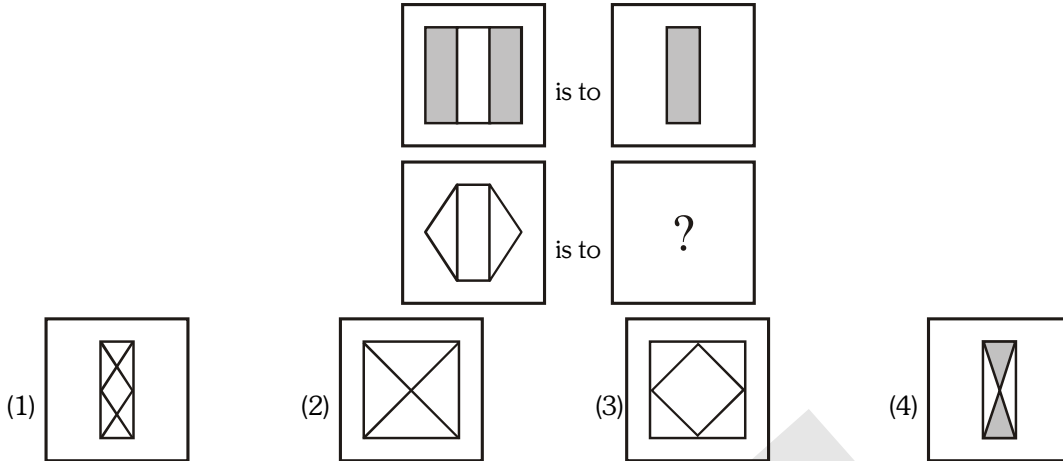


SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)

1. Which figure completes the statement ?



Ans. (1)

Sol. By observation

2. **Fact 1 :** Ravneet said, "Mehtar and I both have goats."

Fact 2 : Mehtar said, "I don't have a goat."

Fact 3 : Ravneet always tells the truth, but Mehtar sometimes lies.

If the three statements are facts, which of the following statements must also be facts ?

I. Mehtar has a goat.

II. Ravneet has a goat.

III. Mehtar is lying.

(1) II only

(2) I and II only

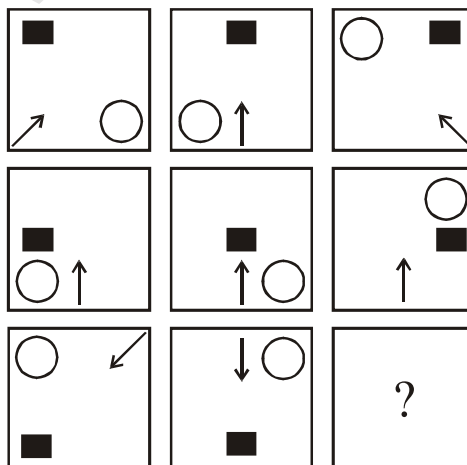
(3) I, II and III

(4) II and III only

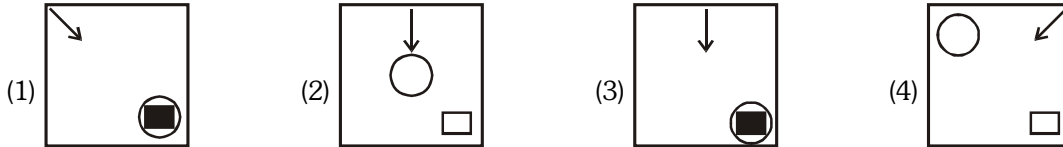
Ans. (3)

Sol. All these statement are correct.

3. Look at the patterns in the squares and understand their relationship to one another so as to fill in the square with missing symbols.



SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)



Ans. (1)

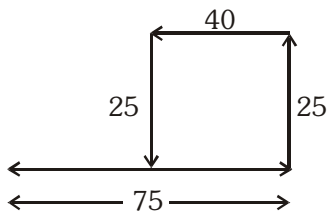
Sol. By observation.

4. Danish starts walking straight towards East. After walking 75m, he turns to the left and walks 25m straight. Again he turns to the left, walks a distance of 40m straight, again he turns to the left and walks a distance of 25 m. How far is he from the starting point?

- (1) 30 m (2) 35 m (3) 40 m (4) 50 m

Ans. (2)

Sol.



So, $(75 \text{ M} - 40 \text{ M}) = 35 \text{ M}$.

5. In the question given below, there are four statements which are to be taken as truth even if they do not seem to be so. There are conclusions numbered I, II, III and IV. Decide which of these logically follow from the given statements.

All students who like English also like Mathematics. Some students like Hindi.

All students who like Hindi do not like mathematics. Students who like Mathematics also like English.

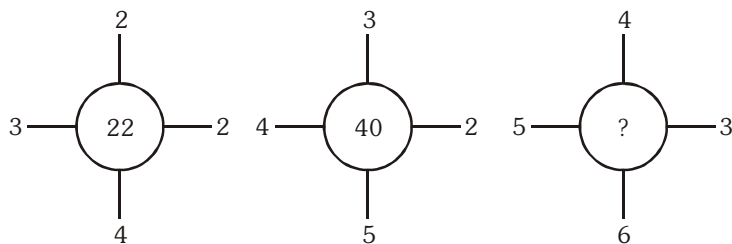
- I. Students who like Hindi also like English.
II. Students who like Mathematics also like Hindi.
III. Students who like Mathematics do not like Hindi.
IV. Students who like English do not like Hindi.

- (1) I and II (2) I and III (3) I and IV (4) III and IV

Ans. (4)

Sol. Statements III and IV are correct.

6. The number in the place of '?' should be



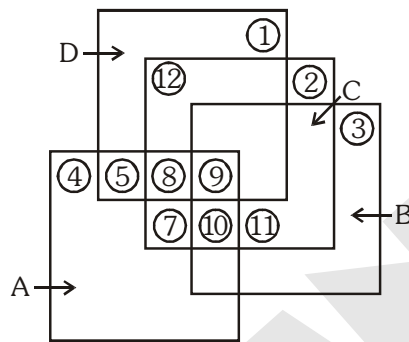
- (1) 42 (2) 58 (3) 59 (4) 68

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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Ans. (4)

Sol. $(3)^2 + (2)^2 + (2)^2 + (4)^2 \Rightarrow 9 + 4 + 4 + 16 \Rightarrow 33 - (3 + 2 + 2 + 4) \Rightarrow 33 - 11 = 22$
 $(4)^2 + (3)^2 + (2)^2 + (5)^2 \Rightarrow 16 + 9 + 4 + 25 \Rightarrow 54 - (4 + 3 + 2 + 5) \Rightarrow 54 - 14 = 40$
 $(5)^2 + (4)^2 + (3)^2 + (6)^2 \Rightarrow 25 + 16 + 9 + 36 \Rightarrow 86 - (5 + 4 + 3 + 6) \Rightarrow 86 - 18 = 68$

Direction (7 to 9) : Answer these questions by using the following diagram.



Each square stands for different class.

- A. represents Indians
- B. represents Students
- C. represents Talented individuals
- D. represents players

7. How many Indian non-player students who are talented ?
 (1) 5 (2) 7 (3) 10 (4) 12

Ans. (3)

Sol. "10" represents the number who are Indians and talented students but non player.

8. How many talented Indians are players
 (1) 13 (2) 17 (3) 19 (4) 22

Ans. (2)

Sol. "17" → 8 and 9 both numbers represents talent Indians players.

