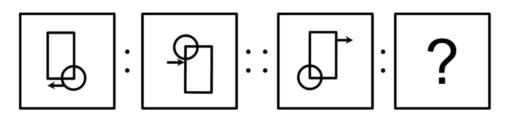# Maharashtra 2020-21 NTSE Stage 1 - Question Paper With Solutions
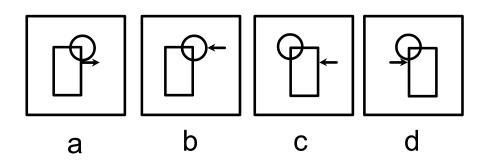
Paper: MAT

Questions (1 – 3) Instruction: In each of the following questions there is a specific relationship between the first and second figure. The same relationship exist between the third and fourth figure which will replace the question mark. Select the correct option from the given alternatives.

Question 1. Question figures
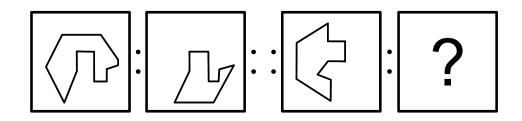

Answer figures

Solution:

1. Answer: (b)
    i. The circle moves to the diagonal corner.
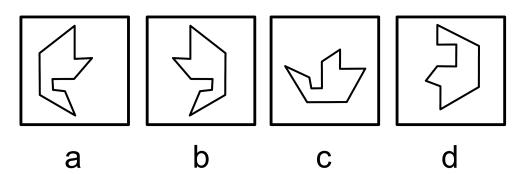   ii. The arrow changes direction.
    All the mentioned points are followed by the image in option b.
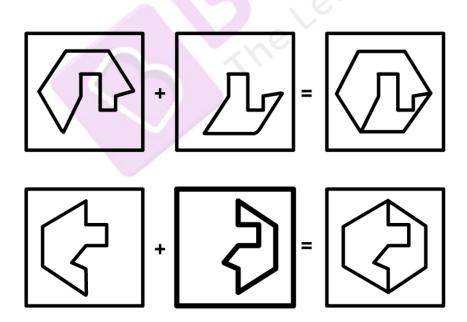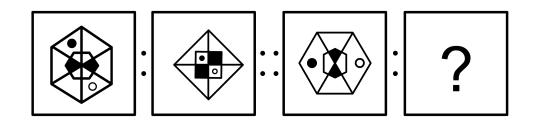

Question 2. Question figures

Answer figures

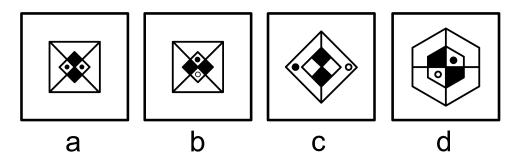| a | b | c | d |

Solution:

1. Answer: (d)

Question 3. Question figures

Answer figures

| a | b | c | d |

Solution:

1. Answer: (b)
   i. The missing image should be composed of quadrilaterals.
   ii. There should be a black and a white circle in the inner quadrilateral.
   Only option b satisfies these conditions.

Question 4. A B Z Y C D X W E F V U G H T S I J R Q K L P O M N
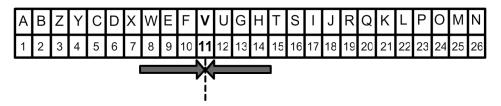
Observe the letter series and observe the letter which is at the central place of letters which is at 8th place from the left and at 13th place from right, find the serial number of that letter from left?

1. a. 13
2. b. 14
3. c. 16
4. d. 11

Solution:

1. Answer: (d)
   Letter in the 8th letter from the left = W
   Letter in the 13th letter from the right = H

A	B	Z	Y	C	D	X	W	E	F	**V**	U	G	H	T	S	I	J	R	Q	K	L	P	O	M	N
1	2	3	4	5	6	7	8	9	10	**11**	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

V is in the central place of letters between W and H.

Question 5 to 8 Directions: Which number will replace the question mark in the given series. Select the correct number from the given alternatives.

Question 5. 68, 54, 45, 34, 27, ___?

1. a. 13
2. b. 17
3. c. 18
4. d. 21

Solution:

1. Answer: c
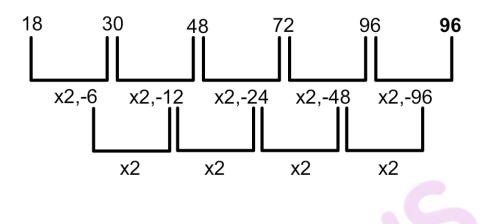   The question should have been 68, 54, 45, 36, 27, 18.

Question 6. 18, 30, 48, 72, 96, ___?

1. a. 96
2. b. 106
3. c. 115
4. d. 120

Solution:

1. Answer: (a)

18	30	48	72	96	**96**

x2,-6   x2,-12   x2,-24   x2,-48   x2,-96

x2   x2   x2   x2

Question 7. 8, 1, 9, 10, 19, 29, ___?, 77

1. a. 38
2. b. 48
3. c. 52
4. d. 56

Solution:

1. Answer: (b)
   The next term is the sum of the previous two terms.
   8 + 1 = 9
   1 + 9 = 10
   9 + 10 = 19
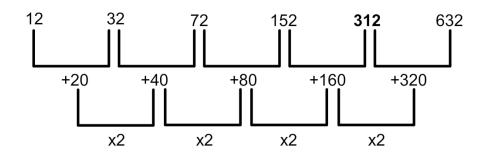   10 + 19 = 29
   19 + 29 = 48
   29 + 48 = 77

Question 8. 12, 32, 72, 152, ?, 632
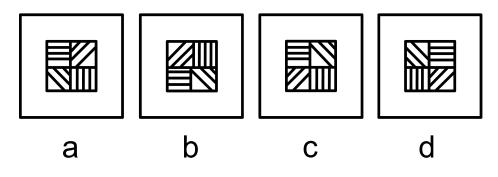
1. a. 312
2. b. 515
3. c. 613
4. d. 815

Solution:

1. Answer: (a)

12	32	72	152	**312**	632

+20   +40   +80   +160   +320

x2   x2   x2   x2

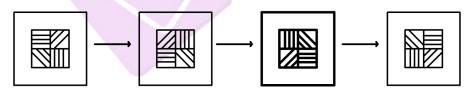---

Question 9. Find the odd figure.

a   b   c   d
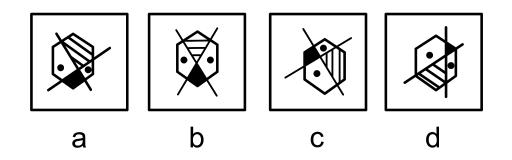
Solution:

1. Answer: (c)
   In the series, each individual shaded portion is moved to the next quadrant in the consecutive option. Option c is a misfit. The correct series is shown below.
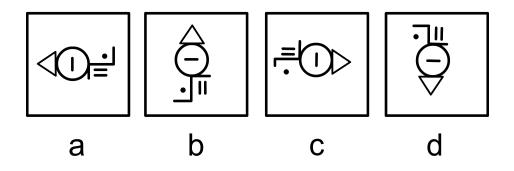

Question 10. Question figures

a   b   c   d

Solution:

1. Answer: (d)
    Only in option d, the line passes through the vertices of the hexagon.

Question 11.

a   b   c   d
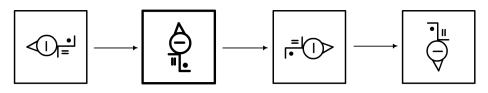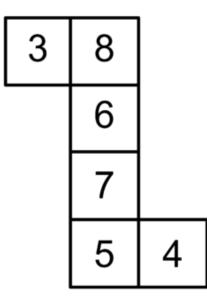
Solution:

1. Answer: (b)
    In the series, an option rotates 90° clockwise to give the next option. Option b is a misfit.
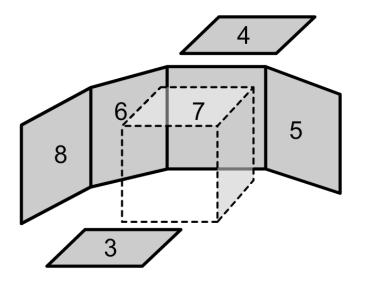   The correct series is shown below.

Question. 12 to 14 Directions: The figure given alongside is folded on the given lines to construct a cube. Observe the figure and answer the following questions by choosing the correct alternative.

3	8
	6
	7
5	4

The given net will fold into a cube as shown below.

Question 12. From the following which number will be opposite to 8?

1. a. 4
2. b. 5
3. c. 6
4. d. 7

Solution:

1. Answer: (d)
   From the image, 8 and 7 are on the opposite faces.

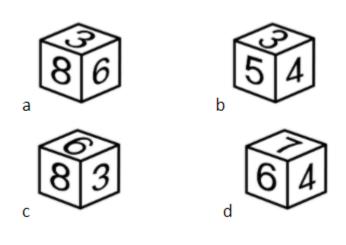**Question 13. From the following which number will not be adjacent to 4?**

1. a. 3
2. b. 8
3. c. 6
4. d. 7

Solution:

1. Answer: (a)
   From the image, 3 and 4 are on the opposite faces and so 3 is not an adjacent number to 4.

Question 14. From the following which figure is not obtained by folding the paper to form a cube?

