CONTENT

PART - II

➤ ➤ ➤ SERIES COMPLETION ➤ ➤ ➤

Series completion problems deals with number, alphabets and both together. While attempting to solve the question, you have to check the pattern of the series. Series moves with certain mathematical operations. You have to check the pattern.

Type of questions asked in the examination :

(i) Find the missing term(s).

(ii) Find the wrong term(s).

NUMBER SERIES :

(a) Some Important Patterns :

(i) a, $a \pm d$, $a \pm 2d$, $a \pm 3d$, ... (Arithmetic Progression)

(ii) a, ak ak^2, ak^3, ...(Geometric Progression)

(iii) $a, \frac{a}{k}, \frac{a}{k^2}, \frac{a}{k^3}, \ldots\ldots\ldots\ldots\ldots$ (Geometric Progression)

(iv) Series of prime number - i.e. 2, 3, 5, 7, 11 .....

(v) Series of composite numbers - i,e, 4, 6, 8, 9, 10, 12, ...

Direction : (1 to 8) Find the missing numbers :

Ex.1 21, 24, 27, 30, ?

Sol. As per series, a, a + d, a + 2d, ... a = 21, d = 3 a + 4d = 21 + 4 × 3 = 33**Ans.** 33

Ex.2 9, 18, 36, ? 144

Sol. As per series a, ak, ak^2, ak^3, ... a = 9+, k = 2 $ak^3 = 9 \times 2^3 = 72$ **Ans.** 72

Ex.3 2, 6, 14, 26, ?

Sol. The pattern is + 4, +8, +12, +16, ...**Ans.** 42

Ex.4 1, 4, 12, 30, ?

Sol. Each term is equal to the previous term multiplied by 2 and 2, 4, 6, ... are added to the products respectively. Hence, the next term = 30 × 2 + 8 = 68.**Ans.** 68

Ex.5 8, 12, 21, 46, 95, ?

Sol. The pattern is + 2^2, + 3^2, 5^2, + 7^2, ... ∴missing number = 95 + 11^2 = 216**Ans.** 216

Ex.6 3, 9, 36, 180, ?

Sol. Each term is multiplied by 3, 4, 5 and so on respectively. Therefore, the next term would be 180 × 6 = 1080.**Ans.** 1080

(b) Multiple Series :

A multiple series is a mixture of more than one series :

Ex.7 4, 7, 3, 6, 2, 5, ?

Sol. The sequence is a combination of two series.

I 4, 3, 2, ?

II 7, 6, 5

The pattern followed in I is -1, -1, -1

∴ missing number = 2 - 1 = 1**Ans.** 1

Ex. 8 14, 15, 12, 16, 9, 18, 4, 21, ?

Sol. The sequence is a combination of two series.

I 14, 12, 9, 4, (.....) and

II 15, 16, 18, 21

The pattern followed in I is -2, -3, -5, ... ∴ missing number = 4 - 7 = - 3**Ans.** - 3

Direction : (9 to 10) Find the wrong term(s) -

Ex.9 9, 13, 21, 37, 69, 132, 261

Sol.

Hence, the wrong number is 132 and should be replaced by 133.**Ans.** 132

Ex.10 5, 8, 10, 12, 15, 18, 20, 23

Sol.

Therefore, number 12 is wrong and should be replaced by 13.**Ans.** 12

ALPHABET SERIES (SERIES OF LETTERS) :

(a) Pattern of Alphabets Show Variation Based on :

(i) Position of the letters **(ii)** Difference between the alphabets

(i) Position of alphabets :

Alphabets in order :

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

Alphabets in reverse order :

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

Direction : (11 to 20) Find the missing term :

Ex 11. B, D, G, I, ?, N

Sol. Gap of letters between the two consecutive terms is increased by +1. So, the missing would be L.

Ex.12 A, Y, D, W, G, U, J, ?

Sol. The given sequence consists of two series :

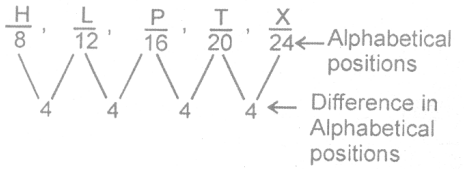
I A, D, G, J in which each letter is moved three steps forward to obtain the next term

II Y, W, U, ? in which each letter is moved two steps backward to obtain the next term.

So, the missing term would be S.

Ex .13 H, L, P, T, X, ?

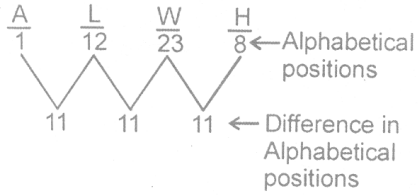
Sol.



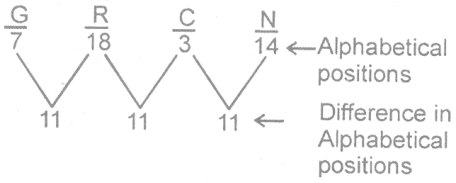
As the difference between alphabetical positions is constant, the next term would be having alphabetical positions 28, i.e. 26 + 2 = B. So, the missing term would be B.

Ex.14 AG, LR, WC, HN, ?

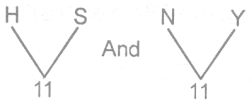
Sol. The first letter of each group and the second letter of each group differs by 11 letters between them.



Similarly,



Therefore, the next group of letter would be SY.



Ex.15 HEJ, JGL, LIN, NKP, ?

Sol. First letter of each group differs by 2 letters. Second letter of each group differs by 2 letters. Third letter of each group differs by 2 letters. All the letters differ in the forward direction. Hence, the next choice would be PMR.

Ex.16 YAL, TCP, OET, JGX, ?

Sol. First letter of each group differs by 5 letters in the backward direction. Second letter of each group differs by 2 letters in the forward direction. Third letter of each group differ by 4 letters in the forward direction. Hence, the next choice would be EIB.

Ex.17 AD, EI, JO, PV, ?

Sol. The first letter of subsequent groups have a difference of 4, 5 and 6 places respectively, whereas the second letter of the subsequent groups has a difference of 5, 6 and 7 places respectively. Therefore, on following the same patter, we get 'WD' as the nest term which would replace the question mark.

Ex.18 Find the term which would replace the questions mark ?

XYQ, ZAR, BCS, DET, ?

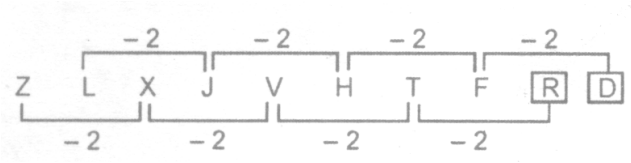
Sol. Here, first two terms of every group of letters are in continuation, like XY, ZA, BC, DE, and the third letter of each group is again in forward continuation, i.e. Q, R, S, T. Hence, the term replacing the question mark would be FGU.

Ex.19 1 BR, 2 EO, 6 HL, 15 KI, ?

Sol. The first number in the terms follow the sequence $+1^2$, $+2^2$, $+3^2$, $+4^2$, ... The second letter of each group differs by 3 letters in the forward direction. Third letter of each group differs by 3 letters in the backward direction. Hence, the next choice would be 31NF.

Ex.20 Z, L, X, J, V, H, T, F, ?, ?

Sol.



Directioins : (21 to 22) Find the wrong term(s) :

Ex.21 DOU, EPV, FQW, GRX, HTY, ITZ

Sol. In every term first second and third letter is in alphabetical order to its next term respectively. Fourth term is not following the same rule. Hence, HTY is the wrong and should be replaced by HXY.