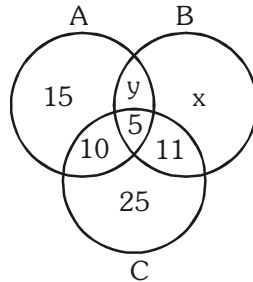
9. How many talented Indians are there, who are students ?
 (1) 13 (2) 15 (3) 17 (4) 19

Ans. (4)

Sol. "19" → 9 and 10 both represents talent students who are Indians.

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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Direction (10-11) : Study the following diagram.



A : Representing people who read newspaper A
B : Representing people who read newspaper B
C : Representing people who read newspaper C.

Based on the above information answer the question 10-11.

- 10.** If the number of people in B is 10 more than A, what is the total number of people in only B (i.e., in B but no in A or C) ?

(1) 14 (2) 24 (3) 30 (4) 36

Ans. (2)

Sol. $[16(x + y)] - (30 + y) = 10$
 $\Rightarrow 16 + x + y - 30 - y = 10$
 $\Rightarrow 16 + x - 30 = 10$
 $\Rightarrow x = 24$

- 11.** If sum of the number of people in only B and the number of people common in both A and B is 63 and the number of people in B is twice the number of people in A, then the values of x and y are respectively

(1) 15, 4 (2) 48, 5 (3) 51, 7 (4) 51, 8

Ans. (3)

Sol. Number of people in only B = x
 Number of people common in both A and B (y + 5)

Given, $x + (y + 5) = 63$
 $x + y = 58$ (1)

Also, given $(16 + x + y) = 2(30 + y)$
 $\Rightarrow 16 + x + y = 60 + 2y$
 $\Rightarrow x - y = 44$ (2)

on solving equation (1) and (2), we get, $y = 7, x = 51$

- 12.** In the question given below, some argument/arguments is/are logical and other are not. Identify the logical argument/arguments.

- Eating lots of vegetables and fruits increases immunity. I eat lots of vegetables and fruits, so my immunity is high.
- Eating lots of vegetables and fruits increases immunity. I do not eat vegetables and fruits, so my immunity is low.
- Eating lots of vegetables and fruits increases immunity. My immunity is low, which means I don't eat fruits and vegetables.

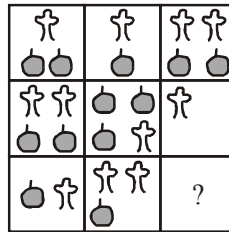
(1) only I (2) I and II (3) I and III (4) II and III

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)

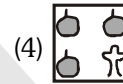
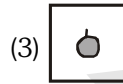
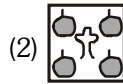
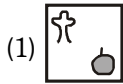
Ans. (1)

Sol. Only I is correct

13. Consider the following figure :



Which of the following alternative should replace the question mark ?



Ans. (4)

Sol. By observation

14. Find out the water image of
A V P U 7 4 3 6

- (1) √ Λ Ъ ∩ Δ † 3 e (2) √ Λ Ъ ∩ 7 † 3 e (3) √ Λ P U † † 3 e (4) √ Λ P U 7 † 3 e

Ans. (1)

Sol. By observation

15. A man goes on trek from the bottom to the top of a mountain. He starts at 6 am of 15th October, 2017 from the bottom and reaches the top at 6 pm of the same day. On 16th October, 2017 he starts from the top at 6 am and goes back following exactly the same route and reaches the bottom at 6 pm. Based on the above situation, the following possibilities are to be analysed.

- I. It is not possible to find a point on the route which he will cross at the same time each day.
- II. It is possible to find a point on the route which he will cross at the same time each day provided only if the travels on each day with equal uniform speed.
- III. It is always possible to find a point on the route which he will cross at the same time each day irrespective of his speed of travel.

- (1) Only I is true (2) Only II is true (3) Only III is true (4) Both I and II are true

Ans. (2)

Sol. Only II is possible

16. At noon and at midnight the long and short hands of a clock are together. Between noon and midnight, how many times the long hand overtakes the short hand ?

- (1) 9 (2) 10 (3) 11 (4) 12

Ans. (3)

Sol. 11 times

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTALABILITY TEST (MAT) (13-05-18)

17. If MENTAL : SMXFOB
then ABILITY : _____

- (1) GJSXWJQ (2) GSXWJJQ (3) SGXWJJQ (4) SJXQJWG

Ans. (1)

Sol. M E N T A L
 13 5 14 20 1 12
 +6 +8 +10 +12 +14 +16

 S M X F O B
 19 13 24 6 15 2

Similarly,

A	B	I	L	I	T	Y
1	2	9	12	9	20	25
+6 +8 +10 +12 +14 +16 +18						

7	10	19	24	23	10	17
G J S X W J Q						

18. As JAISALMER is to JAILSARME, as HYDERABAD is to _____ .

- (1) HYDAERDBA (2) HYDRBEDAA (3) HYDBDREAA (4) HYDEADRAB

Ans. (1)

Sol. JAISALMER → JAILSARME

In this arrangement, 6th letter is shifted to the 4th place and 9th letter is shifted to the 7th place. Except first three letters rest all moved one place ahead.

By applying same logic. We get
HYDERABAD → HYDAERDBA

19. Which of the following alternatives will fit in the place of '?' ?

AZ, GT, MN, ?, YB

- (1) KF (2) RX (3) SH (4) TS

Ans. (3)

Sol. A Z, G T, M N, S H, Y B
 1 26 7 20 13 14 19 8 25 2
 +6 +6 +6 +6
 -6 -6 -6 -6

20. Look at this series :

J14, L16, _____, P20, R22

Which of the following alternatives will fit in the blank space ?

- (1) N18 (2) S24 (3) M18 (4) T24

Ans. (1)

Sol. 10 +2 +2 +2 +2
 J 14, L 16, N 18, P 20, R 22
 +2 +2 +2 +2

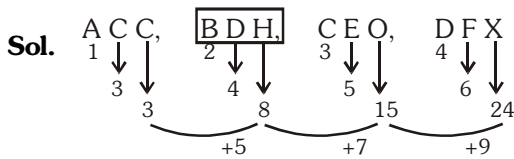
SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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21. What will be the missing term in the given sequence ?

ACC, _____, CEO, DFX

- (1) BDD (2) BDE (3) BDH (4) BED

Ans. (3)

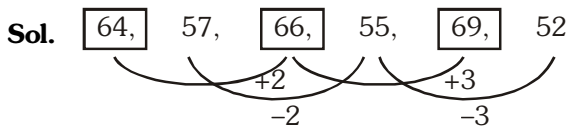


22. Which number comes in place of '?' ?

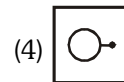
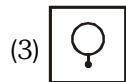
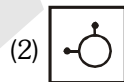
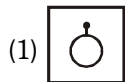
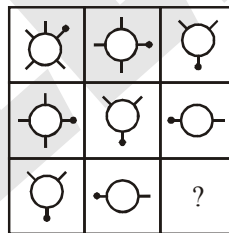
64, 57, 66, 55, ?, 52

- (1) 68 (2) 69 (3) 70 (4) 71

Ans. (2)



23. Select the suitable figure from the given alternatives to complete the figure.



Ans. (1)

Sol. By observation

24. Arrange the given words in a meaningful sequence and find the correct sequence from the given options:

- (A) Wall (B) Clay (C) House (D) Room
(E) Bricks

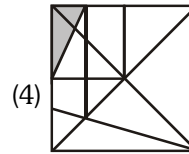
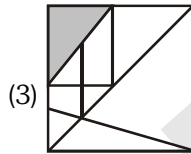
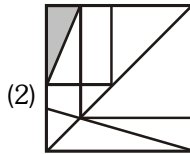
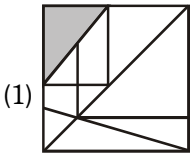
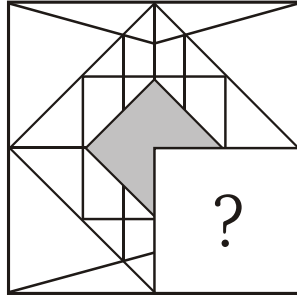
- (1) E, B, A, D, C (2) B, E, D, A, C (3) B, E, A, D, C (4) A, B, C, D, E