Solution:

1. Answer: (b)
   From the image, 3 and 4 are on the opposite faces. So option (b) cannot be obtained by folding the given net.

Question 15. In the following question, there is a specific relationship between the first and second term. The same relationship exists between the third and fourth term. Considering the relationship, select the correct alternative to replace question mark: 4 : 80 :: 21 : ?
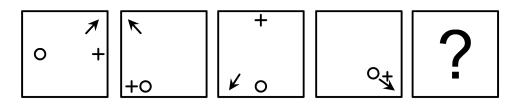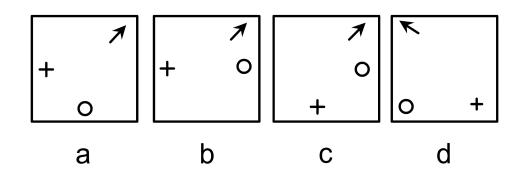
1. a. 9702
2. b. 8702
3. c. 8820
4. d. 421

Solution:

1. Answer: (a)

   $(4)_2 \times (4 + 1) = 80$

   $(21)_2 \times (21 + 1) = 9702$

Question 16 and 17 Directions: In each of the following the question figures change in a particular order. Decide which figure from the given alternatives will replace the question mark.
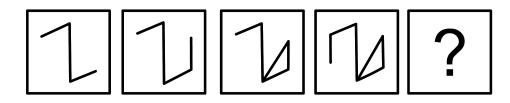
Question 16. Question figures

Answer figure

Solution:

1. Answer: (b)

   1. The arrow (→) rotates 90° in the anticlockwise direction.

   2. The circle (○) rotates 45° in the anticlockwise direction.
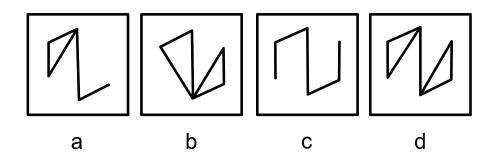
   3. The (+) sign rotates 135° clockwise direction.

   Hence, Option b will be the answer.

Question 17. Question figures

Answer figure

a   b   c   d

Solution:

1. Answer: (d)
   Every next image in the series gets one more line added. The missing image should have 7 lines.

Question 18 to 20 Directions: Sushil, Vipin, Prashant, Amar are four class friends. Sushil does not like to dance. Vipin likes only music and dance. Only three of them like dance and craft. Prashant likes all subjects except music. Sushil is a master in drawing and music.

Table based on the given directions:

Name	Subject
Sushil	Craft, Drawing, Music
Vipin	Music, Dance

Prashant	Craft, Drawing, Dance
Amar	Craft, Dance

Question 18. Amar likes which subjects?

1. a. Music and craft
2. b. Dance and drawing
3. c. Dance and craft
4. d. Music and drawing

Solution:

1. Answer: (c)
   From the table, Amar likes to dance and craft.

Question 19. Which subject Vipin, Prashant and Amar like?

1. a. Drawing
2. b. Music
3. c. Dance
4. d. Craft

Solution:

1. Answer: (c)
   From the table, the only common subject that Vipin, Prashant and Amar like is dance.

Question 20. Who likes drawing?

1. a. Sushil and Vipin
2. b. Vipin and Prashant
3. c. Sushil and Prashant
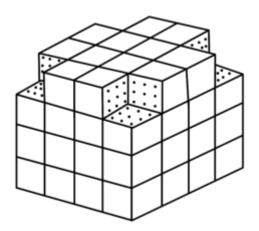4. d. Prashant and Amar

Solution:

1. Answer: (c)
   From the table, Sushil and Prashant like drawing.

Question 21 to 23 Directions: A wooden block of 4 X 4 dimensions is taken. All faces of the block are painted from outside. As shown in the figure it is cut into smaller cubes. Answer the

questions by studying the adjoining figure.

Question 21. How many cubes are there having at least one face painted?

1. a. 64
2. b. 52
3. c. 48
4. d. 24

Solution:

1. Answer: (b)
   Total number of small cubes = 64 - 4 = 60
   Total number of small cubes with no side painted = 8
   Small cubes with at least one side painted = Total number of cubes - cubes with no colour
   Small cubes with at least one side painted = 60 - 8 = 52

Question 22. If the base layer of the block would be the same as the top layer then how many cubes will be in the block?

1. a. 56
2. b. 52
3. c. 60
4. d. 62

Solution:

1. Answer: (a)
   Total number of small cubes in a 4 x 4 matrix of cubes = 4 × 4 × 4 = 64
   Number of small cubes removed from top layer = 4
   Number of small cubes removed from bottom layer = 4
   So the remaining number of small cubes in the block = 64 - 2(4) = 56

Question 23. If the base layer and top layer of a block are the same then at the most how many faces of the cube will be painted?

1. a. 3
2. b. 2
3. c. 1
4. d. 0

Solution:

1. Answer: (a)
   The cubes on the edges will have 3 faces coloured. This is the most number of faces that the block will have painted.
   Note: In the directions, the sequence of cutting the block into small cubes and painting is not specifically mentioned.
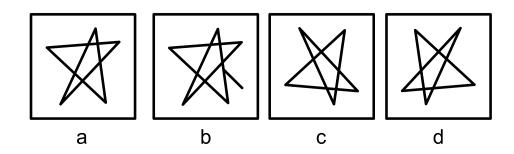
Question 24 and 25 Directions: Choose the mirror image from the alternatives given for the given question figures.
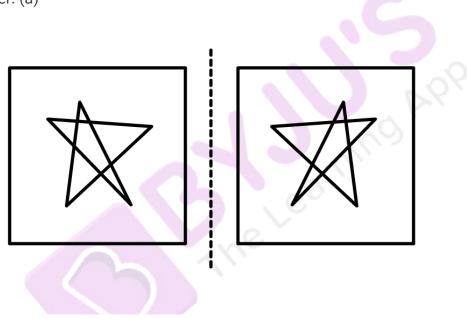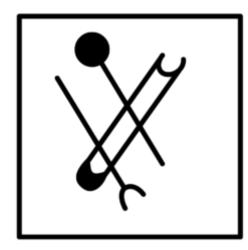
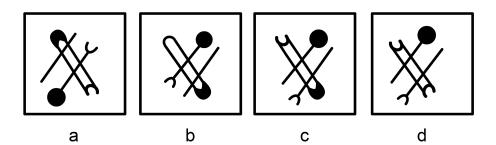**Question 24. Question figure**

Answer figure

a   b   c   d

Solution:

1. Answer: (a)

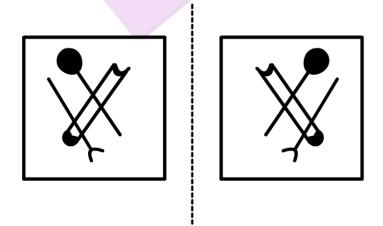**Question 25. Question figure**

Answer figure

| a | b | c | d |

Solution:

1. Answer: (c)

Question 26 and 27 Directions: A rhythmic arrangement of letters is given. The missing letters appear in the same order in one of the alternative answers. Find the correct alternative.

Question 26. p _ rsqr _ _ rs _ q _ pqr

1. a. qrspq
2. b. qrppr
3. c. qspps
4. d. qsqpr

Solution:

1. Answer: (c)
   There are groups of 4 alphabets one after the other, like pqrs, qrsp,...
   Series: p**q**rs/qr**sp**/rs**pq**/**s**pqr

Question 27. a _ cb _ ac _ _ ab _

1. a. bcabb
2. b. bcaab
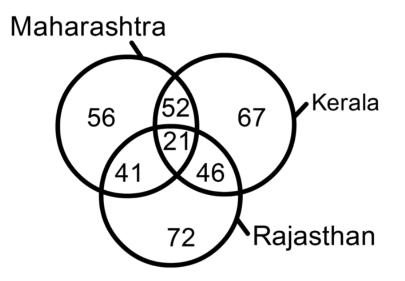3. c. bacbc
4. d. bcabc

Solution:

1. Answer: (d)
   There are groups of 3 alphabets one after the other, like abc, bca,...
   Series: a**b**c/b**c**a/c**ab**/ab**c**

Question 28 to 30 Directions: The numbers in the figure show the number of tourists from different states. Observe the figure and choose the answer from given alternatives for the following questions.
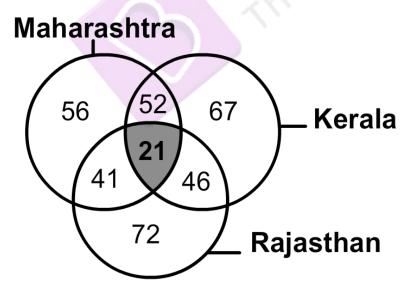
Maharashtra

Kerala

56 52 67

21

41 46

72 Rajasthan

Question 28. How many tourists visited all three states?

1. a. 119
2. b. 108
3. c. 21
4. d. 195

Solution:

1. Answer: (c)

Maharashtra

56 52 67 **Kerala**

21

41 46

72 **Rajasthan**

From the image, 21 tourists visited all three states.