Ex.22 D4V, G10T, J20R, M43P, P90N

Sol. First letter of every term is moved three forward in each next term. Second number of every term of the pattern $\Rightarrow \times + 2 + 1, \times 2 + 2, \times 2 + 3$, ... and third letter of every term is moved two steps backward. Hence G10T is the wrong term and should be replaced by G9T.

LETTER REPEATING SERIES :

Pattern of such questions is that some letters is sequence are missing.

(i) The letters may be in cyclic order (clockwise or anti-clockwise).

(ii) To solve a problem, we have to select one of the alternative from t he given alternatives. The alternative which gives a sequence form of letters is the choice.

directions : (23 to 28) Find the missing term(s) :

Ex.23 a a_b a a_b b b_a

(A) baa (B) abb (C) bab (D) aab

Sol. we proceed step by step to solve the above series :

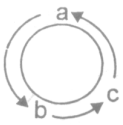
Steps :

1. The first blank space should be filled in by **'b'** so that we have two **'a'**s followed by **b'** s
2. Second blank space should be filled in by **'a'** so that we have three **a'**s followed by three **b'** s
3. The last blank space must be filled in by **'a'** to keep the series in sequence

Ans. (A)

Ex.24 a_cab_a_c_b c

(A) bbac (B) abab (C) abba (D) bcba

Sol. 

Series is abc/abc/abc/abc. So, pattern ab is repeated.

Ans. (D) bcba

Ex.25 a_abb_aa_ba_a_b

(A) ababa (B) aabba (C) aabab (D) aaabb

Sol. Series is aaabb/aaabb/aaabb. So, pattern aaabb is repeated.

Ans. (C) aabab

26. ba_cb_b_bab_

(A) acbb (B) bcaa (c) cabb (D) bacc

Sol. The series is b a b c / b a b c / b a b c

So, pattern babc is repeated

Ans. (D) bacc

Ex.27 a_bc_a_bcda_ccd_bcd_

(A) abddbd (B) acbdbb (C) adbbad (D) bbbddd

Sol. Series is aabcd/abbcd/abccd/abcdd

Ans. (C) adbbad

28. bc_b_c_b_ccb

(A) cbcb (B) bbcb (C) abbc (D) bcbc

Sol. (A) Series is bccb / bccb. So, pattern bccb is repeated

Ans. (A) cbcb

Directions : (29) given below are based on the letter series, In each of these series, some letters are missing. Select the correct alternative. If more than five letters are missing, select the last five letters of the series.

Ex.29 abcd_bc_e_ _de_ _ _ _ _ _

(A) deabc (B) edcba (C) decba (D) edabc

Sol. The series is a b c d / b c d e a / c d e a b / b e a b c

Thus the letters are written in a cyclic order.

Ans. (A) deabc

Direction : (30) There is a letter in the first row and a number series in the second row. Each number in the number series stands for a letter in the letter series. Since in each of that series some term are missing you have to find out as to what those terms are, and answer the questions based on these as given below in the series.

Ex.30 _m y e _ _ y l x _ y l m _ _ l _ _ _
4 6 _ 5 8 6 _ _ _ 5 7 _ 6 5 8 _ _ _ _
The last five terms of the number series are
(A) 46758 (B) 74658 (C) 76485 (D) 4675

Sol. By taking e = 5, l = 4, m = 6, y = 7 and x = 8 the number series runs as 46758 67485 74658 46785. By taking the digits in the groups of five, we find that first digit of the first group (i.e. 4) is the third digit of the second group and the last two digits have interchanged their positions. The same rule applies in others groups also.

Ans. (D) 46785

MISSING TERMS IN FIGURES :

Directions : (31 to 40) Find the missing number(s) :

Ex.31

6	**9**	**15**
8	**12**	**20**
4	**6**	**?**

(A) 5 (B) 10 (C) 15 (D) 231

Sol. In the first row, 6 + 9 = 15
In the second row, 8 + 12 = 20
∴ In the third row, missing number = 4 + 6 = 10.

Ans. (B) 10

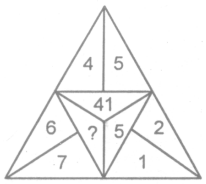
Ex.32

3C	**27D**	**9E**
71	**21K**	**3M**
4D	**?**	**7J**

(A) 11E (B) 28G (C) 35 (D) 48F

Sol. The letters in the first row form a series C,D,E (a series consecutive letters). The letter in the second row form a series I, K, M (a series of alternate letters). Similarly, the letters in the third row will form the series D, G, J (a series in which each letter is there steps ahead of the previous one). So, the missing letter is G. Also, the number in the second column is equal to the product of the numbers in the first and third columns. So, missing number is (4 + 7) i.e. 28 Thus, the answer is 28 G.

Ans. (B) 28G

Ex.33 

(A) 16 (B) 9 (C) 85 (D) 112

Sol. Hint : $4^2 + 5^2 = 16 + 25 = 41$

$1^2 + 2^2 = 1 + 4 = 5$

$6^2 + 7 = 36 + 49 = 85$

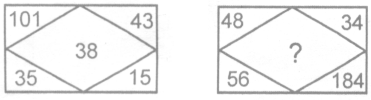
Ans. (C) 85

Ex.34 

(A) 38 (B) 64 (C) 4 (D) 16

Sol. The number '143' given inside the triangle is the combination of $\sqrt{1}, \sqrt{16}, \sqrt{9}$. In same manner number '236' is combination of $\sqrt{4}, \sqrt{9}, \sqrt{36}$. Thus, the answer is '4'.

Ans. (C) 4

Ex.35 

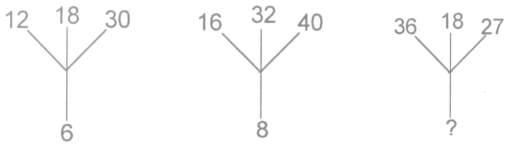
(A) 127 (B) 142 (C) 158 (D) 198

Sol. In first figure, (101 + 15) - (35 + 43) = 116 - 78 = 38.

The same pattern would be followed in second figure.

∴ Missing number = (48 + 184) - (56 + 34) = 232 - 90 = 142.

Ans. (B) 142

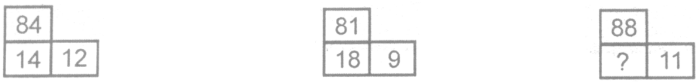
Ex.36 

(A) 18 (B) 12 (C) 9 (D) 6

Sol. The number at the bottom are the H.C.F. of above given numbers

Clearly 9, is the HCF of 36, 18 and 27.

Ans. (C) 9

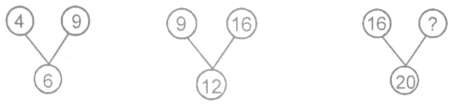
Ex.37 

(A) 16 (B) 21 (C) 61 (D) 81

Sol. In first figure $12\times\frac{14}{2}=84$. In second figure $9\times\frac{18}{2}=81$

Let the missing number In third figure be x. Then $11\times\frac{x}{2}=88$ or $x=\frac{88\times2}{11}=16.$

Ans. (A) 16

Ex.38 

(A) 60 (B) 50 (C) 21 (D) 25

Sol. The square of the number at the bottom is equal to the product of the two upper numbers. Thus,

In first figure, $4 \times 9 = 6^2 = 36$. In second figure, $9 \times 16 = 12^2 = 144$.