Ans. (3)

Sol. Sequence is = Clay → Bricks → Wall → Room → House

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTALABILITY TEST (MAT) (13-05-18)

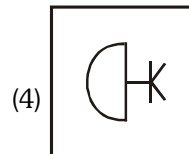
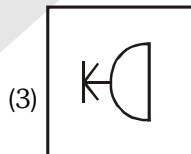
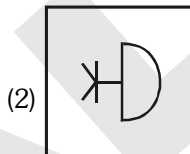
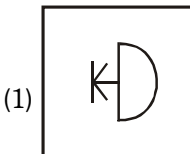
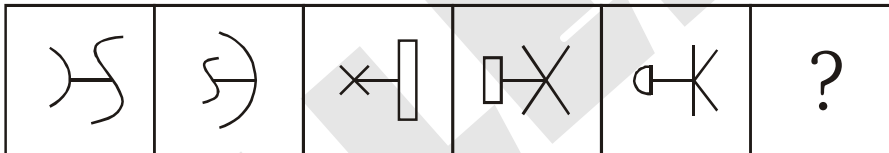
25. Identify the figure that completes the pattern.



Ans. (3)

Sol. By observation

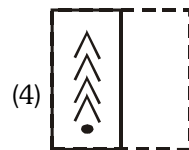
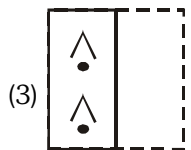
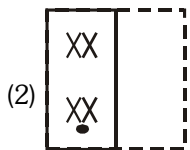
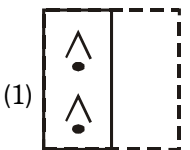
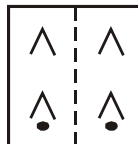
26. Replace '?' by the appropriate figure from the given options.



Ans. (3)

Sol. By observation

27. When a square shaped transparent sheet with the pattern shown in the figure is folded along the dotted line which pattern would appear ?



Ans. (1)

Sol. By observation.

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)

28. Fact 1 : All monkeys like to jump.

Fact 2 : Some monkeys like to swim.

Fact 3 : Some monkeys look like their masters.

If the first three statements are facts, which of the following statements must also be a fact(s) ?

I. All monkeys who like to swim look like their masters.

II. Monkeys who like to swim also like to jump.

III. Monkeys who like to jump do not look like their masters.

(1) I only

(2) II only

(3) II and III

(4) Both I and II

Ans. (2)

Sol. Only II statement follow the fact.

29. Given below is a statement followed by two assumptions.

The population below poverty line has increased in urban area during the last year.

Assumptions :

I. The population below poverty line has decreased in rural area.

II. The population below poverty line has not increased during the current year.

Which of the assumptions is implicit in the statement ?

(1) Only I is implicit

(2) Only II is implicit.

(3) Either I or II is implicit. (4) Neither I nor II is implicit.

Ans. (4)

Sol. None of the assumption is implicit.

30. Identify the conclusion(s) which logically follow(s) from the given statements:

A. Some men are educated.

B. Educated men prefer small families.

Conclusions:

I. All small families are educated.

II. Some men prefer small families.

(1) Only conclusion I follows

(2) Only conclusion II follows

(3) Both I and II follow

(4) Neither I nor II follows

Ans. (2)

Sol. Only conclusion II is correct.

31. A watch is showing right time at 9 pm. This watch gains 10 minutes in every 24 hours. What will be the time shown next day by the watch when the correct time is 2 am ?

(1) 02 :00:24 am

(2) 02 :00:48 am

(3) 02 :02:05 am

(4) 02 :02:30 am

Ans. (3)

Sol. In 24 Hr gain = 10 min

$$1 \text{ Hr} = \frac{10}{24} \text{ min}$$

$$5 \text{ Hr} = \frac{10}{24} \times 5 = \frac{50}{24} \text{ Min} = 2 \frac{2}{24} = 2 \text{ min } \frac{2}{24} \times 60 \text{ sec}$$

$$= 2 \text{ min } 5 \text{ sec}$$

So, required time = 02 : 02 : 05 am

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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32. In a school, students are offered subjects in such a manner that they have to choose at least one subject from History and Geography. Accordingly:

All students who study History also study Geography logically implies:

- I. There are no students who study Geography and do not study History.
- II. There are no students who study History and do not study Geography.
- III. There are no students who do not study History and do not study Geography.
- IV. All students who do not study Geography are students who study History.

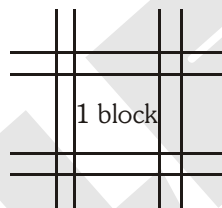
- (1) I and II (2) I and III (3) II and III (4) II and IV

Ans. (3)

Sol. $H = G$

Clearly, there are no students who study history and do not study geography & vice-versa.

33. In a city, all the roads are either parallel to the East-West or North-South direction. Every $\frac{1}{8}$ th of a kilometre from each road there is a crossing and the square area covered between four crossings is called a block. Starting from a crossing, if I travel four blocks north, take left and then travel three blocks west, I reach another crossing. What is the distance between these two crossings ?

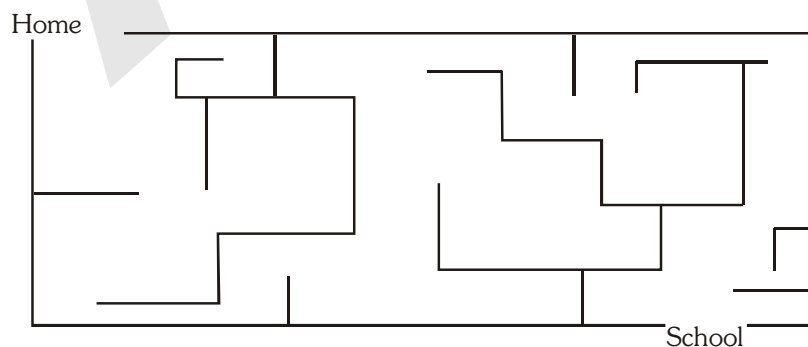


- (1) 5 km (2) 7 km (3) $7/8$ km (4) $5/8$ km

Ans. (4)

Sol. $\sqrt{\left(\frac{4}{8}\right)^2 + \left(\frac{3}{8}\right)^2} \Rightarrow \sqrt{\frac{4^2 + 3^2}{8^2}} = \sqrt{\frac{25}{8^2}} \Rightarrow \frac{5}{8}$ km

34. How many minimum right turns will you take to reach school from home ?



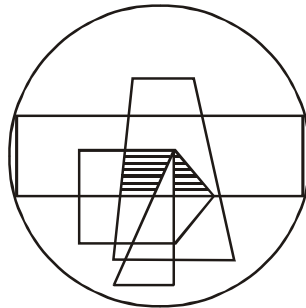
- (1) 7 (2) 8 (3) 9 (4) 10

Ans. (3)

Sol. Minimum right turns $\Rightarrow 9$

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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35. The figure shows the Gender, Marital Status and Profession (GMP) of a number of people. Each shape shows a different GMP.



Circle indicates total population, trapezium is males, pentagon is married, rectangle is teachers, and triangle is doctors.

What do the shaded regions represent in the diagram?