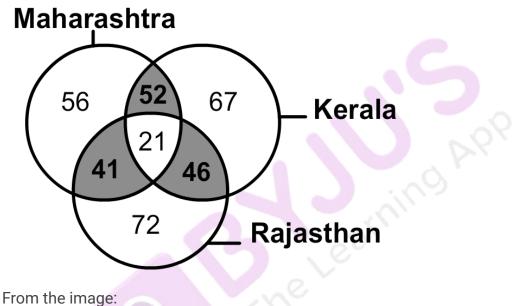**Question 29. Find the number of tourists visiting only two states.**

1. a. 93
2. b. 98
3. c. 87
4. d. 139

Solution:

1. Answer: (d)

From the image:
Total number of tourists visiting only two states = 52 + 41 + 46 = 139
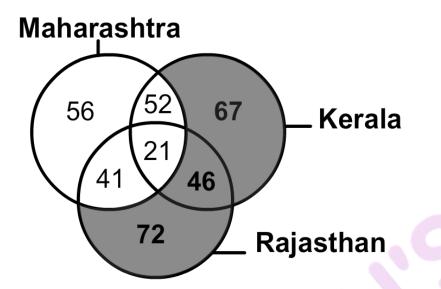
Question 30. Find the number of tourists who visited Kerala and Rajasthan but not visited Maharashtra?

1. a. 139
2. b. 185
3. c. 206
4. d. 232

Solution:

1. Answer: (b)

Tourists who visited Kerala and Rajasthan but not visited = 46 + 72 + 67 = 185

Question 31. Find the odd term.

1. a. ACEDB
2. b. HJLIK
3. c. TVXWU
4. d. PRTSQ

Solution:

1. Answer: (b)
   All the options except b have letters arranged in a particular pattern.

Question 32. Find the odd term.

1. a. ZBX
2. b. VFT
3. c. RJO
4. d. SIQ

Solution:

1. Answer: (c)

Z	B	X		V	F	T

-2 (for Z B X)   -2 (for V F T)
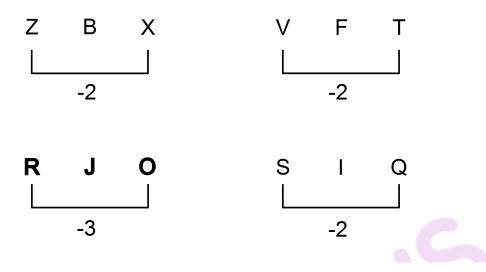
R **J** **O**   S I Q

-3   -2

(Question 33 and 34) Directions: Which symbols will come in the order. Choose the correct alternative.

Question 33. ΣθΔμβ, θΣΔμβ, θΔΣμβ, ?

1. a. θΔβΣμ
2. b. θΔμβΣ
3. c. θΔΣβμ
4. d. θΔμΣβ

Solution:

1. Answer: (d)
   In every next term the symbol (Σ), interchanges its position with the symbol to its right. Therefore, the answer will be θ Δ μ β.

Question 34. ψ Ω □ ○, Ω □ ○δ, □ ○ δα?

1. a. ○ δ α η
2. b. ○ δ α Ω
3. c. ○ δ α ψ
4. d. ○ δ α □

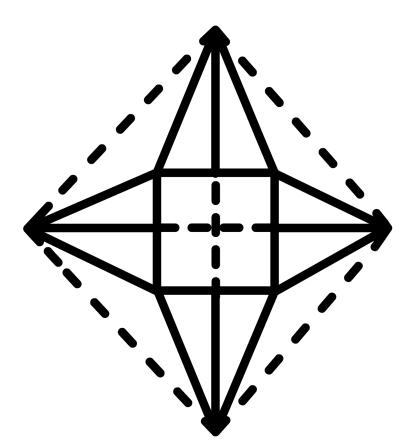Solution:

1. Answer: (a)
   The last symbol in each term is a new symbol that does not exist in any of the prior terms. Only in option (a), the last term is a unique new term that does not exist in the prior terms.

Question 35. Find the number of triangles in the given figure.
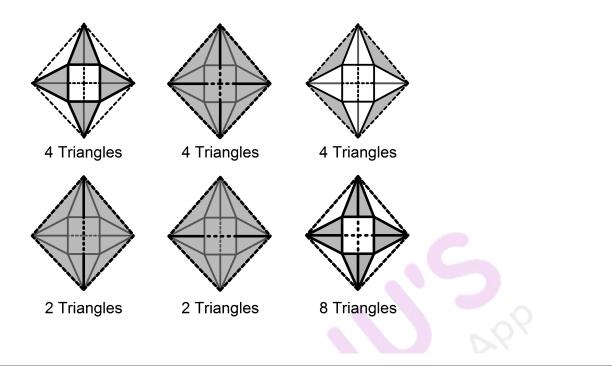
1. a. 16
2. b. 20
3. c. 24
4. d. 32

Solution:
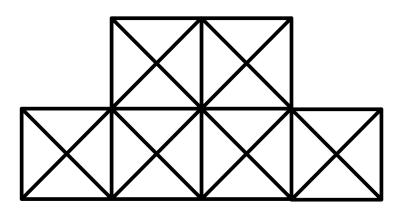
1. Answer: (c)
   The number of triangles will be 24 as shown.

4 Triangles   4 Triangles   4 Triangles

2 Triangles   2 Triangles   8 Triangles

Question 36. Find the total number of squares in the following figure.
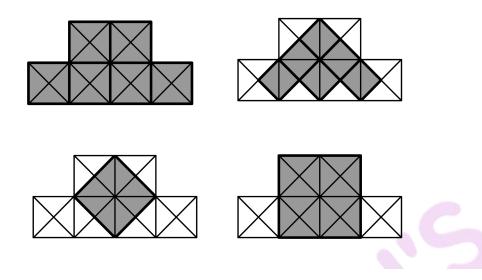
1. a. 6
2. b. 12
3. c. 13
4. d. 15
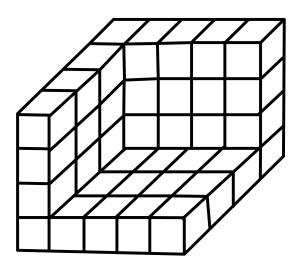
Solution:

1. Answer: Bonus
   There should be 14 squares.

Questions. 37 to 39 Directions: The following figure is made by arranging some cubes having each side 1 unit. This is painted from all sides. Observe the figure and choose the correct alternative for the following questions.

Question 37. Find the number of cubes having the maximum number of faces painted.
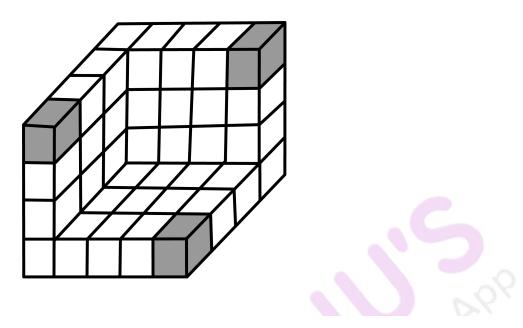
1. a. 1
2. b. 2
3. c. 3
4. d. 4

Solution:

1. Answer: (c)

The number of cubes having the maximum number of faces (4) painted = 3

Question 38. How many cubes are used to make the arrangement as shown in the figure?

1. a. 35
2. b. 40
3. c. 44
4. d. 46

Solution:

1. Answer: (c)
   Total number of cubes in given arrangement = (5 × 4) + (5 × 3) + (3 × 3) = 44

**Question 39. Find the number of cubes having no face painted.**

1. a. 0
2. b. 1
3. c. 2
4. d. 3

Solution:
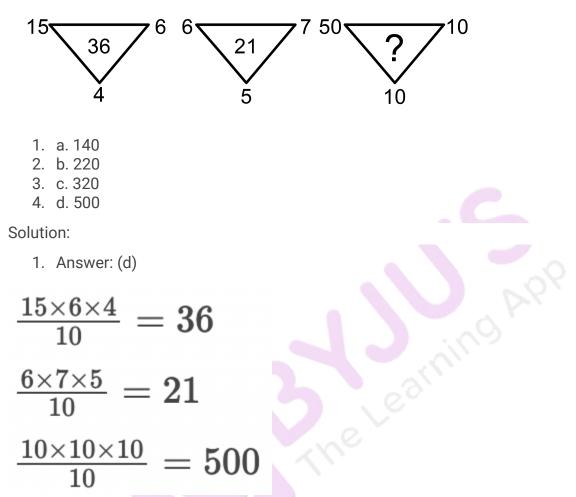
1. Answer: (a)
   At least two faces of all the cubes in the given arrangement are painted.
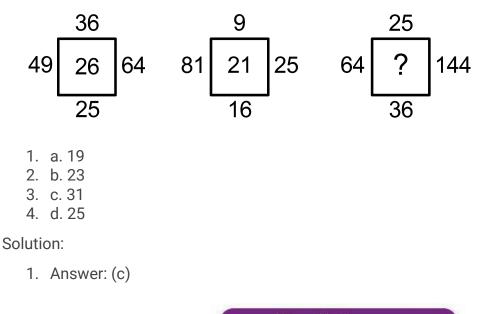
Question 40 and 41 Directions: In the following figure numbers are written with a specific rule. Find the rule and decide which alternative will be in place of the question mark.