Let the missing number in third figure be x. Then, $16 \times x = 20^2 = 400$ or $x = \frac{400}{16} = 25.$

Ans. (D) 25

Ex.39 

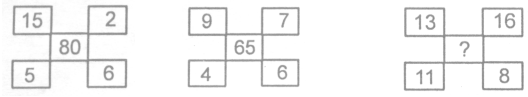
(A) 47 (B) 45 (C) 37 (D)

Sol. In first figure, $6 \times 3 + 3 \times 5 = 33$

In second figure, $5 \times 4 + 4 \times 7 = 48$

$\therefore$ In third figure, $5 \times 4 + 3 \times 5 = 35$

Ans. (D) 35

Ex.40. 

(A) 48 (B) 72 (C) 35 (D) 120

Sol. In first figure $(15 - 5) \times (2 + 6) = 80$.

In second figure $(9 - 4) \times (7 + 6) = 85$.

$\therefore$ In third figure, missing number $= (13 - 11) \times (16 + 8) = 48$.

Ans. (A) 48

PRATICE EXERCISE

Directions : (1 to 13) Find the missing term(s) -

1. 101, 100, ?, 87, 71, 46.

(A) 92 (B) 88 (C) 89 (D) 96

2. 100, 50, 52, 26, 28, ?, 16, 8.

(A) 30 (B) 36 (C) 14 (D) 32

3. 6, 24, 60, 120, 210, 336, ?, 720

(A) 496 (B) 502 (C) 504 (D) 498

4. 3, 1, 4, 5, 9, 14, 23, ?

(A) 32 (B) 37 (C) 41 (D) 28

5. 3, 6, 18, 72, 360, ?

(A) 720 (B) 1080 (C) 1600 (D) 2160

6. 78, 79, 81, ?, 92, 103, 119

(A) 88 (B) 85 (C) 84 (D) 83

7. 0, 6, 20, 42, 72, ?

(A) 106 (B) 112 (C) 110 (D) 108

8. 2, 9, 28, 65, ?

(A) 121 (B) 195 (C) 126 (D) 103

9. 1, 11, ?, 11, 11, 16, 11

(A) 1 (B) 11 (C) 6 (D) 192

10. 137, 248, 389, 470, ?

(A) 582 (B) 581 (C) 571 (D) 481

11. 3, 15, 35, ?, 99, 143

(A) 63 (B) 77 (C) 69 (D) 81

12. 9, 16, 30, 58, ?

(A) 104 (B) 114 (C) 116 (D) 118

13. 3, 12, 27, 48, 75, 108, ?

(A) 192 (B) 183 (C) 162 (D) 147

Directions : (14 to 16) Find the wrong term(s)

14. 2 5 1 20 30 47 65

(A) 5 (B) 20 (C) 30 (D) 47

15. 121, 143, 165, 186, 209

(A) 143 (B) 165 (C) 186 (D) 209

16. 9, 15, 24, 34, 51, 69, 90

(A) 15 (B) 24 (C) 34 (D) 51

Directions : (17 to 28) Find the missing term(s) -

17. X, U, S, P, N, K, I, ?

(A) J (B) K (C) M (D) F

18. Z, X, U, Q, L, ?

(A) F (B) K (C) G (D) E

19. A, H, N, S, W, ?

(A) A (B) Y (C) B (D) Z

20. Q, T, V, Y, A, ?

(A) B (B) C (C) D (D) F

21. X, A, D, G, J, ?

(A) N (B) O (C) M (D) P

22. AZ, YB, CX, WD, ?

(A) VE (B) UE (C) EU (D) EV

23. ZSD, YTC, XUB, WVA, ?

(A) HDC (B) CHI (C) HCD (D) DIC

24. RML, VIJ, ZFH, DDF, ?

(A) HDC (B) CHI (C) HCD (D) DIC

25. LRX, DJP, VBH, NTZ, ?

(A) ELS (B) FMR (C) GKS (D) FLR

26. P3C R5F T8I V12L ?

(A) Y170 (B) X17M (C) X170 (D) X160

27. MAD, OBE, SCH, YDM, ?

(A) HET (B) HES (C) GET (D) UAE

28. X 15 A, W 13 C, ? , 9 G, N 7 I

(a) T 12 E (B) R 11F (C) T 11E (D) R 13 D

Directions : (29 to 34 which sequence of letters when placed at the blanks one after the other will complete the given letter series ?

29. a_b a a_a a _ _ ab

(A) a a a a (B) b a a a (C) b b a a (D) a b b a

30. a_ b a a _ b a a_b a

(A) a a b (B) b a b (C) b b a (D) b b b

31. _ a a b b_a_ a b_b

(A) b b a a (B) b a b a (C) b a a b (D) a b a b

32. b a b b b_b_b_b b

(A) b b a (B) b a b (C) a b a (D) a a a

33. a a b_a a a_b b a_

(A) b a a (B) a b b (C) b a b (D) a a b

34. m_l_ml_m_llm

(A) lmmm (B) lmlm (C) lmml (D) mllm

Direction : (35 to 36) given below are based on the leter sires, In each of these series, some letters are missing. Select the correct alternative. If more than five letters are missing, select the last five letters of the series.

35. x _ xxy _ x _ xy _ yxx _ _ yy _ y

(A) xyyy (B) xxyyx (C) yxxyx (D) xyxyx

36. _ _ r + tprptsrpst _ _ _ _

(A) pqrts (B) pqtrs (C) pqrst (D) qrpst

Directions : (37 to 38) There is a letter series in the first row and a number series in the second row. Each number in the number series stands for a letter in the letter series. Since in each of these series some term are missing you have to find out as to what those terms are, and answer the questions based on these as given below in the series.

37. n _ g f _ t _ f h t n _ _ t _ b _ f

1 3 _ 2 4 5 0 _ 4 _ _ 3 _ _ _ _ _ _

The last five terms of the number series are

(A) 50123 (B) 40331 (C) 40231 (D) 51302

38. _ m i a x _ i r x a _ _ m a _ _ _ _ _ _

4 _ 5 _ 7 3 _ _ _ _ 6 _ _ _ _ _ _ _

The last five term of the letter series are

(A) r m x i a (B) x m r a i (C) x r m a l (D) r m i x a

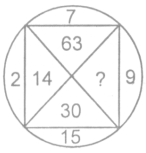
Directions : (39 to 53) Find the missing terms in the given figures :

39.

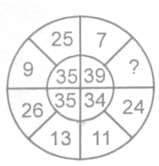
1	7	6
3	3	?
5	4	8
35	74	104

(A) 1 (B) 2 (C) 3 (D) 4

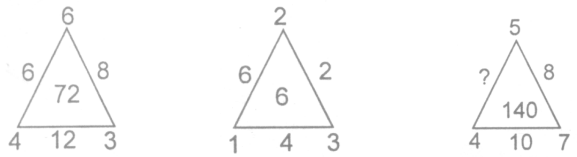
40.



(A) 33 (B) 145 (C) 135 (D) 18

41. 

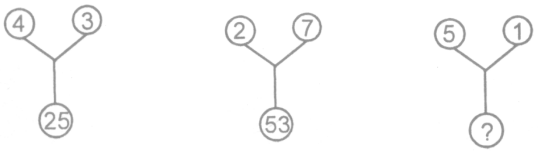
(A) 28 (B) 36 (C) 81 (D) 49

42. 

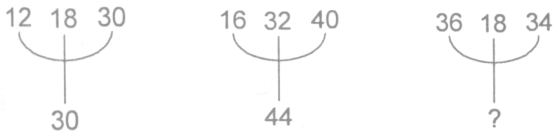
(A) 16 (B) 14 (C) 20 (D) 22

43. 