- (1) married males who are teachers
- (2) unmarried males who are doctors
- (3) unmarried females who are doctors
- (4) married males who are neither doctors nor teachers

Ans. (1)

Sol. Shaded portion all are included except triangle (i.e. doctor)

Directions (Ques. 36 - 38) Each of integers 1 to 26 is represented in the Venn diagram in the appropriate regions P to W where region

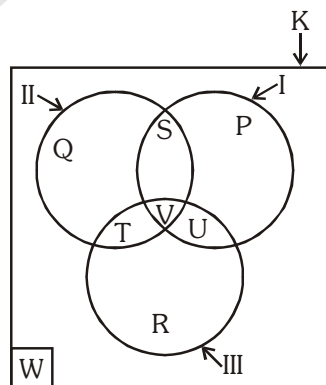
K represents integers from 1 to 26.

I represents even integers from 1 to 26

II represents perfect square integers from 1 to 26.

III represent prime numbers from 1 to 26.

W represents number from 1 to 26 other than those in I, II and III.



36. Which region contains exactly two integers?

- (1) P and W only
- (2) R and U only
- (3) S and W only
- (4) U and W only

SOLUTION

NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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Ans. (3)

Sol. I → 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 126

II → 1, 4, 9, 16

III → 2, 3, 5, 7, 11, 13, 17, 19, 23

W → 15, 21

S → 4, 16 and W 15, 21

37. The total number of integers in S and R is equal to the number of integers in

(1) P only

(2) T only

(3) V only

(4) W only

Ans. (1)

Sol. S → 2 integer (4, 16)

R → 8 integer (3, 5, 7, 11, 13, 17, 19, 23)

Total = 10 integer

∴ P only has 10 integer

38. Which region contains exactly eight integers?

(1) P

(2) Q

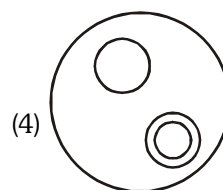
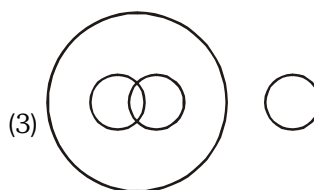
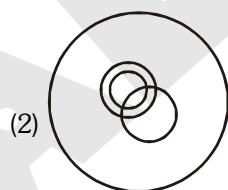
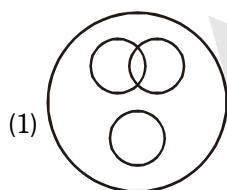
(3) R

(4) S

Ans. (3)

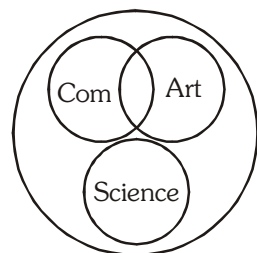
Sol. Exactly 8 integer (R)

39. In a school, commerce and arts subjects were offered. Some students opted only for commerce and some only arts. There were science students also who did not choose any of these subjects. The rest of them accepted both commerce and arts. Which one of the following Venn diagram correctly reflects this situations?



Ans. (1)

Sol.



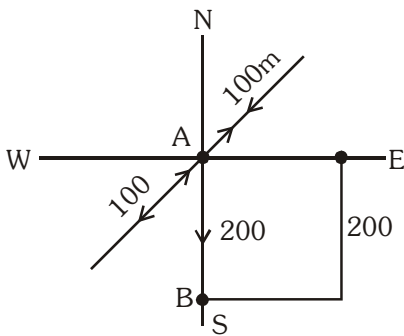
SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)

40. A person walked 100 m straight from the point 'A' in the North-East direction, walked 200 m in South-West direction from there, 100m in North-East direction again, walked 100 m eastward, 200m southward and 100m westward to reach at the point 'B'. Choose the right answer from the following to find out his/her distance and direction from 'A'.

- (1) 100m, North (2) 100m, South (3) 200m, North (4) 200m, South

Ans. (4)

Sol. Distance of A – B \Rightarrow 200 m (south)



Direction (Qs. 41 to 44) Items 41-44, each contains a question of two statements I and II, giving certain data. Select the correct answer from (1) to (4) depending on the sufficiency of data given in the statements to answer each question.

1. If I alone is sufficient and II alone is not sufficient to answer the question.
2. If II alone is sufficient and I alone is not sufficient to answer the question.
3. If both I and II together are sufficient but neither statement alone is sufficient to answer the question.
4. If both I and II together are not sufficient to answer the question and additional data specific to the question are needed.

41. A, B and C have money with them in the ratio 5 : 3 : 1. How much money does B have?

- I A has Rs. 60 more than C
II The money with B is 40% less than the money with A.

- (1) 1 (2) 2 (3) 3 (4) 4

Ans. (1)

Sol. 5 : 3 : 1 = A : B : C

$$A = 5x, B = 3x, C = x$$

$$A = C + 60$$

$$5x - x = 60 \quad \Rightarrow \quad 4x = 60 \quad \Rightarrow \quad x = 15$$

$$B = 3x \Rightarrow 3 \times 15 \Rightarrow 45$$

Only I alone sufficient

42. What is the cost of each pen?

- I. The cost of 6 pens and 5 pencils is Rs. 30.
II. If the cost of each pen and each pencil is reduced by 40%, then the cost of 12 pens and 10 pencils will be Rs. 36.

- (1) 1 (2) 2 (3) 3 (4) 4

SOLUTION

NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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Ans. (4)

Sol. 6 pens + 5 pencil = 30

$$1 \text{ pen} + 1 \text{ pencil} = x - \frac{40}{100}x \Rightarrow \frac{60}{100}x$$

$$12 \text{ pen} + 10 \text{ pencil} = 36$$

$$2 \text{ pen} + 10 (1 \text{ pen} + 1 \text{ pencil}) = 36$$

$$2 \text{ pen} + 10 \times \frac{60}{100}x$$

Both are not sufficient.

43. What is the ratio of saving of A and B?

I The ratio of income of A and B is 5 : 6

II The ratio of expenditure of A and B is 3 : 4

(1) 1

(2) 2

(3) 3

(4) 4

Ans. (4)

Sol. Clearly, we don't find saving of A and B from their ratio of income and ratio of expenditure.

44. What is the ratio of the selling prices of two articles A and B?

I The cost price of article A is equal to the selling price of B.

II The profit made by selling A is equal to 1/5 of its selling price.

(1) 1

(2) 2

(3) 3

(4) 4

Ans. (3)

Sol. Clearly, from I and II, there are two equations, between A and B. So, from both statements we find the selling price of A and B.

45. If in a code language STAR = 50 and CIRUS = 65 then PLANET will be

(1) 68

(2) 78

(3) 84

(4) 94

Ans. (4)

Sol. $\begin{matrix} 8 & 7 & 26 & 9 \\ S & T & A & R \end{matrix} = 50$ Add (Reverse position value)

$$\begin{matrix} 24 & 18 & 9 & 6 & 8 \\ C & I & R & U & S \end{matrix} = 65$$

$$\begin{matrix} P & L & A & N & E & T = ? & 94 \\ 11 & 15 & 26 & 13 & 22 & 7 \end{matrix}$$

46. Pankaja puts her alarm clock on the table in such a way that at 6 pm the hour hand points to North. In which direction will the minute hand point at 9 : 15 pm?