Question 40. In the figure, decide which alternative will be in place of the question mark.

1. a. 140
2. b. 220
3. c. 320
4. d. 500

Solution:

1. Answer: (d)

$$\frac{15 \times 6 \times 4}{10} = 36$$

$$\frac{6 \times 7 \times 5}{10} = 21$$

$$\frac{10 \times 10 \times 10}{10} = 500$$

Question 41. In the figure, decide which alternative will be in place of the question mark.

1. a. 19
2. b. 23
3. c. 31
4. d. 25

Solution:

1. Answer: (c)

√25 + √36 + √49 + √64 = 26
√9 + √16 + √25 + √81 = 21
√25 + √36 + √64 + √144 = 31
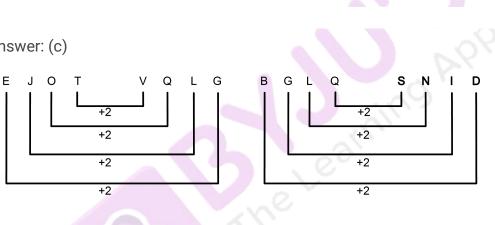
Question 42 to 44 Directions: In the following questions there is a specific relation between first and second term. The same relationship exists between the third and fourth term, which will replace the question mark. Select the correct alternative from the given alternatives.

Question 42. EJOT : VQLG :: BGLQ : ?

1. a. DINS
2. b. RMHC
3. c. SNID
4. d. EJOT

Solution:

1. Answer: (c)
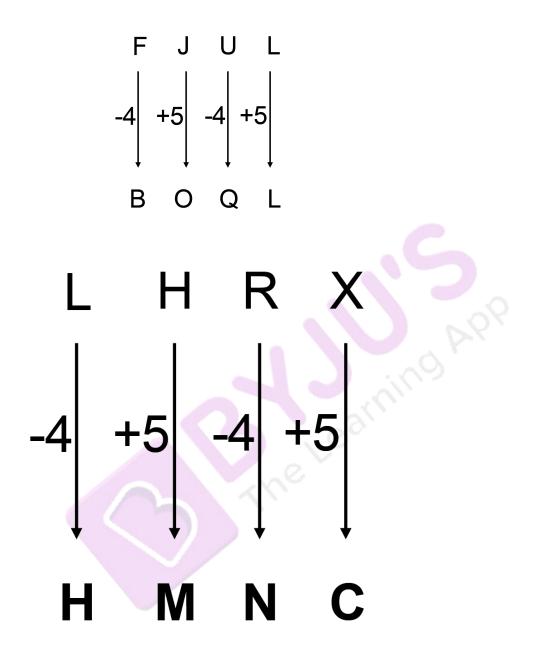
Question 43. FJUL : BOQQ :: LHRX : ?

1. a. BKPR
2. b. MNCC
3. c. HRYY
4. d. HMNC

Solution:

1. Answer: (d)

```
F       J       U       L

-4      +5      -4      +5
 |       |       |       |
 ↓       ↓       ↓       ↓

B       O       Q       L
```

```
L       H       R       X


-4      +5      -4      +5
 |       |       |       |
 ↓       ↓       ↓       ↓


H       M       N       C
```

Question 44. QPRS : TUWV :: JIKL : ?

1. a. MNOP
2. b. NMOP
3. c. MNPO
4. d. NMPO

Solution:

1. Answer: (c)

Q P R S : T U W V :: J I K L : M N P O

2 1 3 4 5 6 8 7 2 1 3 4 5 6 8 7

Question 45 and 46 Directions: Choose the mirror image from the alternatives given for the given question figures.

Question 45. Question figure

Answer figure

a   b   c   d

Solution:

1. Answer: (b) or (d)

Actual Image

Actual Image   Mirror Image

Mirror Image

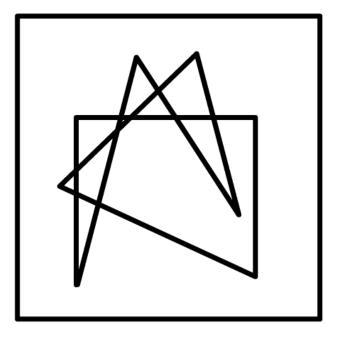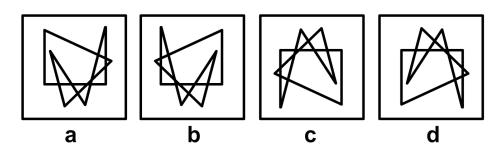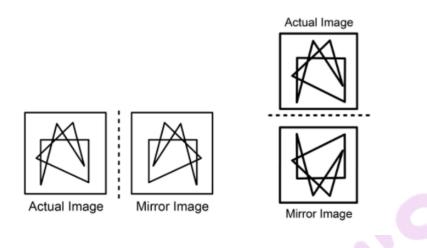**Question 46. Ishant is taller than Sanjay, Ashok is taller than Ishant, Sachin is not as tall as Ashok but taller than Ishant. Who is shortest in height?**

1. a. Sanjay
2. b. Sachin
3. c. Ishant
4. d. Can't be determined

Solution:

1. Answer: (a)
    From the question, the heights can be compared as follows.
    Ashok > Sachin > Ishant > Sanjay

Question 47 and 48 Directions: In a row, Pradyuman is twelfth from the front and Sarvesh is Twenty-fifth from behind. Rahul is exactly at the centre place between Pradyuman and Sarvesh There are 70 persons in the row then.

Question 47. Rahul is standing at which place from the front?

1. a. 29
2. b. 33
3. c. 17
4. d. 42

Solution:

1. Answer: (a)
    Position of Sarvesh from front = 70 - 24 = 46 (Since there are 24 persons behind Sarvesh)
    Number of people between Pradyuman and Sarvesh = 46 - 12 - 1 = 33.

Rahul is the 17th person from Pradyuman.
Position of Rahul from the front = 12 + 17 = 29th person

Question 48. Rahul is at which place from behind?

1. a. 29
2. b. 42
3. c. 33
4. d. 17

Solution:

1. Answer: (b)
   There are 28 people before Rahul.
   So the position of Rahul from behind is 70 - 28 i.e. 42.
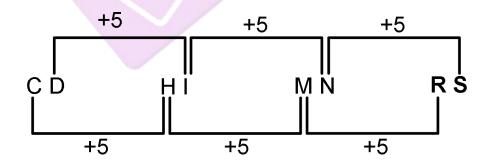

Questions. 49 to 52 Directions: In each of the following questions write which correct term in sequence replaces the question mark?

Question 49. CD, HI, MN, __?

1. a. QS
2. b. OP
3. c. RS
4. d. PQ

Solution:

1. Answer: (c)

Question 50. RD, PG, MK, IN, __?
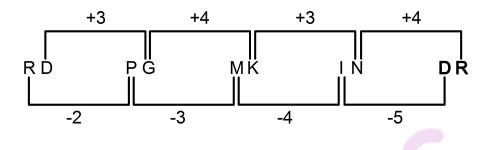
1. a. ER
2. b. DR
3. c. CQ

4. d. DQ

Solution:

1. Answer: (b)

Question 51. BM26, EN70, HO120, KP176, __?

1. a. NQ250
2. b. NP224
3. c. MQ221
4. d. NQ238

Solution:

1. Answer: (d)
   BM = 2 x 13 = 26
   EN = 5 x 14 = 70
   HO = 8 x 15 = 120
   KP = 11 x 16 = 176
   NQ = 14 x 17 = 238

Question 52. T23C, QG24, 26NL, KP27, __?

1. a. 29GV
2. b. 29HU
3. c. 27GT
4. d. 28HT

Solution:

1. Answer: (b)
   Checking the relation between the letters of the terms in the Series:
   T - 3 = Q; C + 4 = G
   Q - 3 = N; G + 5 = L
   N - 3 = K; L + 4 = P
   K - 3 = H; P + 5 = U
   So, We get TC, QG, NL, KP, HU.

Hence the next term in the series is 29HU.
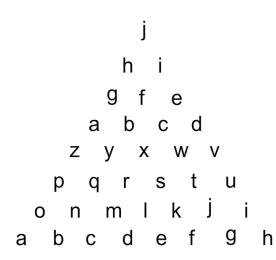Note: The number in each term is the sum of the serial numbers of the letters.