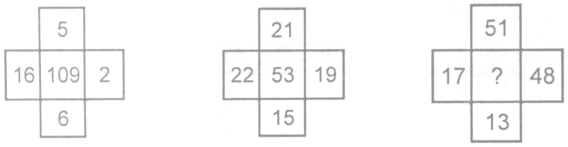
(A) 117 (B) 36 (C) 32 (D) 26

44. 

(A) 26 (B) 25 (C) 27 (D) 30

45. 

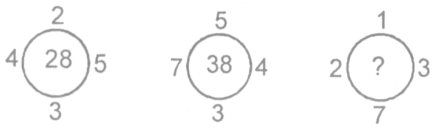
(A) 48 (B) 9 (C) 44 (D) 64

46. 

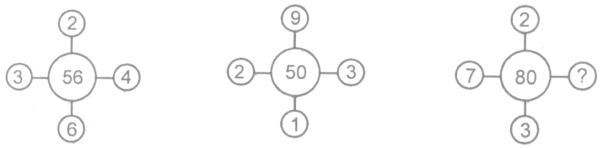
(A) 25 (B) 129 (C) 7 (D) 49

47. 

(A) 78 (B) 82 (C) 94 (D) 86

48. 

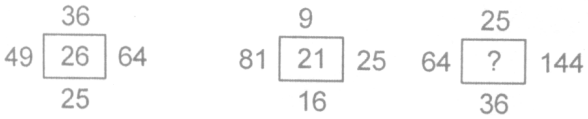
(A) 14 (B) 18 (C) 11 (D) 26

49. 

(A) 9 (B) 11 (C) 1 (D) 12

50. 

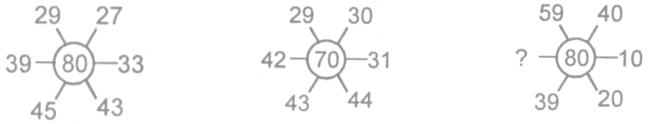
(A) G, 6 (B) I, 9 (C) G, 5 (D) I, 5

51. 

(A) 19 (B) 23 (C) 25 (D) 31

52. 

(A) 3 (B) 4 (C) 5 (D) 6

53. 

(A) 69 (B) 49 (C) 50 (D) 60

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	D	C	C	B	D	B	C	C	C	B	A	B	D	C	C
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	C	D	A	D	C	C	D	C	C	D	C	C	C	D	D
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	D	C	A	B	A	A	D	D	B	C	A	B	B	A	C
Que.	46	47	48	49	50	51	52	53							
Ans.	A	D	D	A	C	D	B	A							

CODDING - DECODING

CODING-DECODING :

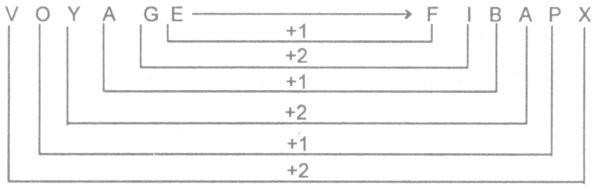
Coding is a method of sending a message to the receiver, such that the third person doesn't know about it. Code language is formed by certain rules & rules & patterns. To know this language following certain rules is called 'Decoding'.

TYPES OF ODING-DECODING :

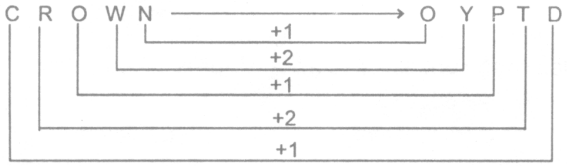
(i) letter-letter coding
(ii) letter-number coding
(iii) To code letter/words in puzzle form
(iv) To code some objects in puzzle form
(v) To code as per table form/column form

Ex.1 If in any code language **VOYAGE** is coded as **FIBAPX** how is **CROWN** coded in that language
(A) OXPTD (B) DTPYO (C) OYPTD (D) DTPXO

Sol.



Similarly,

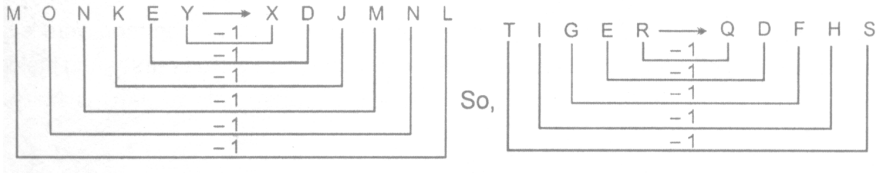


The pattern of letters is +1, +2, +1, +2 ..... & they are reversed.

Ans. (C)

Ex.2 In a certain code, **MONKEY** is written as **XDJMNL.** How is **TIGER** written in that code ?
(A) QDFHS (B) SDFHS (C) SHFDQ (D) UJHFS

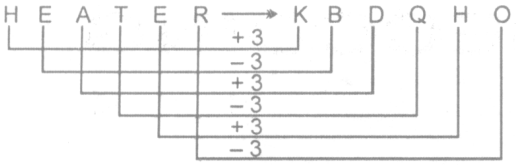
Sol.

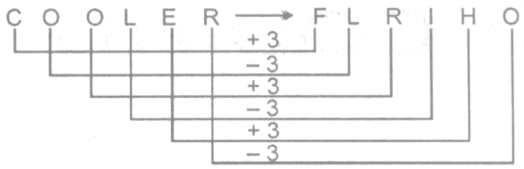


Ans. (A)

Ex.3 In a certain code **HEATER** is written as **KBDQHO,** how will you encode **COOLER ?**

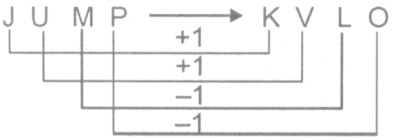
(A) ALRIHV (B) FLRIHO (C) FLIRHO (D) None of these

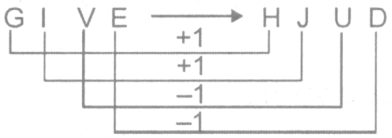
Sol. 

So, 

Ex.4 If **JUMP** is coded as **KVLO** then **GIVE** will be coded as :

(A) HHWD (B) HIUE (C) HJUD (D) HJVD

Sol. 

Similarly 

Ans. (C)

Ex.5 if D = 4 and **COVER =** 63, then **BASIS = ?**

(A) 49 (B) 50 (C) 54 (D) 55

Sol. In the code A = 1, B = 2, C = 3, ..., X = 24, Y = 25, Z = 26

C O V E R So B A S I S

3 + 15 + 22 + 5 + 18 = 63 2 + 1 + 19 + 9 + 19 = 50

Ans. (B)

Ex.6 If **cloud** is called **white, white** is called **rain, rain** is called **green, green** is called **air, air** is called **blue,** and **blue** is called **water,** where do the birds fly is ?

(A) Air (B) Cloud (C) White (D) Blue

Sol. Birds fly in air and **air** is called **blue.**

Ans. (D)

Ex.7 If **room** is called **house, house** is called **roof, roof** is called **floor, floor** is called **terrace,** where will a person sand on ?

(A) Floor (B) Terrace (C) Roof (D) Room

Sol. A person stands on a floor and **floor** is called **terrace.**

Ans. (B)

Ex.8 In a certain language, **tir me sac** means **green and tasty, dic sac for** means **tomato is green, voc tir for** means **food is tasty**. Which of the following does mean **tomato is tasty** in that code ?