(1) South-East

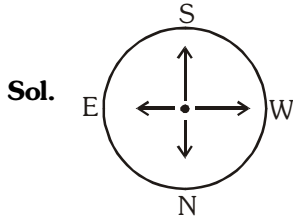
(2) South

(3) North

(4) West

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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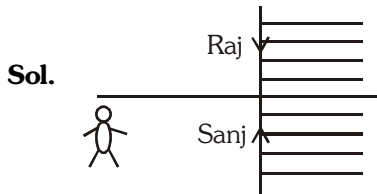
Ans. (4)



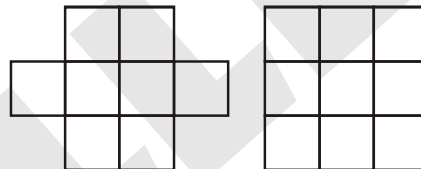
47. One evening before sunset two friends Rajni and Sanjiv were talking face to face. If Sanjiv's shadow was exactly to his right side, to which direction Rajni was facing?

- (1) North (2) North East (3) South (4) South East

Ans. (3)

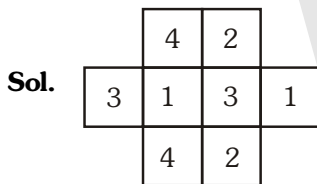


48. The square boxes in the figures below are to be painted with different colours such that no two adjacent boxes (even diagonally) have same colour. How many minimum colours do you need in each case?



- (1) (3, 4) (2) (4, 4) (3) (4, 5) (4) (3, 5)

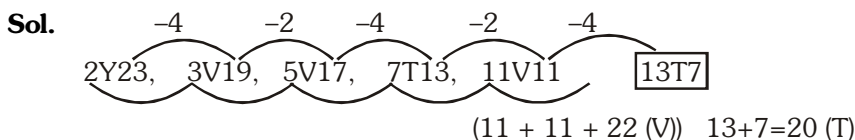
Ans. (2)



49. What is the number in place of '?' ?
2Y23, 3V19, 5V17, 7T13, 11V11, _____

- (1) 13T7 (2) 13V9 (3) 13W9 (4) 13U7

Ans. (1)



SOLUTION

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50. Identify which number does not fit in the sequence?

156, 182, 210, 240, 282, 306

(1) 182

(2) 210

(3) 282

(4) 306

Ans. (3)

Sol. $156, 182, 210, 240, 282, 306$
 $\underbrace{156, 182}_{26}, \underbrace{210, 240}_{28}, \underbrace{282, 306}_{34}$

51. What is the number in place of '?'?

6, 15, 35, ?, 143, 221

(1) 45

(2) 65

(3) 77

(4) 93

Ans. (3)

Sol. $2 \times 3 = 6$

$3 \times 5 = 15$

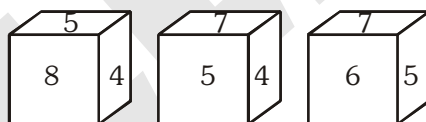
$5 \times 7 = 35$

$7 \times 11 = 77$

$11 \times 13 = 143$

$13 \times 17 = 221$

52. A pattern is being followed to derive numbers using two out of the six numbers appearing on the faces of a dice having numbers from 4 to 9, both inclusive. Two such pairs yield 106 and 52. What will the third pairs yield?



(1) 100

(2) 113

(3) 130

(4) 145

Ans. (2)

Sol. $6^2 + 4^2 = 36 + 16 = 52$

$9^2 + 5^2 = 81 + 25 = 106$

$8^2 + 7^2 = 64 + 49 = 113$

53. Which group of letter given in the alternatives will complete the sequence?

a_tta_ant_an_nt_an

(1) a t n t t

(2) n n t a t

(3) n a n t t

(4) t n t a t

Ans. (2)

Sol. anttananttananttan — nntat

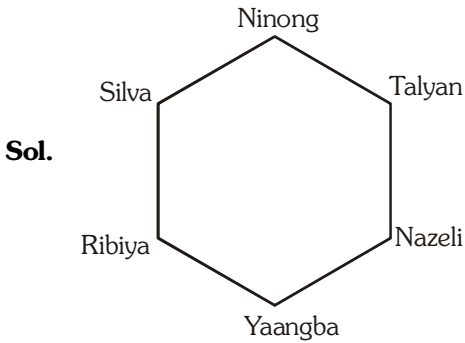
Direction (Qs. 54 - 57)

A group of students is sitting in such a way that each of occupies a corner of a hexagonal table. Ninong is sitting opposite to Yaangba, Ribiya is sitting next to Silva, Nazeli is sitting opposite to Silva, but not next to Ninong, one person is sitting between Talyang and Yaangba.

SOLUTION
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54. Who is sitting opposite to Ribiya?
(1) Yaangba (2) Silva (3) Talyang (4) Nazeli

Ans. (3)



Clearly, Talyang is sitting opposite to Ribiya.

55. Who is sitting between Ribiya and Ninong?
(1) Yaangba (2) Nazeli (3) Talyang (4) Silva

Ans. (4)

Sol. Clearly, Silva is sitting between Ribiya and Ninong.

56. Who is sitting between Talyang and Yaangba?
(1) Nazeli (2) Ribiya (3) Ninong (4) Silva

Ans. (1)

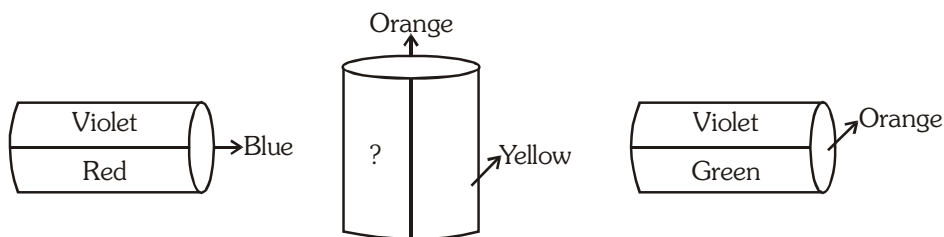
Sol. Clearly, Nazeli is sitting between Talyang and Yaangba.

57. If Talyang sits to the right of Ninong, who is on the left to Ninong?
(1) Ribiya (2) Nazeli (3) Yaangba (4) Silva

Ans. (4)

Sol. Clearly, Silva is on the left of Ninong.

58. A cylinder is painted in 6 colours - Violet, Red, Blue, Green, Yellow and Orange. The three positions of the cylinder are as follows. Looking at these figures, identify the correct colour in place of '?'.



- (1) Red (2) Blue (3) Green (4) Violet

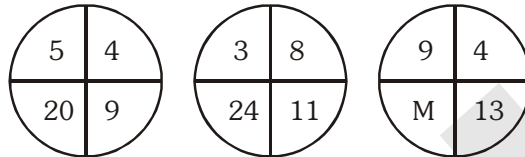
SOLUTION
 NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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Ans. (3)



Clearly, Green is the correct colour is place of “?”