Question 53 to 57 Directions: Observe the following pyramid and decide which alternative will be in place of question mark in each of the following questions.

```
                          j
                       h    i
                     g   f    e
                   a   b   c   d
                 z   y   x   w   v
               p   q   r   s   t   u
             o   n   m   l   k   j   i
           a   b   c   d   e   f   g   h
```

Question 53. oab : zpq :: gab : __?
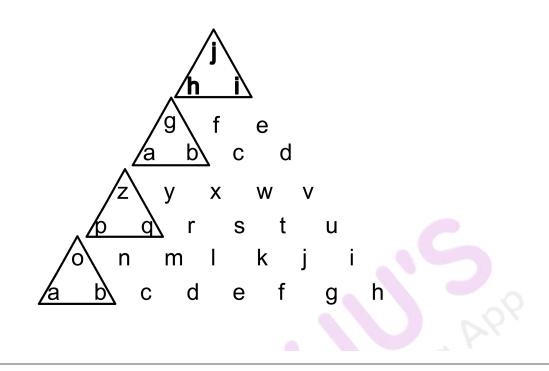
1. a. mde
2. b. bxy
3. c. jhi
4. d. tjk

Solution:

1. Answer: (c)

j
h   i
g   f   e
a   b   c   d
z   y   x   w   v
p   q   r   s   t   u
o   n   m   l   k   j   i
a   b   c   d   e   f   g   h
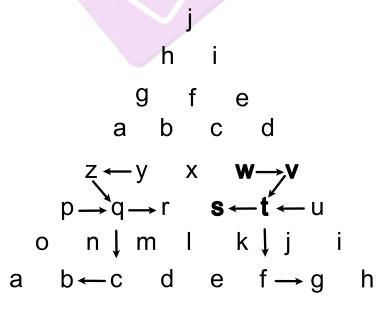
Question 54. pqcb : utfg :: yzqr : __?

1. a. abcd
2. b. lscb
3. c. ekig
4. d. wvts

Solution:

1. Answer: (d)

j

h   i

g   f   e

a   b   c   d

z ← y   x   **w → v**

p → q → r   **s ← t ← u**

o   n ↓ m   l   k ↓ j   i
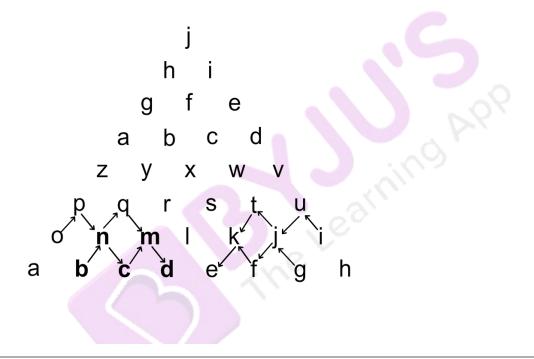
a   b ← c   d   e   f → g   h

Question 55. opnqm : ijtk :: __? : gjfke

1. a. bncmd
2. b. gbfce
3. c. jfxle
4. d. Ybxsr

Solution:

1. Answer: Bonus
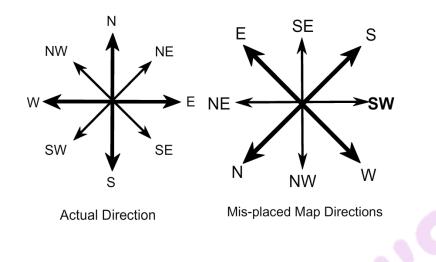   In the question, ijtk should have been iujtk to obtain the correct option.

Question 56. A map was so placed that north-west becomes south then what will east become?

1. a. South-west
2. b. North
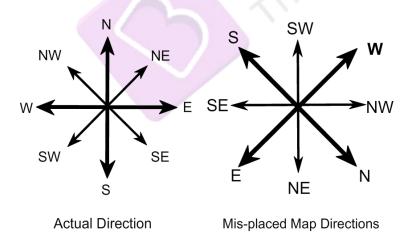3. c. North-east
4. d. West

Solution:

1. Answer: (a)

N
NW   NE
W   E
SW   SE
S

Actual Direction

SE
E   S
NE   **SW**
N   W
NW

Mis-placed Map Directions

Question 57. A map was so placed that south-east becomes west then what will north-east become?

1. a. South-west
2. b. West
3. c. North-west
4. d. South

Solution:

1. Answer: (b)

N
NW   NE
W   E
SW   SE
S

Actual Direction

SW
S   **W**
SE   NW
E   N
NE

Mis-placed Map Directions
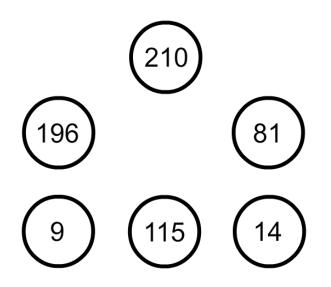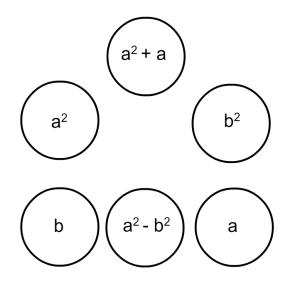
Question 58 to 60 Directions: There is a certain relationship between the numbers that are given in the following figure. According to that relationship which alternative will replace the question mark?

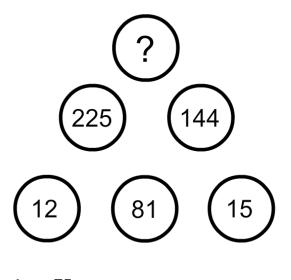210

196   81

9   115   14

The relationship in the image can be expressed as follows:

$a^2 + a$

a^2 b^2

b $a^2 - b^2$ a

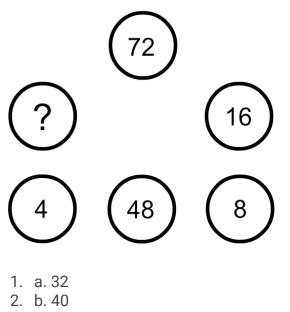**Question 58. Which alternative will replace the question mark?**

1. a. 75
2. b. 240
3. c. 360
4. d. 400

Solution:

1. Answer: (b)
   From the relationship image: Here a = 15. Missing number, $a^2 + a = 225 + 15 = 240$

Question 59. Which alternative will replace the question mark?
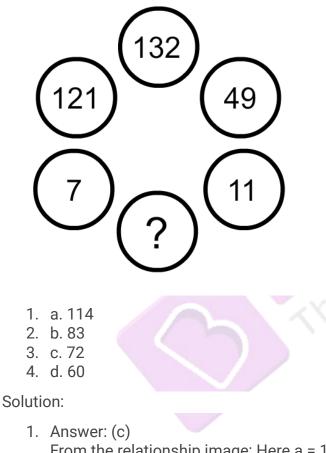

1. a. 32
2. b. 40
3. c. 64

4. d. 80

Solution:

1. Answer: (c)
   From the relationship image: Here a = 8. Missing number, a$_2$ = 64

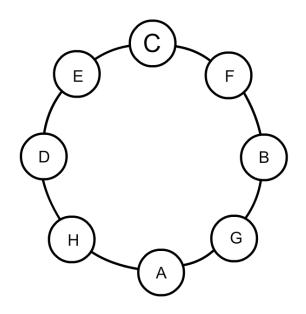**Question 60. Which alternative will replace the question mark?**

1. a. 114
2. b. 83
3. c. 72
4. d. 60

Solution:

1. Answer: (c)
   From the relationship image: Here a = 11 and b = 7. Missing number, a$_2$ - b$_2$ = 121 - 49 = 72

Question 61 to 63 Directions: A, B, C, D, E, F, G, H eight friends are sitting around the circular table. C is sitting in front of A and H is sitting at the first position to the left of A. F is in front of H. Whereas D is at the first position to the right of E and C is at the first position to left of E. A is between G and H. Choose the correct alternatives for the questions given below.

Image drawn from the given directions:

Question 61. Who is sitting between B and C?

1. a. D
2. b. G
3. c. F
4. d. H

Solution:

1. Answer: (c)
   As it can be seen from the image that F sits between B and C.

Question 62. Who is sitting between A and B?

1. a. D
2. b. G
3. c. E
4. d. F

Solution:

1. Answer: (b)
   As it can be seen from the image, G is sitting between A and B.

Question 63. If B and D would have interchanged the places then who will be sitting in the first position to the left of B?
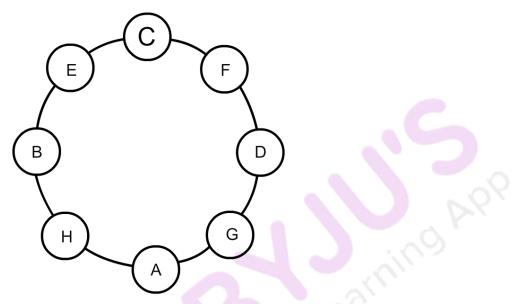
1. a. G
2. b. C

3. c. F
4. d. E

Solution:

1. Answer: (d)
   If B and D were to interchange their places then the new sitting arrangement would be:

   As it can be seen in the image, E would be sitting to the left of B.

Question 64. If according to mathematical code language

8 ÷ 2 = 70, 9 ÷ 3 = 87, 10 ÷ 4 = 106 then 7 ÷ 5 = ?