(A) for tir dic (B) dic for sac (C) tir me for (D) None of these

Sol. In the first and second statements, the common code word is **green** and the common word is **sac.** So, **green** means **sac.** In the first and third statements, the common code word is **tasty** and the common word is **tir.** So, **tasty** means **tir.** Thus, in second and above statements **tomato is tasty** means **for tir dic.**

Ans. (A)

Ex.9 In a certain code, **256** means **red colour chalk, 589** means **green colour flower,** and **245** means **white colour chalk.** What digit in that code does mean **white ?**

(A) 2 (B) 4 (C) 5 (D) cannot be determined

Sol. In the first and second statements, the common digit is **5** and the common word is **colour.** So, **5** means **colour.** In the first and third statements, the common code digit is **2** and the common word is **chalk.** So, **2** means **chalk.** Thus, is third and above statements **4** means **white.**

Ans. (B)

Directions : (10 to 13) In the following questions, two columns I and II have been given. In column I few words are given and in column II their codes have been given using a particular rule. The order of the smaller letter have been placed in jumbled up form. You have to decode the language and choose the alternative whish is equal to letter asked in the question.

Column I	**Column II**
(i) DESIGN	(a) uklbjz
(ii) INFORM	(b) cbxkqy
(iii) MOTHER	(c) ygzwxc
(iv) RIGHTS	(d) bjucgw
(v) TAILOR	(e) wcpybv
(vi) GARDEN	(f) vzcjlk

Ex.10 What is the code for letter **N** ?

(A) u (B) k (C) c (D) g

Sol. In statement (i) and (ii), common letters and **I** and **N** and common codes are **b** and **k.** Hence, it is clear that **IN** stand for **bk** but not respectively. From statement (iv), it is clear that the world has letter **N** and code **k** in its coding. Hence, code for **N** is **k.**

Ans. (B)

Ex.11 What is the code for letter **F** ?

(A) l (B) b (C) q (D) g

Sol. In the statement (ii), it is clear that world has letter **F** in it, which is not contained by an other word. Similarly, its code has letter **q,** which is not contained by any other code. Hence, **F** stands for **q.**

Ans. (C)

Ex.12 What is the code for letter **O** ?

(A) y (B) k (C) v (D) c

Sol. From statements (iii) and (vi), it is clear that **TOR ywc.** From statement (ii), **OR = yc.** From statement, (vi) **R = c.** Hence, **O = y.**

Ans. (A)

Ex.13 What is the code for letter **S ?**

A() z (B) w (C) u (D) x

Sol. From statements (i) and (iv), it is clear that **STG = ubj**. We have already found that **I = b.d** Therefore, **SG = uj.** Now, from statement (vi) **G = j,** therefore **S = u.**

Ans. (C)

Directions : (14 to 15) In each questions there is a word written in capital letters with one letter underlined. For each letter in that word there is a code written is small letters. That code is denoted by either (A), (B), (C), (D) or (E) not in the same order. You have to find out the exact code for the underlined letter in the word. The number of that code is the answer. Please note that the same letter appearing in other word(s) may be coded differently.

Ex.14 PRI<u>S</u>M

(A) r (B) 0 (C) h (D) q (E) ℓ

Sol. P9-1) is **o,** R(-1) is **q,** I(-1) is **h** S(-1) is **r** and M(-1) is ℓ.

Sol. (A)

Ex.15 WHIC<u>H</u>

(A) f (B) g (C) u (D) e (E) j

Sol. W (-2) is **u,** H(+2) is **J,** I(-2) is **g** C(+2) is **e** and H(-2) is **f.**

Ans. (A)

PRACTICE EXERCSIE

1. If **TRAIN** IS CODED AS **RPYGL,** the code for **SCOOTER** would be

(A) QAMMRCP (B) QBNNRCP (C) QAMMSBP (D) QBNNSBP

2. If **SCIENCE** is coded as **UFJTJM, GENE** will be coded as :

(A) HGQI (B) IHRJ (C) IHRI (D) IHSJ

3. If **EQOKYO** stands for **DOLLAR** and **QQXMBP** stands for **POUNDS,** then **MARKET** stands for :

(A) NYOLGW (B) NYOGLW (C) LYOLGW (D) NYOLWG

4. If in a certain code **MANISH** is written as **NZMRHS,** then how will **RNJITA** be written in the same code ?

(A) IZMQRGZ (B) IZMPRGZ (C) IZMQRHZ (D) IZMQRIZ

5. If **GOOD** is written **HQRH**, how will you write **DREAM ?**

(A) ESPBN (B) ETHER (C) ETHPQ (D) ESHDR

6. If **TRANSFER** is coded as **RTNAFSRE,** then **ELEPHANT** would be coded as

(A) LEPEHATN (B) LEPEAHTN (C) LEEPAHTN (D) LEPEAHNT

7. In a certain code, **PAINTER** is written **NCGPRGP,** then **REASON** would be written as

(A) PCYQMN (B) PGYQMN (C) PGYUMP (D) PGYUPM

8. If **BOOK** is coded as **43,** what will be the code number for **PEN ?**

(A) 53 (B) 33 (C) 35 (D) 43

9. In a certain code **KAMAL** is written as **29894, VIJAY** is written as **35196** then the word **VIMAL** will be coded as

(A) 29196 (B) 35894 (C) 35194 (D) 35196

10. If **TOWER** is coded as **81,** what will be the code number for **POWER ?**

(A) 75 (B) 55 (C) 18 (D) 77

11. If **MAN** is coded as **28,** what will be the code number for **CHIKD ?**

(A) 25 (B) 36 (C) 49 (D) 64

12. If **CAR** is **22** then **SCOOTER = ?**

(A) 33 (B) 44 (C) 11 (D) 95

13. If **Eye** is called **Hand, Hand** is called **Mouth, Mouth** is called **Ear, Ear** is called **Nose** and **Nose** is called **Tongue,** with which of the following would a person **hear ?**

(A) Eye (B) Mouth (C) Nose (D) Ear

14. If **orange** is called **butter, butter** is called **soap, soap** is called **ink, ink** is called **honey** and **honey** is called **orange,** Which of the following is used for washing **clothes ?**

(A) Honey (B) Butter (C) Orange (D) Ink

15. In a certain code, **256** means **boys are good, 637** means **amar is good,** and **348** means **lata is bad.** Which digit means **amar** in that code ?

(A) 2 (B) 7 (C) 6 (D) 8

Directions : (16 to 21) The following questions are based on the pattern as used for previous questions. Understand the coding pattern and answer the questions.

Column I	**Column II**
(i) FAMOUS	(a) jcphxp
(ii) SATIRE	(b) hqdbyn
(iii) FRIGHT	(c) ybcnke
(IV) TANGLE	(d) zewhnd
(V) ROVING	(e) epbmyw
(VI) HUNTER	(f) wdnbxk

16. What is the code used for the letter **M** ?

(A) q (B) x (C) j (D) e

17. What is the code used for the letter **E** ?
(A) d (B) n (C) b (D) k

18. What is the code used for the letter **F ?**
(A) w (B) p (C) d (D) c

19. What is the code used for the letter **A** ?
(A) h (B) q (C) b (D) n

20. What is the code used for the letter **N ?**
(A) e (B) p (C) m (D) w

21. What is the code used for the letter **U ?**
(A) d (B) n (C) b (D) x

Directions : (22 to 24) In each Q. there is a word written in capital letters with one letter underlined. For each letter in that word there is a code written in small letters. That code is denoted by either (A), (B), (C), (D) or (E) not is the same order. You have to find out the exact code for the underlined letter in the world. The number of that code is the answer. Please not that the same letter appearing in other word(s) may be coded differently.