59. Find the missing number at the place of ‘M’?



(1) 36

(2) 52

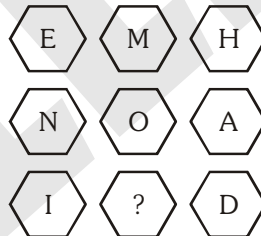
(3) 81

(4) 117

Ans. (1)

Sol. $5 + 4 = 9$; $5 \times 4 = 20$
 $3 + 8 = 11$; $3 \times 8 = 24$
 $9 + 4 = 13$; $9 \times 4 = 36$

60. Which letter replaces the question mark (?)?



(1) A

(2) E

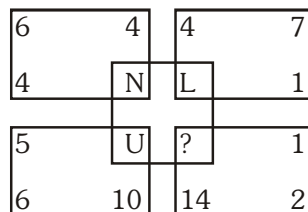
(3) H

(4) M

Ans. (4)

Sol. $E(5) + H(8) = M(13)$
 $N(14) + A(1) = O(15)$
 $I(9) + D(4) = M(13)$

61. Which letter replaces the question mark (?) ?



(1) M

(2) O

(3) P

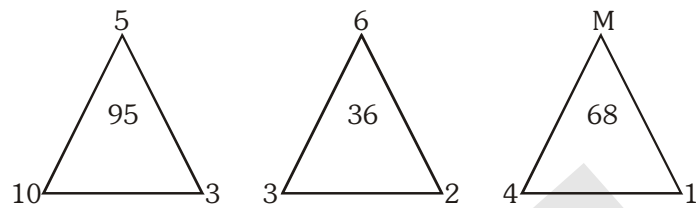
(4) Q

SOLUTION
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Ans. (4)

Sol. $6 + 4 + 4 = 14 - N$
 $4 + 7 + 1 = 12 - L$
 $5 + 6 + 10 = 21 - U$
 $14 + 2 + 1 = 17 - Q$

62. What is the number that should come in place of 'M'?

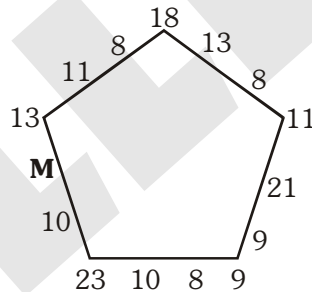


- (1) 2 (2) 3 (3) 4 (4) 6

Ans. (2)

Sol. Sum of the numbers of vertex multiplication.

63. In the given figure which number should replace 'M'?



- (1) 4 (2) 11 (3) 13 (4) 19

Ans. (1)

Sol. All number present on side sum is 50.

64. Manushi remembers that birthday of Chaitra is after July 10 but before July 17, but Vishakha remembers that it is between 15 and 27 July, both inclusive. If July 10 was a Thursday and if both of them remember correctly then on which day was Chaitra's birthday?

- (1) Sunday (2) Monday (3) Tuesday (4) Wednesday

Ans. (4)

Sol. July 10 11 12 13 14 15 16 (Manushi)
 16 17 18 19 20 21 22 23 24 25 26 (Vishakha)

So, the common date is = 16 July

July 10 = Thursday.

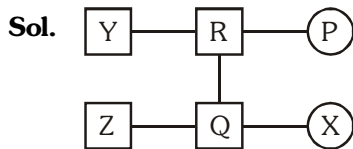
So, 16 July = Wednesday.

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
MENTAL ABILITY TEST (MAT) (13-05-18)

- 65.** A family consists of six members P, Q, R, X, Y, Z.
Q is the son of R but R is not mother of Q.
P and R are a married couple.
Y is the brother of R. X is the daughter of P. Z is the brother of Q.
Which symbol represents the children of P?

- (1) QXYZ (2) QXZ (3) XZR (4) QZ

Ans. (2)



Clearly, Q X Z represents all the children of P.

- 66.** I noticed that my watch goes $\frac{1}{2}$ minute fast at dusk, but at dawn it loses $\frac{1}{3}$ minute. On 1st March morning my watch showed right time, then on which of the following dates the watch was 5 minutes fast?

- (1) 28th March (2) 29th March (3) 30th March (4) 31th March

Ans. (4)

Sol. $\frac{1}{2} - \frac{1}{3} = \frac{1}{6}$ min per day.

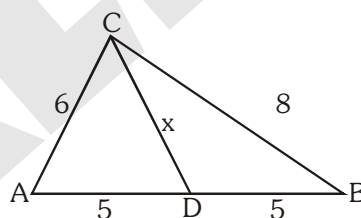
So, $\frac{1}{6}$ min fast in 1 day.

\Rightarrow 1 min fast in 6 day.

\Rightarrow 5 min fast in $6 \times 5 = 30$ day.

So, on 31st march the watch way 5 min fast.

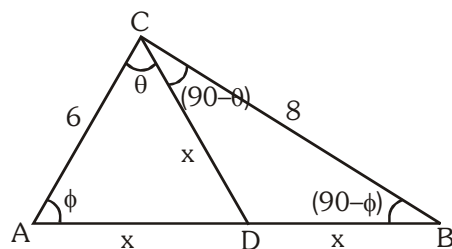
- 67.** What is the length 'x' of the line segment CD in the triangle drawn below ?



- (1) 4 (2) 5 (3) 6 (4) 8

Ans. (2)

Sol.



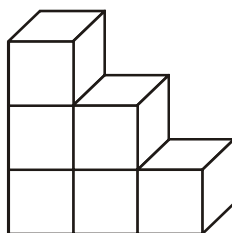
$$6^2 + 8^2 = (2x)^2$$

$$100 = 4x^2$$

$$\text{So, } x = 5$$

SOLUTION
NATIONAL TALENT SEARCH EXAMINATION 2018 Stage-2
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- 72.** Six dice are stacked as shown in the figure. On each dice, the sum of number appearing on a face and on the face opposite to it is 7.



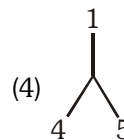
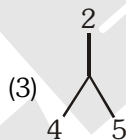
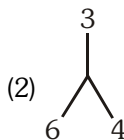
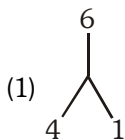
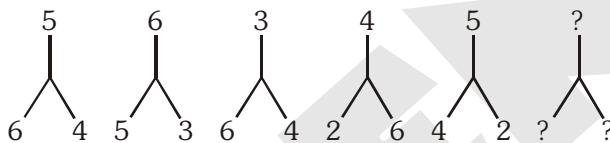
What is the maximum possible sum of the numbers on the visible faces ?

- (1) 88 (2) 89 (3) 96 (4) 147

Ans. (2)

Sol. By observation

- 73.** Observe the sequence given below and select the appropriate alternative which will maintain the series.

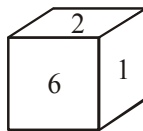
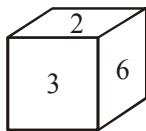


Ans. (4)

Sol. Sum of given figure number are
 I → 15
 II → 14
 III → 13
 and soon

As the sum of the given figure are decreasing by 1 from I to II, II to III and so on so option (4)

- 74.** Two position of a dice are shown. When number 3 is on the top, what number will be at the bottom ?



- (1) 1 but not 4 (2) 4 but not 1 (3) 5 or 4 (4) 5 but not 4

Ans. (1)

Sol. As two face as same so opposite of 3 is 1 so option (1)

- 75.** Which interchange in signs and number would make the equation correct ?

$$(96 \div 128) + 64 = 2$$

- (1) + and \div , 64 and 96 (2) + and \div , 64 and 128
 (3) + and \div , 96 and 128 (4) \div and +, 94 and 128

SOLUTION
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Ans. (1)

Sol. $64 + 128 \div 96$
 $192 \div 96 = 2$
So option (1)

76. Let “%” stands for “is equal to”, “?” for “greater than”, “#” for “lesser than”. If $6x \% 5y$ and $2y ? 3z$, then
(1) $2x ? 3z$ (2) $4x ? 5z$ (3) $2x \# z$ (4) $4x \% 3z$

Ans. (2)

Sol. $6x = 5y$... (i)
 $2y > 3z$... (ii)
put value of y from (i) to (ii)

$$2\left(\frac{6}{5}x\right) > 3z$$

$$12x > 15z$$

$$4x > 3z$$

$$4x ? 5z$$

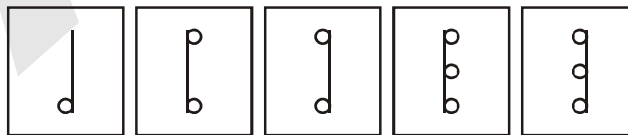
77. If Q means ‘addition sign’, J means ‘multiplication sign’ T means ‘subtraction sign’ and K means ‘division sign’ then, $30 K 2 Q 3 J 6 T 5 = ?$
Find the number in place of “?”.