1. a. 65
2. b. 58
3. c. 51
4. d. 63

Solution:

1. Answer: (c)
   8 ÷ 2 = $(8)^2$ + (8 - 2) = 64 + 6 = 70
   9 ÷ 3 = $(9)^2$ + (9 - 3) = 81 + 6 = 87
   10 ÷ 4 = $(10)^2$ + (10 - 4) = 100 + 6 = 106
   7 ÷ 5 = $(7)^2$ + (7 - 5) = 49 + 2 = 51

Question 65. If according to mathematical code 9+2=36, 8+3 = 72, 7+4=112 then 6+5=?
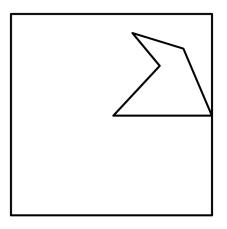
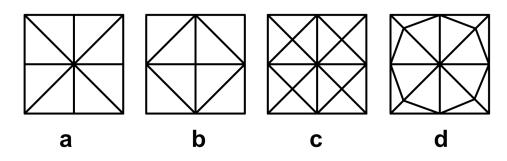1. a. 84

2. b. 130
3. c. 75
4. d. 150

Solution:

1. Answer: (d)
   9 + 2 = 9 x (2)$_2$ = 9 x 4 = 36
   8 + 3 = 8 x (3)$_2$ = 8 x 9 = 72
   7 + 4 = 7 x (4)$_2$ = 7 x 16 = 112
   6 + 5 = 6 x (5)$_2$ = 6 x 25 = 150

Question 66 and 67 Directions: A square-shaped paper is folded as shown in the figure. The paper when unfolded will look like as shown in one of the alternatives. Select the correct alternative.

Question 66. Question figure

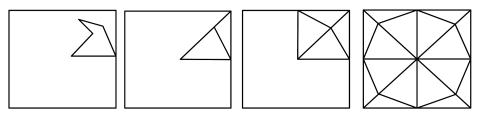**Answer figure**

| a | b | c | d |

Solution:
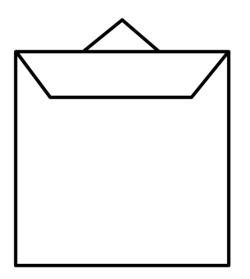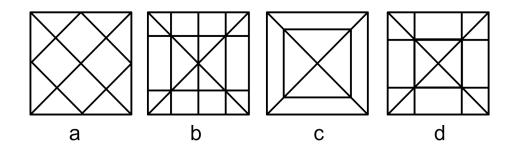
1. Answer: (d)

Unfolding the paper will produce an image similar to option (d)

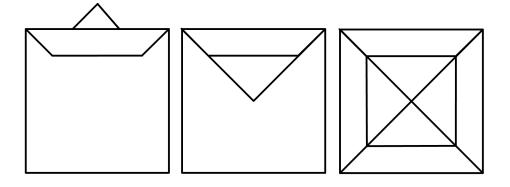**Question 67. Question figure**

Answer figure

a   b   c   d

Solution:

1. Answer: (c)
   Unfolding the paper will produce an image similar to option (c).

Question 68. Ten years before the ratio of ages of Ram and Shyam was 1 : 7, ten years after the ratio of their ages is 1 : 3. Find the present age of Ram.

1. a. 10 years
2. b. 20 years
3. c. 30 years
4. d. 70 years

Solution:

1. Answer: (b)
   Let the present age of Ram and Shyam be r and s, respectively.
   The conditions given to us are:
   (r-10)/(s-10) = 1/7
   (r+10)/(s+10) = 1/3
   The equations we get after simplification are:
   Equation 1: 7r - s = 60
   Equation 2: 3r - s = -20
   Solving the two equations you will get r = 20.

Question 69. From the above information what will be the age of Shyam after 10 years?

1. a. 70 years
2. b. 80 years
3. c. 90 years
4. d. 30 years

Solution:

1. Answer: (c)
   Since the present age of Ram (r) = 20, using the two equations, the value of the present age of Shyam (s) = 80. As the question is asking for s+10, therefore our answer will be (80+10) = 90 years.

Question 70 and 71 Directions: In the following questions the numbers outside the bracket are related to numbers inside the bracket in a specific manner. From the given alternatives find the right number which matches and will replace the question mark.

Question 70. Find the right number which matches and will replace the question mark.

78 (20) 82

37 (12) 59

45 (?) 91

1. a. 13
2. b. 17
3. c. 19
4. d. 23

Solution:

1. Answer: (b)

$$\frac{78+82}{8} = 20$$

$$\frac{37+59}{8} = 12$$

$$\frac{45+91}{8} = 17$$

Question 71. Find the right number which matches and will replace the question mark.

95 (53) 87

152 (82) 58

76 (?) 174

1. a. 46
2. b. 93
3. c. 89
4. d. 78

Solution:

1. Answer: (a)

95/199 = 5, 87/29 = 3. Combining 5 and 3 we get 53
152/19 = 8, 58 / 29 = 2. Combining 8 and 2 we get 82
76/19 = 4, 174 / 29 = 6. Combining 4 and 6 we get 46

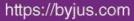**Question 72. From the position shown in above figure, Ranu, Shaifu and Charvi run along the sides of the equilateral triangle in clockwise direction for 1 side of the triangle. Now Charvi is in which direction of Shaifu?**

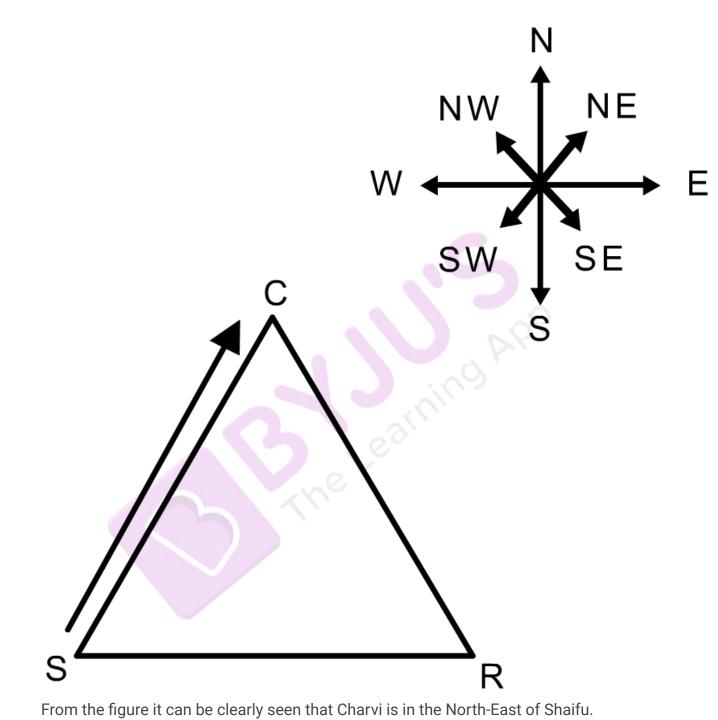1. a. South-West
2. b. South-East
3. c. North-West
4. d. North-East

Solution:

1. Answer: (d)
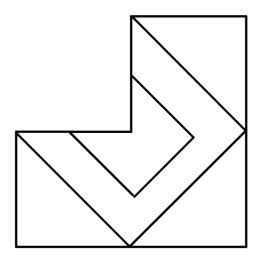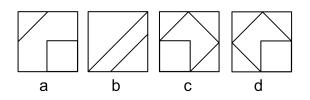   After they have run along 1 side of the triangle in clockwise direction their positions are as shown.

From the figure it can be clearly seen that Charvi is in the North-East of Shaifu.

Question 73. Question figure

Answer figure

a   b   c   d

Solution:
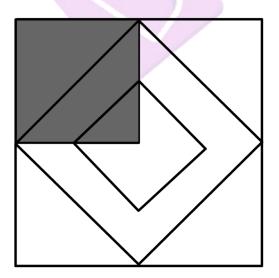
1. Answer: (b)
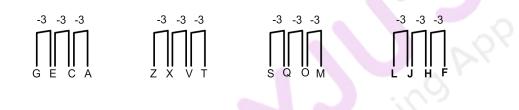
Question 74 to 76 Directions: In the following questions specific groups of letters are given. From the given alternatives, find out the right letters which match the given group.

Question 74. GECA ZXVT SQOM

1. a. YWUT
2. b. VTRQ
3. c. MKIH
4. d. LJHF

Solution:

1. Answer: (d)
   Only option (d) follows the pattern given below:

Question 75. BEIN EHLQ ILPU

1. a. NQUZ
2. b. HKOS
3. c. LOSY
4. d. JMQT

Solution:

1. Answer: (a)
   Only option (a) follows the pattern given below:

Question 76. BYEV DWHS IRLO

1. a. FUKO

2. b. CXJP
3. c. GTDW
4. d. AZCW

Solution:
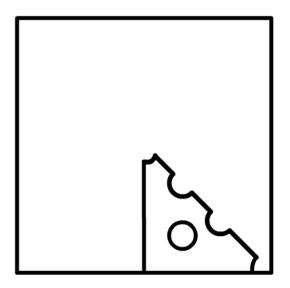
1. Answer: (c)
   The alphabets are mapped paired as shown in the table below.

