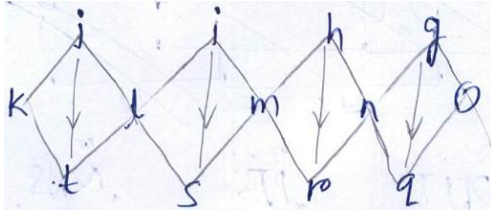
49.

Sol.: (2)



50.

Sol.: (1)



51 – 53.

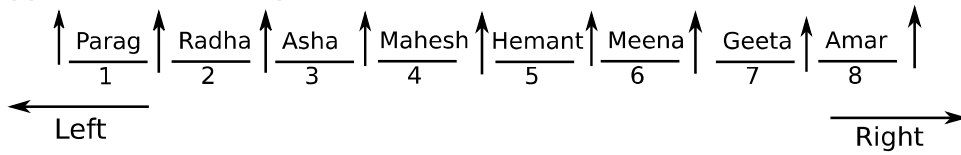
Given: (1) Gita is at third place to right of mahesh

(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)
 $\overset{1}{\Delta} \overset{2}{O} \overset{3}{\square} \overset{4}{\oplus}, \overset{2}{O} \overset{3}{\square} \overset{4}{\oplus} \overset{1}{\Delta}, \overset{3}{\square} \overset{4}{\oplus} \overset{1}{\Delta} \overset{2}{O}, \overset{4}{\oplus} \overset{1}{\Delta} \overset{2}{O} \overset{3}{\square}$

57.

Sol. (3)
 $\overset{1}{\alpha} \overset{2}{\eta} \overset{3}{f} \overset{4}{\theta} \overset{5}{\lambda}, \overset{5}{\lambda} \overset{1}{\alpha} \overset{2}{\eta} \overset{3}{f} \overset{4}{\theta}, \overset{4}{\theta} \overset{5}{\lambda} \overset{1}{\alpha} \overset{2}{\eta} \overset{3}{f}, \overset{3}{f} \overset{4}{\theta} \overset{5}{\lambda} \overset{1}{\alpha} \overset{2}{\eta}$

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)

1 10 25 50

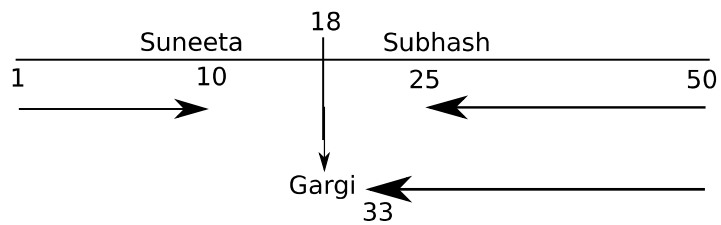
Suneeta Subhash

18

Gargi

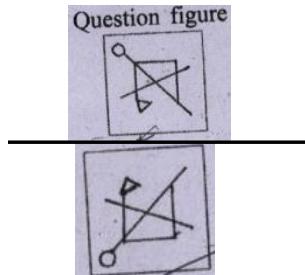
61.

Sol. (3)



62.

Sol. (4)



63.

Sol. (1)



64.

Sol. (3)

$$(60 - 37) \times 2 = 46$$

$$(158 - 121) \times 2 = 74$$

$$(269 - 318) \times 2 = 98$$

65.

Sol. (2)

$$3 \times 5 + 7 \times 3 = 36$$

$$6 \times 4 + 2 \times 7 = 38$$

$$4 \times 3 + 5 \times 8 = 52$$

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.

Sol.

By observation
(2)

76.

Sol:

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

77.

Sol: (4)
 $\underbrace{a\ b\ b\ a}_{(4)}\ \underbrace{b\ a\ a\ b}_{(4)}\ \underbrace{a\ b\ b\ a}_{(4)}\ \underbrace{b\ a\ a\ b}_{(4)}$

78.

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

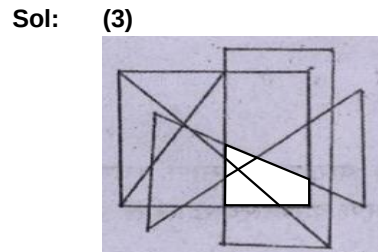
79.