22. A<u>B</u>OVE
(A) q (B) g (C) v (D) b (E) q

23. <u>C</u>OVER
(A) u (B) y (C) q (D) g (E) f

24. BLA<u>S</u>T
(A) i (B) e (C) q (D) p (E) d

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	A	B	A	A	B	B	C	C	B	D	B	D
Que.	13	14	15	16	17	18	19	20	21	22	23	24
Ans.	C	D	B	C	A	D	A	D	D	D	E	D

ALPHABET - TEST & NUMBER RANKING

ALPHABETICAL ORDER :

You have to arrange these word in order in which they are arranged in a dictionary. In a dictionary the words are placed in alphabetical order w.r.t the second alphabet of the word and so on (that is, third alphabet, fourth alphabet.....)

Direction : Arrange in the correct alphabetical order.

Ex.1 Plane, Plain, Plan, Plenty, Player, prayer, Place.

Sol. The given words can be arranged in the alphabetical order as :
Place, Plain, Plan, Player, Plenty, Prayer.

Ex.2 Arrange the given words in alphabetical order and tick the one that comes last.
Heavy, Heredity, Hesitate, Hedge, Hero, Haste, History, Hindrance

Sol. The given words can be arranged in the alphabetical order as:
Haste, Heavy, Hedge, Heredity, Hero, Hesitate, Hindrance, **History**
Clearly, **History** comes last.

Ex.3 Arrange the given word in the order they occur in dictionary.
1. SIGN 2. SOLID 3. SCENE 4. SIMPLE
(A) 3, 1, 2, 4 (B) 3, 1, 4, 2 (C) 3, 4, 1, 2 (D) 3, 4, 2, 1

Sol. (B) The correct alphabetical order of the given words is :
SCENE, SIGN, SIMPLE, SOLID Thus, the correct sequence is **3, 1, 4, 2**

Directions : (4) In the following questions, a group of letters is given which are numbered 1,2,3,4,5 and 6. Below are given four alternatives containing combinations of these numbers. Select that combinations of numbers so that letters arranged accordingly, form a meaningful word.

Ex.4 R R A O U H
1 2 3 4 5 6
(A) 1, 3, 4, 5, 6, 2 (B) 2, 3, 6, 4, 5, 1 (C) 6, 3, 2, 4, 5, 1 (D) 3, 5, 2, 6, 4, 1

Sol. (D) The given letter, when arranged in the order **3, 5, 2, 6, 4, 1** Fro m the word **AUTHOR.**

Ex.5 In the word **PARADISE** how many pairs of letters are there which have as many letters between them in the word as in the alphabet ?

(A) None (B) One (C) Two (D) Three

Sol. (D)

Letter in the given word	**Letter in the alphabet series**
(i) P A R	P Q R
(ii) A R A D	A B C D
(iii) A D I S E	A B D E

Ex.6 Number of letters skipped in between adjacent letters in the series decreases by two. Which of the following series observes this rule ?

(A) EPVAF (B) GPWBE (C) UVJOP (D) XFMQU

Sol. (B) G H I J K L M N O P Q R S T U V W X Y Z A B C D E

8 6 4 2

Clearly, in letter series **GPWBE**, the number of letter skipped in between adjacent letters in the series is decreases by two.

Ex.7 In the alphabet series which letter is midway between **22nd** letter from the left and **21st** letter from the right ?

(A) L (B) M (C) O (D) None of these

Sol. (D) Consider the English alphabet :

22 Letters from the left

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

21 Letters from the right

By counting **21** letters from the first and **22** letters from the left, we get the following sequence in which **N** comes exactly middle.

F G H I J K L M N O P Q R S T U V

Ex.8 In the first half of the alphabet is written in the reverse order, which of the following will be the 19th letter from your right ?

(A) H (B) F (D) (D) E

Sol. (B) The new alphabet series is :

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

Nineteenth letter from the right will be letter F.

Ex.9 It is possible to make a meaningful word out of the second, the fourth, the fifth and the eighth letters of the world **ILLOGICAL** then which of the following will be the third letter of the so formed word ? If more than one word can be formed then give X and the answer.

(A) A (B) G (C) O (D) X

Sol. The second, fourth, fifth and eighth letters of the world **ILLOICAL** are, **L, I, G, A** respectively. The words formed are **GOAL** and **GOAL.**

Ex.10 In the following scrambled letters are rearranged to from the name of a city, which letter will appear in the middle /

AIDMURA

(A) M (B) R (C) U (D) D

Sol. (C) The city name is **MADURAI** and letter **U** exists exactly in the middle.

Ex.11 Find which one word can not be made from the letters of the given word.

CORRESPONDING

(A) DROPERS (B) SUPERIOR (C) GRINDER (D) DISCERN

Sol. (B) The word **CORRESPONDING** contains all the letters of the word **SUPERIOR** except **U.** So, the word **SUPERIOR** can't be formed.

NUMBER RANKING :

Ex.12 In the following number series, how may **8's** are there with are immediately preceded by a number which does not divide it but followed by a number which divides it ?

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

(A) 1 (B) 2 (C) 3 (D) 4

Sol. (C) As per the question

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

Thus, three such numbers are there

Ex.13 In a row of girls, Mardula is **18th** from the right and Sanjana is **18th** from the left. If both of them exchange their position, Sanjana becomes **25th** from the left, how many girls are there in the row?

(A) 40 (B) 41 (C) 42 (D) 35

Sol. (C) Sanjana's new position is **25th** from left. But it is the some as Mrudula's earlier position which is **18th** from the right.

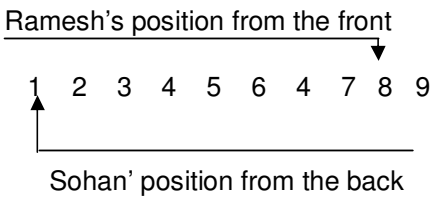
then the total number of girls are = (rank from left + rank from right(- 1

= (18 + 25) - 1 = 43 - 1 = 42.

Ex.14 In a quene of boys Sohan is **9th** from the back. Ramesh's place is **8th** from the front. Radhey is standing in the middle of the two. What would be the minimum number of boys standing in the queue ?

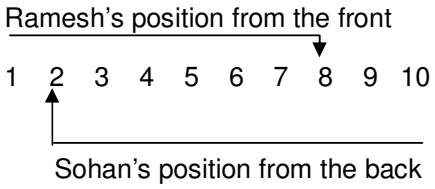
(A) 8 (B) 10 (C) 12 (D) 14

Sol. (B) Case - I



In this case there is only even number of boys in between Ramesh and Sohan. So, Radhey cannto stand in the middle of two.

Case- II



In this case there is odd number of boys (i.e.,5) in between Ramesh and Sohan. So, Radhey can stand in the exact middle of two. So, the minimum number of boys standing in queue are 10.

Ex.15 In the number from **1** to **45** which are exactly divisible by **3** are arranged is ascending order, minimum number being on the top, which would come at the ninth place form the top ?

(A) 18 (B) 21 (C) 24 (D) 27

Sol. (D) The required numbers in ascending order are : 3, 6, 9, 12, 15, 18, 21, 24, 27 ,30, 33, 36, 39, 42, 45. The **9th** number from the top is **27.**

PRACTICE EXERCISE

1. Arrange the word in the alphabetical order and tick the one that comes second.

(A) Explosion (B) Emergency (C) Ecstasy (D) Eager

Directions : (2 to 3) In each of the following questions, a group of letter is given which are numbered 1,2,3,4,5 and 6. Below are given four alternatives containing combinations of these numbers. Select that combination of numbers so that letters arranged accordingly, form a meaningful world.