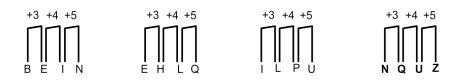| A	B	C	**D**	E	F	**G**	H	I	J	K	L	M
Z	Y	X	**W**	V	U	**T**	S	R	Q	P	O	N

   In each term of the series, the first two letters and last two letters are pairs from the given table.
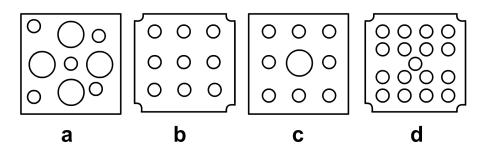
Question 77 and 78 Directions: A square piece of paper is folded and cut at specific spots as shown in the figures. The paper when unfolded will look-like as shown in one of the alternatives. Select the correct alternative.

Question 77. Question figure
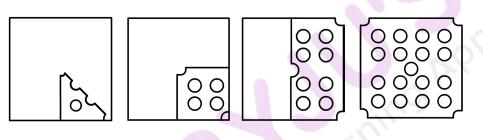
Answer figure

| a | b | c | d |

Solution:
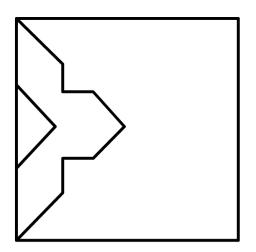
1. Answer: (d)
   Solution: By observing the images given below it is clear that image (d) should be the answer.
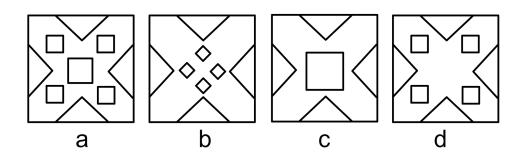
Question 78. Question figure

Answer figure

a   b   c   d

Solution:
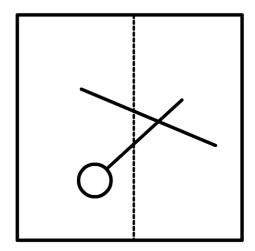
1. Answer: (d)
   Solution: By observing the images given below, it is clear that image (b) is the answer.
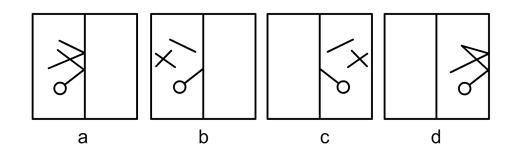
Question 79 and 80 Directions: In the figure given below a transparent square shaped paper is folded along the dotted lines, which figure will be obtained? Find the figure from the alternative figures given.

Question 79. Question figure

Answer figure

a   b   c   d
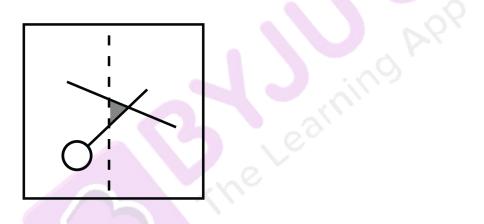
Solution:
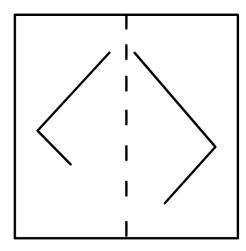
1. Answer: (a)
   The two lines intersect with a middle line to form a triangle shown below.
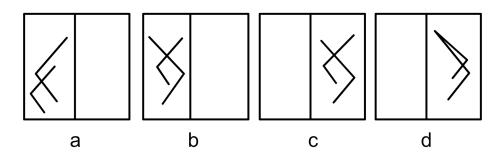
On folding the paper the direction of the triangle will change but it will be connected to the folding line. Out of the given images, only option (a) satisfies this condition.

Question 80. Question figure

Answer figure

a   b   c   d

Solution:
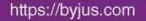
1. Answer: (d)
   i. The edge of both figures is opposite to each other, on folding the sheet the edges will be on the same side. Images (a) and (d) satisfy this condition.
   ii. Also, the small figure is above the larger figure in the unfolded sheet, so in the folded sheet the smaller image will be on top of the larger image. Hence, image (d) is the answer.

Question 81 to 83 Directions: In a certain code language the word BASIC has been written in four different code languages. Understanding the code, find out the correct code language for the word given in each of the following questions.

Word	Code language
BASIC	(a) EDVLF
-	(b) CISAB

- (c) YASIZ

- (d) BZRHC

Question 81. EARTH = BARTE

Answer: (c)
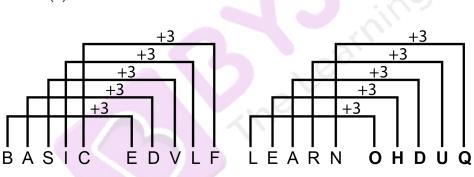
Middle 3 letters remain the same in the code as in the word. So, it is code language **YASIZ**.

Solution:

1. Answer: (c)
   Middle 3 letters remain the same in the code as in the word. So, it is code language **YASIZ**.
2. Answer: (a)

Question 83. LEARN = OHDUQ

Solution:

1. Answer: (a)

Question 84. In a certain code language if @ x ☆ = 45, ◡ x P = 48, P x ☆ = 40, and # x @ = 27 then find the value of #?

1. a. 5
2. b. 6
3. c. 3
4. d. 9

Solution:

1. Answer: (c)
   Since, **@ x ☆ = 45 and P x ☆ = 40**, the symbol (☆) has to be 5. Using this value all the other equations can be solved.

$$@ \times \text{✡} = 45, \quad \smile \times P = 48, \quad P \times \text{✡} = 40 \text{ and } \# \times @ = 27$$

$$\downarrow \quad \downarrow \qquad \downarrow \quad \downarrow \qquad \downarrow \quad \downarrow \qquad \qquad \downarrow \quad \downarrow$$

$$9 \quad 5 \qquad 6 \quad 8 \qquad 8 \quad 5 \qquad \qquad ③ \quad 9$$

Question 85. In a certain code language if ǁ means 4, ǁǁǁǁǁ means 12, @ means x, ⊙ means ÷, # means + and $means - are used then find$ ǁǁǁǁ@ǁǁǁǁǁǁ ǁǁǁǁ ⊙ ǁ # ǁǁǁǁǁǁ = ?

1. a. 104
2. b. 106
3. c. 102
4. d. 30

Solution:

1. Answer: (b)
   If ǁ means 4, then ǁǁǁǁ means 8.
   Then,
   ǁǁǁǁ @ ǁǁǁǁǁǁ $ ǁǁǁǁ ⊙ ǁ # ǁǁǁǁǁǁ = 8 x 12 - 8 ÷ 4 + 12 = 106

Question 86 to 88 Directions: In the following questions a specific group of numbers are given. From the given alternatives, find out the right number which matches the given group.

Question 86. 416, 749, 525,

1. a. 982
2. b. 864
3. c. 637
4. d. 319

Solution:

1. Answer: (b)
   $416 = 4(4_2)$
   $749 = 7(7_2)$
   $525 = 5(5_2)$
   Similarly for option b, $864 = 8(8_2)$.

Question 87. 294, 648, 448,

1. a. 84
2. b. 94
3. c. 100

4. d. 194

Solution:
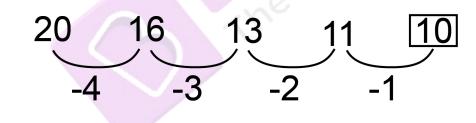
1. Answer: (c)
   $294 = 7_3 - 7_2$
   $648 = 9_3 - 9_2$
   $448 = 8_3 - 8_2$
   Similarly,
   $100 = 5_3 - 5_2$

Question 88. 3 ⅓, 3.2, 3.25, 3 ⅔,

1. a. 3.5
2. b. 5
3. c. 4.2
4. d. 13/3

Solution:

1. Answer: (b)
   On simplifying, we get 10/3, 16/5, 13/4 and 11/3.
   10/3 is also equal to 20/6.
   We have, Numerator:

$$20 \quad 16 \quad 13 \quad 11 \quad \boxed{10}$$
$$-4 \quad -3 \quad -2 \quad -1$$
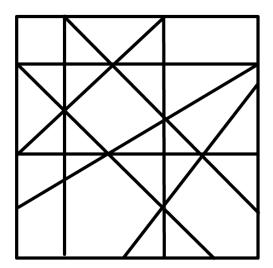
   Denominator = 6, 5, 4, 3, 2
   So, the answer is 10/2 = 5.
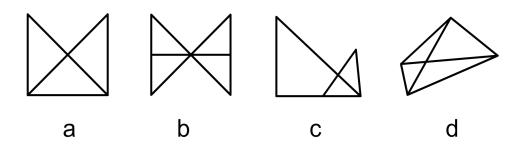
Question 89 and 90 Directions: In the given questions a complex figure is given. Find out which of the simple figures given in the alternatives is hidden in the complex figure.