Sol: (3)
 Ans. 15

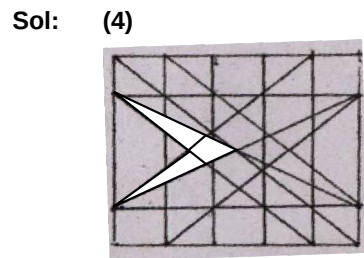
80.

Sol: (1) 3
 By observation

81.



82.



83.

Sol: (3)
 Descending Order:
 $\begin{array}{rcl} 78 & \searrow & 24 \\ 54 & \searrow & 28 \\ 26 & \searrow & 32 \\ -6 & \searrow & \end{array} \begin{array}{l} 4 \\ 4 \\ 4 \end{array}$

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)

$$6^2 + 5 = 41$$

$$4^2 + 5 = 21$$

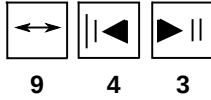
$$8^2 + 5 = 69$$

$$10^2 + 5 = 105$$

86.

Sol:

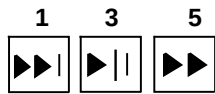
(4)



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.

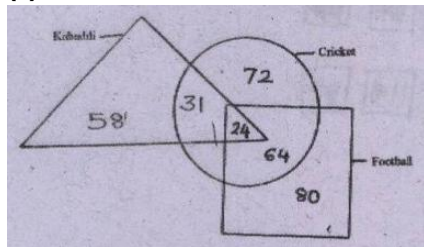
(3)

By observation.

91.

Sol:

(4) 31



92.

(4)

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

$$58 + 72 + 80 = 210$$

93.

Sol:

(2) 58

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

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

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

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

$$4 + 20 - 7 \quad - \rightarrow \div$$

$$24 - 7 = 17.$$

96.

Sol: (3)

By Observation

8 7 4 6 0 5 3

↓ ↓ ↓ ↓ ↓ ↓ ↓

? ! () ^ % \$

97.

Sol: (2)

By observation.

(% ! \$ `) Δ #

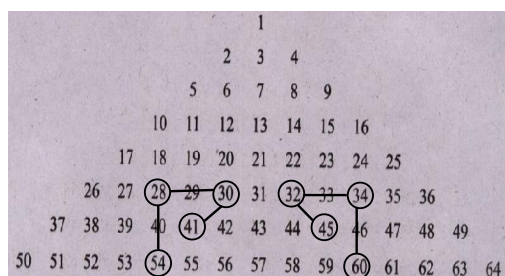
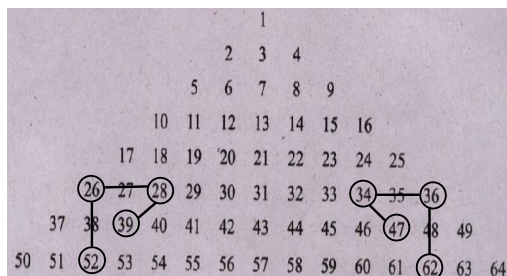
↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓

4 5 7 3 9 6 1 2

98.

Sol: (1)

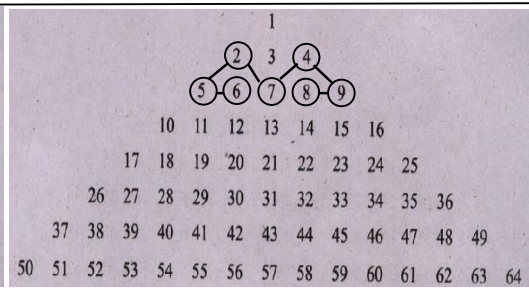
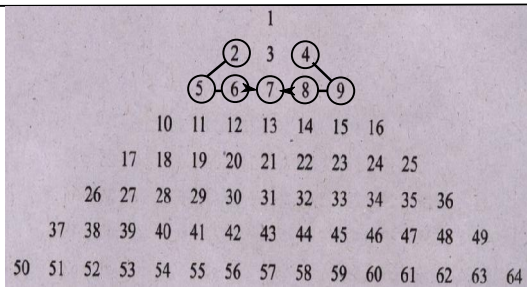
Make the pyramid (solution)



99.

Sol: (3)

By observing pattern



100.

Sol:

(4)

By pattern