- (1) 18 (2) 28 (3) 31 (4) 103

Ans. (2)

Sol. $30 \div 2 + 3 \times 6 - 5$
 $15 + 18 - 5$
 $33 - 5 = 28$

78. Which figure should come next among the options given below ?



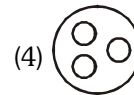
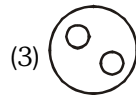
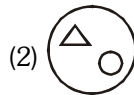
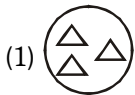
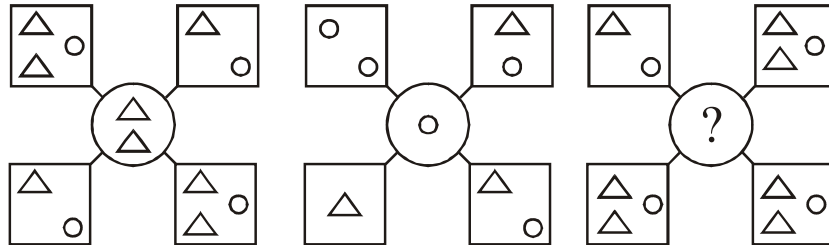
- (1)  (2)  (3)  (4) 

Ans. (4)

Sol. Figure is reversing and adding one circle and then mirror images alternatively.
So option (4)

SOLUTION
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79. Observe the trends in figures given below and find the missing character.



Ans. (1)

Sol. In 1st - $6\Delta - 40 = 2\Delta$
2nd - $40 - 3\Delta = 10$
3rd - $7\Delta - 40 = 3\Delta$

80.

Equivalent Signs	+	-	×	÷	=	()
	→	←	↑	↓	↕	↻

$$3 \uparrow 8 \downarrow 4 \rightarrow 2 \leftarrow 5 \leftarrow \updownarrow \left[\right] 7 \rightarrow 12 \leftarrow 1 ?? 6$$

What will come in place of "??" ?



Ans. (1)

Sol. $3 \uparrow 8 \downarrow 4 \rightarrow 2 \leftarrow 5 \leftarrow \updownarrow [4 \rightarrow 12 \leftarrow 1 ?? 6]$

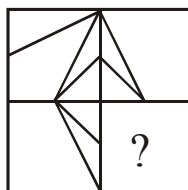
$$3 \times 8 \div 4 + 2.5 = (7 + 12 - 1) ? 16$$

$$3 \times 2 + 2 - 5 = (19 - 1) ? 6$$

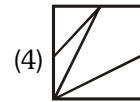
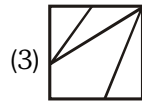
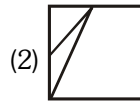
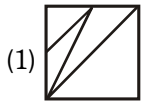
$$6 + 2 - 5 = 3$$

$$3 = 3$$

81. Complete the missing pattern.



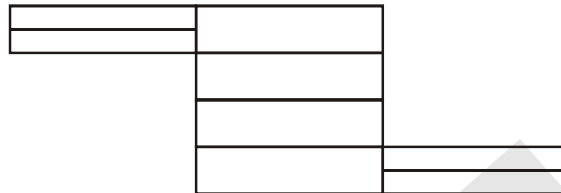
SOLUTION
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Ans. (4)

Sol. By observation

82. Find the number of rectangles in the following figure.



(1) 18

(2) 17

(3) 16

(4) 15

Ans. (1)

Sol. 1 → 8
 2 → 5
 3 → 4
 4 → 1

Total – 18

83. In the given matrix, first row and the first column consist of symbols and numbers respectively, the combination of those would be the code for specific alphabets given in other cells. For example, the code for “G” could be 1\$ or 2@. In the same manner, what from the given alternatives will be the correct code for “PEACE” ?

	@	#	*	\$
0	A	P	Q	P
1	T	P	S	G
2	G	R	N	E
3	E	M	O	T
4	C	E	A	C
5	J	R	L	E
6	A	B	L	J
7	E	Q	C	Z

(1) 0\$ 4# 0@ 7*2#

(2) 1# 3@ 6@ 4\$ 4#

(3) 5* 7@ 4* 1\$ 2@

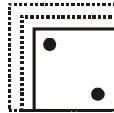
(4) 0\$ 2\$ 0@ 6* 2#

Ans. (2)

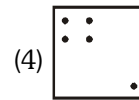
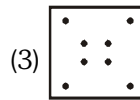
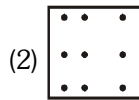
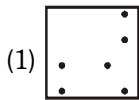
Sol. By observation

SOLUTION
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84. A square sheet is folded into half, the line of folding being parallel to a side of the square. It is again folded into half, the line of folding being parallel to the shorter side. In this condition the front of the paper always appears as it is given in the figure below (the dotted lines represent the folded portions).

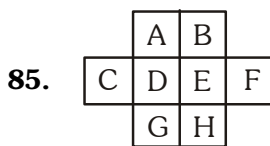


From the alternatives choose the correct figure which represents the paper in to original unfolded form.



Ans. (4)

Sol. By observation



A, B, C, D, E, F, G, H are each to be assigned a different number from 1 to 8. What should be values of B, D, E, F and G so that no consecutive numbers are in adjacent (even diagonally) squares. Given: A = 5, C = 2, H = 4.

(1) (6, 8, 1, 7, 3)

(2) (3, 8, 7, 1, 6)

(3) (8, 6, 3, 7, 1)

(4) (3, 8, 1, 7, 6)

Ans. (4)

Sol. By observation

86. In a farmhouse there are 50 hens, 45 goats and 8 camels which are maintained by a few supervisors. If the total number of feet be 224 more than the number of heads in the farmhouse then the total number of supervisors is :

(1) 5

(2) 8

(3) 10

(4) 15

Ans. (4)

Sol. let no. of super vibords = x

Hence = 50 \rightarrow Legs $50 \times 2 = 100$
 \rightarrow Head 50

Gadts = \rightarrow Legs $45 \times 4 = 180$
 \rightarrow Head 45

Canels = 8 \rightarrow Legs $8 \times 4 = 32$
 \rightarrow Head 8

Supereruisors = x \rightarrow Legs $x \times 2 = 2x$
 \rightarrow Head x

Total legs = $100 + 180 + 32 + 2x \Rightarrow 312 + 2x$

Total heads = $50 + 45 + 8 + x \Rightarrow 103 + x$

SOLUTION
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According to question feet 224 more than heads so equation becomes.

$$312 + 2x = 103 + x + 224$$

$$x = 224 + 103 - 312$$

$$x = 15$$

87. If in a coded language.

'Busy bees' are coded as 'Cpu cff',

'busy crows' are coded as 'cpu hup',

'Bright Crows' are coded as 'Csj Hup'.

Then 'Busy crows are clever' will be coded as

(1) Cpu Hup Bsf Dmf

(2) Cpu hup bsf dmf

(3) cpu Hup Baf Dmf

(4) cpu hup bsf Dmf

Ans. (2)

Sol. 'Busy Bees' → Cpu cff

'busy crows' → pup hup

'Bright crows' → Csi Hup

Craues → hup

Busy → Cpu

Bess → cff

Bright → csf

Busy crows are clever

Cpu Hup bst Dmf

88. What is the code used for 'Blue derived from the given coded statements as per a code language ?

(I) 'Flower Blue Red White' is coded as 'Sa Ra Ga Ma'.

(II) 'Take Red Pink Flower' is coded as 'Sa Ha Ma Pa'.

(III) 'Take Blue Red Buds' is coded as 'Pa Da Ma Ga'.