Question 89. Question figure

Answer figure

a   b   c   d

Solution:
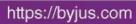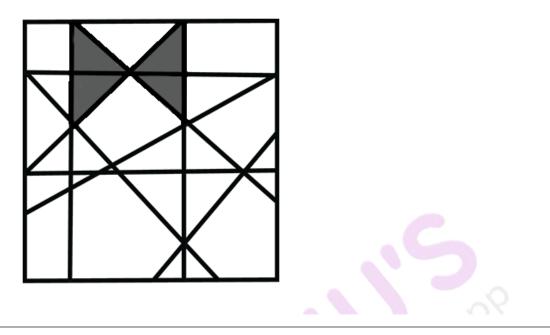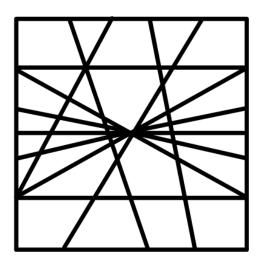
1. Answer: (b)
   By observing we can see that figure b is part of the question figure.
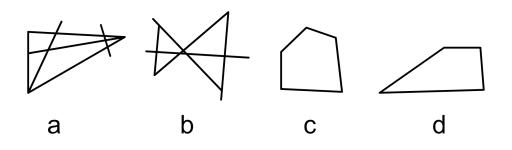
Question 90. Question figure

Answer figure

a   b   c   d

Solution:
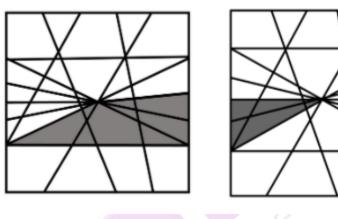
1. Answer: (a)
   By observing we can see that the figure (a) is part of the question figure.
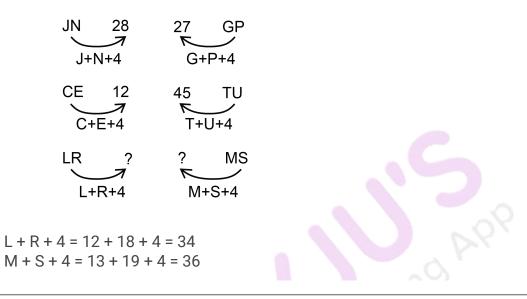
Question 91. In the following question letters and numbers are written with a specific rule in horizontal rows. Find the rule and decide which will be in place of the question mark.

JN	28	27	GP
CE	12	45	TU
LR	?	?	MS
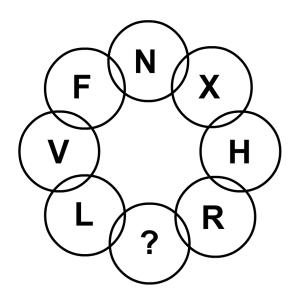
1. a. 30, 41
2. b. 30, 32
3. c. 34, 36
4. d. 35, 35

Solution:

1. Answer: (c)
   Solution: Let A = 1, B = 2, and so on. Then

   JN   28   27   GP
   J+N+4   G+P+4

   CE   12   45   TU
   C+E+4   T+U+4

   LR   ?   ?   MS
   L+R+4   M+S+4

   L + R + 4 = 12 + 18 + 4 = 34
   M + S + 4 = 13 + 19 + 4 = 36
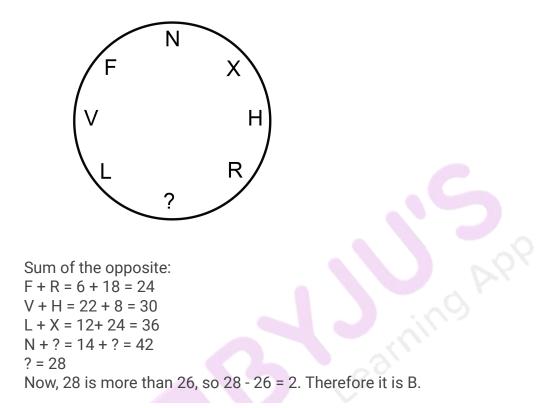
Question 92. Write the correct alternative to replace the question mark.

1. a. C
2. b. B
3. c. Z
4. d. A

Solution:

1. Answer: (b)

Sum of the opposite:
F + R = 6 + 18 = 24
V + H = 22 + 8 = 30
L + X = 12+ 24 = 36
N + ? = 14 + ? = 42
? = 28
Now, 28 is more than 26, so 28 - 26 = 2. Therefore it is B.

Question 93 and 94 Directions: In the following table the digits are assigned with certain symbols. Observe them carefully and choose the correct alternative to answer the questions.

Digits	0	1	2	3	4	5	6	7	8	9
Symbols	⊕	卐	＋	⌣̣	▽	#	⊗	⌣̇	△	$

Question 93. How will you write the number 635104?

a. $\oplus \bigtriangledown \oplus \smile \# \, \text{卐}$

b. $\otimes \smile \# \, \text{卐} \oplus \bigtriangledown$

c. $\oplus \smile \triangle \# \, \text{卐} \otimes$

d. $\otimes \triangle \smile \# \, \text{卐} \oplus$

Solution:

1. Answer: (b)
   By observing the symbols and their corresponding numbers, it is clear that the number 635104 can be written as:

$$\otimes \quad \smile \quad \# \quad \text{卐} \quad \oplus \quad \bigtriangledown$$

Question 94. Which number will be expressed by

$$\$ \; \# \; \text{卐} \; \triangle \; \smile \; \bigtriangledown$$

1. a. 951478
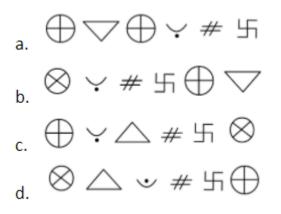2. b. 958174
3. c. 951847
4. d. 951874

Solution:

1. Answer: (d)
   By observing the symbols and their corresponding numbers, it is clear that the symbol represents the number 951874.

Question 95 and 96: Directions: In the following questions word letters are given in column I and are coded in column II. But they are not arranged to the order of word letters in column I.

Find the code language and choose the correct alternative to answer the questions.

Column I	Column II
T E A R	8 6 2 3
P U R N	5 6 4 1
T A L K	9 8 7 2
N E T	2 3 5

Code for each letter is obtained by comparing common letters in the words and common numbers in the corresponding codes:

Comparing TEAR and PURN : R = 6

Comparing PURN and NET: N = 5

Comparing TALK and NET: T = 2

Comparing TEAR and BET: E = 3

Comparing TEAR and TALK: A = 8

P and U could be 1 or 4.

L and K could be 7 or 9.

Question 95. What is the code for the word PREAK?

1. a. 13689
2. b. 16389
3. c. 16839
4. d. 16489

Solution:

1. Answer: (b)
   From the codes derived:
   Since REA is 638, PREAK = 16389

Question 96. 542687 code is for which word?

1. a. NATURE
2. b. NATEUR
3. c. NUTRAL
4. d. NURTAL

Solution:

1. Answer: (c)
   From the codes derived:
   Since 268 is TRA, 542687 = NUTRAL

Question 97. Observe the following code language and choose the correct alternative to answer the questions.

Letters	Z	A	W	O	D	I	Y	L	P	C
Digits	0	1	2	3	4	5	6	7	8	9

What is the code for the word ZODIAC?

1. a. 034159
2. b. 034519
3. c. 043951
4. d. 093415

Solution:

1. Answer: (b)
   From the table we can see, Z = 0, O = 3, D = 4, I = 5, A = 1 and C = 9
   So, ZODIAC = 034519

Question 98 to 100 Directions: Observe the pyramid of number and choose the correct alternative which will replace question mark.

```
                    1
                2   3   4
            5   6   7   8   9
        10  11  12  13  14  15  16
      17  18  19  20  21  22  23  24  25
    26  27  28  29  30  31  32  33  34  35  36
  37  38  39  40  41  42  43  44  45  46  47  48   49
```
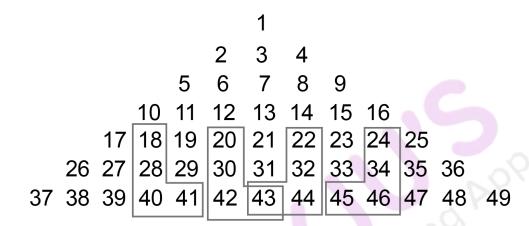
Question 98. 18284041 : 24344645 : : 20304243 : ?

1. a. 22324443
2. b. 21314344
3. c. 22324445
4. d. 24344647

Solution:

1. Answer: (a)

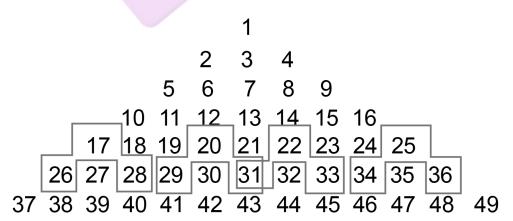**Question 99.** 261728 : ? : : 292031 : 332231

1. a. 281930
2. b. 302132
3. c. 362534
4. d. 352433

Solution:

1. Answer: (c)

Question 100. 37261718 : 49362524 : : 39271710 : ?

1. a. 39281920
2. b. 47352516
3. c. 47342322
4. d. 46342416

Solution:

1. Answer: (b)

```
                  1
              2   3   4
            5   6   7   8   9
        10  11  12  13  14  15  16
        17  18  19  20  21  22  23  24  25
      26  27  28  29  30  31  32  33  34  35  36
    37  38  39  40  41  42  43  44  45  46  47  48  49
```