2. **K A T C E L**

1 2 3 4 5 6

(A) 4, 2, 3, 1, 5, 6 (B) 1, 2, 4, 5, 6, 3 (C) 6, 5, 3, 2, 4, 1 (D) 3, 2, 4, 1, 6, 5

3. **I N L A S G**

1 2 3 4 5 6

(A) 6, 1, 3, 5, 4, 2 (B) 5, 1, 6, 2, 4, 3 (C) 3, 4, 6, 1, 2, 5 (D) 2, 4, 3, 6, 1, 5

4. How many such letters are there in the word **CREATIVE**, which have as many letters between them in the word as in the alphabet ?
(A) 1 (B) 2 (C) 3 (D) 4

5. How many pairs of letter in the word **BRIGHTER** have as many letters between them in the word as in the alphabet >
(A) 2 (B) 3 (C) 4 (D) more than 4

6. Number of letters skipped between adjacent letter in the series is in the order of **2, 5, 7, 10**. Which of the following series observes the rule given above ?
(A) CEGLT (B) FNKOT (C) QTZHS (D) SYBEP

7. If the alphabets are written in the reverse order, which letter will be the fifth letter to the right of the fourteenth letter from the left.
(A) R (B) I (C) S (D) H

8. In the alphabet series the first and the second letters interchange their positions and similarly the third and the fourth letter, the fifth and the sixth letters and so on, which letter will be the **17th** from your right ?
(A) H (B) I (C) F (D) K

9. If the first and the firth letters in the word **ORDINARY** are interchanged, the second and the sixth, the third and the seventh and so on what will be the fifth letter from the right and after rearrangement ?
(A) R (B) I (C) Y (D) N

10. In the first and second letters in the word **COMMUNITAIONS** were interchanged, also the third and the fourth letters, the fifth and sixth letters and so on, which would be the tenth letter counting from your right ?
(A) N (B) A (C) T (D) U

11. If it is possible to make a meaningful word with the first, the fifth, the sixth and the eleventh letters of the word **COURAGEOUSLY,** which of the following will be third letter of that word ? If no such word can be made, give **X** as the answer and if more than one such word can be made, give **M** as the answer.
(A) O (B) A (C) G (D) X

12. If it is possible to from a word the first, fourth, seventh and eleventh letters of the word **SUPERFLUOUS,** write the first letter of that word. Otherwise **X** is the answer.
(A) S (B) L (C) X (D) E

Directions : (13 to 14) In each of the following questions, find which one word can not be made from the letters of the given word.

13. TEMPERAMENT
(A) METER (B) PETER (C) TENTER (D) TESTER

14. RAPPROCHEMENT

(A) REPRESENT (B) REPROACH (C) PHANTOM (D) CEMENT

15. How many odd numbers are there in the following sequence which are immediately followed by an odd number ?

5 1 4 7 3 9 8 5 2 6 3 1 5 8 6 3 8 5 2 2 4 3 4 9 6

(A) 2 (B) 3 (C) 4 (D) More than 4

16. How many **6's** are there in the following sequence, which are either immediately preceded by **2** or immediately followed by **9** ?

5 6 2 4 3 6 9 2 6 7 1 6 4 7 6 8 2 6 3 4 6 9 8 6 2

(A) 1 (B) 2 (C) 3 (D) 4

17. Anil and Sunil are ranked seventh and eleventh respectively from the top in a class of **31** students. What will be their respective ranks from the bottom in the class ?

(A) 20th and 24th (B) 24th and 20th (C) 25th and 21st (D) 26th and 22nd

18. If all the numbers from **7** to **59,** which are divisible by **3** are arranged in descending order then which number will be at **10th** place from the bottom ?

(A) 36 (B) 39 (C) 30 (D) 27

19. In a row of girls, Rina and Mona occupy the ninth place from the right end and tenth place from the left end, respectively. If they interchanged their places, Rina and Mona occupy seventeenth place from the right and eighteenth place from the left, respectively. How many girls are there in the row ?

(A) 25 (B) 26 (C) 27 (D) Data inadequate

20. Three persons **P, Q** and **R** are standing in a queue. There are five persons between **P** and **Q** and eight persons between **Q** and **R**. If there be three persons ahead of **R** and **18** persons behind **P,** what could be the minimum number of persons in the queue ?

(A) 38 (B) 37 (C) 25 (D) 28

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	C	D	B	C	B	C	A	B	C	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	D	B	D	A	D	D	C	A	B	C

MATHEMATICAL OPERATIONS

You are provided with substitutes for various mathematical symbols. This is called **Substitution** method. You are required to put in the real signs in the given equation and then solve the questions.

Note :

While attempting to solve a mathematical expression, proceed according to the rule **BODMAS** - that is, Brackets, Of, Division, Multiplication, Addition, Subtraction.

Ex.1 $(48 - 12) \div 4 + 6 \div 2 \times 3 = ?$

Sol. $(48 - 12) \div 4 + 6 \div 2 \times 3 = 36 \div 4 + 6 \div 2 \times 3$ (Solving Bracket)

$= 9 + 3 \times 3$ (Solving Division)

$= 9 + 9$ (Solving Multiplication)

$= 18$ (Solving Addition)

Ex.2 If **x** stands for **addition, <** for **substraction,** + stands for **division, >** for **multiplication, -** stands for **equal to, ÷** for **greater than** and = stands for **less than** state which of the following is true ?

(A) $3 \times 2 < 4 \div 16 > 2 + 4$ (B) $5 > 2 + 2 = 10 < 4 \times 2$

(C) $3 \times 4 > 2 - 9 + 3 < 3$ (D) $5 \times 3 < 7 \div 8 + 4 \div 1$

Sol. (B) Using proper nations, we have

(A) given statement is $3 + 2 - 4 > 16 \times 2 \div 4$ or $1 > 8$, which is not true.

(B) given statement is $5 \times 2 \div 2 < 10 - 4 + 2$ or $5 < 8$, which is true.

(C) given statement is $3 + 4 \times 2 = 9 \div 3 - 3$ or $11 = 0$, which is not true.

(D) given statement is $5 + 3 - 7 > 8 \div 4 + 1$ or $1 > 3$, which is not true.

Ex.3 If + is xm - is +, x is ÷ and ÷ is -, then what is the value of given equation

$21 \div 8 + 2 - 12 \times 3 = ?$

(A) 14 (B) 9 (C) 13.5 (D) 11

Sol. (B) Using the proper signs, we get

$21 - 8 \times 2 + 12 \div 3 = 21 - 8 \times 2 + 4$

$= 21 - 16 + 4 = 9.$

Ex.4 Find out to sign to be interchanged for making the questions correct

$10 + 10 \div 1 - 10 \times 10 = 10$

(A) + and - (B) + and × (C) ÷ and x (D) + and ÷

Sol. (B) By making the interchanges given in (A), the equation as

$10 - 10 \bar{} 10 + 10 \times 10 = 10$ or $109 = 10$ which is false

By making the interchanges given in (B), the equation as

$10 \times 10 \div 10 - 10 + 10 = 10$ or $10 = 10$ which is true

By making the interchanges given in (C), the equation as

$10 + 10 \times 10 - 10 \div 10 = 10$ or $109 = 10$ which is false

By making the interchanges given in (D), the equation as

$10 \div 10 + 10 - 10 \div 10 = 10$ or $- 89 = 10$ which is false

Direction : (5) In the following questions find the relationship that can definitely be deducted on the basis two relationship given. The symbols used are as follows :

□ means **greater then,** Δ means **less than** - means **not equal to** + means **equal to**

Ex.5 If $8A \Delta 6B$ and $3B \Delta 4C$, therefore

(A) C □ A (B) C Δ A (C) 2C + A (D) C □ 2A

Sol. (A) From the questions we get $8 A < 6 B$ or $4A < 3B$ and $3B$ M $4C$ which implies that $4A < 3B < 4C$. From this relationship we conclude that $4a < 4C$ or $A < C$ i.e., C □ A.