(IV) 'Bring Red Take White' is coded as 'Ma Na Pa Ra'.

(1) Sa

(2) Ga

(3) Pa

(4) Ra

Ans. (2)

Sol. 'Flower Blue Red White' → Sa Ra Ga Ma ... (1)

'Tabs Red Prib flower' → Sa Ha Ma Pa ... (2)

'Tabe Blue Red Birds' → Pa DA Ma Ga ... (3)

'Bring Red Tabe White' → Ma Na Pa Ra (4)

From (1) (2) (3) & (4) Red → Ma

From (1) & (3) Blue → Ga

Option (2) Ga

89. What will be the number of digits used in numbering the pages of a book having 199 pages-

(1) 398

(2) 489

(3) 495

(4) 532

Ans. (2)

Sol. One digits No ⇒ 1 to 9 = $9 \times 1 \Rightarrow 9$

Two digits No ⇒ 10 to 99 = $90 \times 2 \Rightarrow 180$

Three digits No ⇒ 100 to 199 = $100 \times 3 \Rightarrow 300$

SOLUTION

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90. In certain code 678 means 'study very hard', 347 means 'hard work pays' and 246 means 'study and work'. Which of the following is the code for 'very' ?

- (1) 4 (2) 6 (3) 7 (4) 8

Ans. (4)

Sol. 678 → Study very hard ... (1)

347 → hard work pays ... (2)

246 → Study and work

From (1) and (3) study → 6

From (1) and (2) hard → 7

So clearly very → 8

Option (4) 8

91. In a certain code 'TOME' is written as '@ \$ * ?' and 'ARE' is written as '! & ?'. How can 'REMOTE' be written in that code ?

- (1) & ? ! \$ @ ? (2) & ? * \$ @ ?
(3) @ ? * \$ @ ? (4) * @ \$ * ? !

Ans. (2)

Sol. Direct coding

R E M O T E

& ! * \$ @ !

& ! * \$ @ !

92. If in a certain code

$23 \times 26 = 42$ and $11 \times 15 = 19$, then, $32 \times 16 = ?$

- (1) 40 (2) 41 (3) 44 (4) 48

Ans. (2)

Sol. $23 \times 26 = 42$

$23 + 26 = 49 - 7 = 42$

Some as $11 \times 15 = 19$

$11 + 15 = 26 - 7 = 19$

Same as $32 \times 16 = ?$

$32 + 16 = 48 - 7 = 41$

93. In a family of 6 (A, B, C, D, E and F) members, there is one married couple with equal number of male and female members. Read the following relations and find out the one from the alternatives, which is not true for the given family.

Relations :

A and E are sons of F.

D is the mother of a boy and a girl.

B is the son of A.

(1) A, E, B are males

(2) C is the grand daughter of F

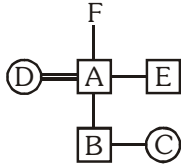
(3) C is the daughter of E

(4) D is the wife of A

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Ans. (3)

Sol. C is the daughter of E



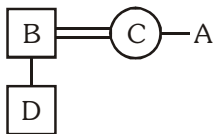
94. If P + Q means P is husband of Q, P/Q means P is sister of Q, P* Q means P is the son of Q. How is D related to A in D*B+C/A ?

- (1) Son (2) Nephew (3) Sister (4) Couple

Ans. (2)

Sol. D * B + C/A

Nephew



95. Afsana was walking in a desert. Anwar was passing by riding on a camel. Afsana requested for a lift. Anwar said he will give life only to those who are related to him.

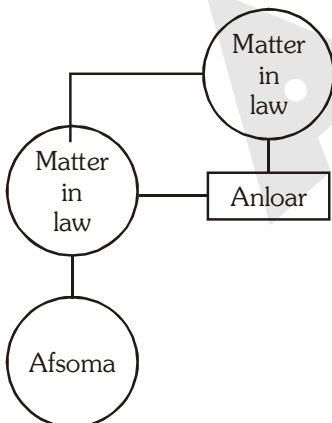
At this, Afsana told him that Anwar's mother-in-law is the mother of her mother-in-law.

How is Anwar related to Afsana ?

- (1) Father (2) Maternal uncle (3) Brother-in-law (4) Father-in-law

Ans. (4)

Sol. Father - In - Law



96. A person travels from Mumbai to Ahmedabad by car in 5 hours. The speed of the car during first hour of journey was 60 km/hr. For the next two hours speed was 80 km/hr. Next hour it was 100 km/hr. Finally, during the last hour of his journey he drove at 40 km/hr. What is the average speed during his journey ?

- (1) 56 km/hr. (2) 67.4 km/hr. (3) 70 km/hr. (4) 72 km/hr.

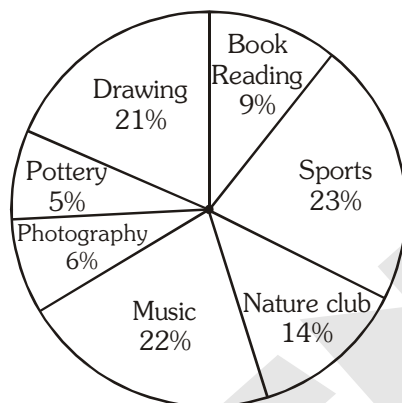
SOLUTION
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Ans. (4)

Sol. Arrange speed = $\frac{60+80+80+100+40}{5} = \frac{360}{5} = 72 \text{ km/hr}$

Directions for (Questions 97–98)

Study the pie chart and information given below and answer the following questions.

There are 1150 students of a school opted sports as a hobby.


97. How many students have book reading as a hobby?

- (1) 390 (2) 420 (3) 440 (4) 450

Ans. (4)

Sol. Total students $\Rightarrow \frac{100}{23} \times 1150 \Rightarrow 5000$

Student have book reading hobby = $\frac{9}{100} \times 5000 \Rightarrow 450$

98. What is the total number of students in the school?

- (1) 4990 (2) 5000 (3) 5050 (4) 5100

Ans. (2)

Sol. Total no. of students $\frac{100}{23} \times 1150 = 5000$ students

99. The following table shows, the distribution of Boys and Girls students of seven different schools.

School	Boys (Total 27,300)	Girls (Total 24,700)
A.	17%	8%
B.	12%	15%
C.	12%	12%
D.	13%	13%
E.	19%	14%
F.	14%	21%
G.	15%	17%

SOLUTION
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What is the ratio between the number of Girls and Boys students respectively from school F ?

- (1) 14 : 21 (2) 19 : 21 (3) 17 : 21 (4) 19 : 14

Ans. (4)

Sol. Number of girls in F : 5187
Number of boys in F : 3822
Raho : 5187 : 3822 \Rightarrow 19 : 14

100. Ayush, Hina, Harbhajan and George are student friends studying in Delhi and plan to go on winter holiday some where in India. They can go to Rajasthan, Goa, Kerala, Odisha, Madhya Pradesh or any of the North Eastern States.

Ayush is willing to go any where except North Eastern States. Harbhajan prefers not to go to Goa and Kerala. Hina wants to go either to Goa or Odisha. Geoge does not mind as long as it is not Rajasthan. Which destination would be acceptable to all ?

- (1) Goa (2) Odisha (3) Kerala (4) Madhya Pradesh

Ans. (2)

Ayush	Kerala, <u>Odisha</u> , Madhya pradesh, Rajasthan, Goa
Harbhayam	Rajasthan, <u>Odisha</u> , Madhya Pradesh, North Eastern
Light	Gao, <u>Odisha</u>
Gravity	Goa, Kerala, <u>Odisha</u> Madhya Pradesh, North Eastern