Ex.6 Which of the following conclusion is correct according to the given expression and symbols ?

A : ⊁ B : > C : ≠ D : =

E : ⊀ F : <

Expression (pEq) and (qEr)

(A) pEr (B) pEr(C) rBp(D) rBp

Sol. (A) pEq and qEr $\Rightarrow p \not< q$ and $q \not< r \Rightarrow p \not< r \Rightarrow p$ Er

Ex.7 If $A + D > C + E$, $C + D = 2B$ nd $B + E > C + D$, it necessarily follows that

(A) $A + B > 2D$(B) $B + D > C + E$ (C) $A + D > B + E$ (D) $A + D > B + C$

Sol. (D) $A + B > C + E$

$\Rightarrow A + D > (2B - D) + E$ ($\therefore C + D = 2B$)

$\Rightarrow A + D > (B + E) + (B - D)$

$\Rightarrow A + D > (C + D) + (B - D)$

$\Rightarrow A + D > B + C.$

Direction : (8) In the questions given below, use the following notations :

A " B means 'add B to ';

A ' b means 'subtract B from A';

A @ B means 'divide A by B';

A , B means 'multiply A by B';

Now, answer the following question.

Ex.8 The time taken by two running trains in crossing each other is calculated by dividing the sum of the lengths of two trains by the total speed of the two trains. If the length of the first train is L_1, the length of the second train is L_2, the speed of the first train is V_1 and the speed of the second train is V_2, which of the following expression would represent the time taken ?

(A) $(L_1 \text{ “ } L_2)$, $(V_2 \text{” } V_2)$ (B) $\{L_1 \text{ “ } L_2) @ (V_1 \text{ “ } V_2)$

(C) $[(L_1 \text{ “ } L_2) @ (V_1 \text{ “ } V_2)]$, 60 (D) $(L_1 \text{ ‘ } L_2) @ (V_1 \text{’ } V_2)$

Sol. (B) Clearly, time taken $= \dfrac{\text{sum of lenghts of two trains}}{\text{total speed of two trains}}$

$$= \frac{L_1 + L_2}{V_1 + V_2} = (L_1 \text{ “ } L_2) @ (V_1 \text{ “ } V_2)$$

Directions : (9 to 10) The following symbols have been used.

- ***x Stands for equal to***
- ***< Stands for not equal to***
- ***- Stands for greater than***
- ***+ Stands for not greater than***
- ***> Stands for less than***
- ***= Stands for not less than***

Ex.9 If p + q = r, then it is not possible that

(A) p > q > r (B) p < q + r (C) p × q > r (D) p + q × r

Sol. (C) With the notations given,

p + q = r means $p \le q \ge r$

From option (A), p > q > r means $p < q \ne r$, this is true.

From option (B), p < q + r means $p \ne q \le r$, this is true.

From option (C), p × q > r means p = q < r, this is not true.

From option (D), p + q × r means $p \le q = r$, this is true.

Ex.10 If p = q = r, then it is possible that ,

(A) p < q > r (B) p x q x r (C) p > q +r (D) p > q > r

Sol. (B) With the notations given,

p = q = r means $p \ge q \ge r$

From option (A), p < q < r means $p \ne q < r$, this is not true.

From option (B), p × q × r means p = q = r, this is true

From option (C), p > q + r means $p < q \le r$, this is not true.

From option (D), p > q > r means p < q < r, this is not true.

Directions : (11 to 13) In the following questions the symbols $, @ $\subset, \supset$ and $\neq$ are used with the following meaning.

A $ B means A is greater than B
A @ B means A is either greater than or equal to B
A $\subset$ B means is A is equal to B
A $\supset$ B means A is smaller than B
A $\neq$ B means A is either smaller than or equal to B
Now is each of the following questions assuming the given statements to be true, find which of the two conclusion I and II given below them is / are definitely true ? Given answer (A) if only conclusion I is true, (B) if only conclusion II is true (C) if neither I nor Ii is true (D) if both I and II are true.

Ex.11 **Statements :** P @ Q, M $\neq$ N, N $\subset$ Q
Conclusion : I P $ M
II. N $\neq$ P

Sol. (B) As per the statement
P $\geq$ Q = N $\leq$ M, Conclusion
I . P > Q.
II. N $\leq$ O
Only conclusion (II) is completely correct

Ex.12 **Statements :** D $\geq$ X, F @ Y, D $ F
Conclusion : I. X @ Y
II. Y $\neq$ D

Sol. (C) As per the statement
X = D > F $\geq$ Y, from the conclusions
I. X $\geq$ Y
II. Y $\leq$ D
No conclusion follows

Ex.13 **Statements :** M $\subset$ P, S $ T, M @ T
Conclusions : I. T $\leq$ P
II. S $\supset$ T

Sol. (A) As per the statement
P = M $\geq$ T < S, from the conclusions
I. T $\leq$ P
II. S < T
Conclusion (I) is correct

PRACTIVE EXERCISE

Directions : (1) In each of the following questions, different alphabets stand for various symbols as indicated below :

Addition : O ***Subtraction : M*** ***Multiplication : A***

Division : Q ***Equal to : X*** ***Greater than : Y***

Less than : Z

Out of the four alternatives given in these questions, only one is correct.

1. (A) 32 X 8 Q 2 A 3 Q 1 A 2 (B) 10 X 2 A 3 A 2 M 2 Q 1

(C) 2 Y 1 A 1 Q 1 O 1 A 1 (D) 16 Y 8 A 3 O 1 A 2 M 2

2. If ÷ means +, - means ÷, × means - and + means ×, then

$\frac{(32\times 8)-8\times 2}{4+18\times 8+9\div 1}=?$

(A) 0 (B) 1 (C) 12 (D) None of these

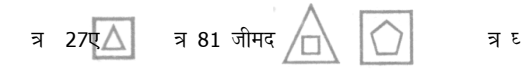
3. If **a** means 'plus' **b** means 'minus', **c** means 'multiplied by' and **d** means 'divided by' then 16c 12 b 6d 2a 17 = ?

(A) 65 (B) 55 (C) 216 (D) 206

4. If > denote +, < denotes -, + denotes ÷, ∧ denotes ×, - denotes =, x denotes > and = denotes <, choose the correct statement in the following questions.

(A) 14 > 18 + 9 = 16 + 4 > 1 (B) 4 > 3 ∧ 8 < 1 - 6 + 2 > 24

(C) 3 < 6 ∧ 4 > 25 = 8 + 4 > 1 (D) 12 > 9 ∧ 3 < 6 × 25 + 5 > 6

5. If  (A) 690 (B) 689 (C) 780 (D) 789

6. Correct the following equation by interchanging two sign

5 - × 45 + 15 ÷ 3 = 5

(A) + and - (B) × and + (C) × and ÷ (D) × and -

Directions : (7 to 8) Answer the questions on the basis of the information given below, If '$' represents '+', ',' represents '-' '#' represents '×' and '@' represent '/' then answer the following questions based on the above given representation.

7. What is the value of 4 # 3 $ 10 @ 5 $ 8 # 2, 18 ?

(A) 10 (B) 12 (C) 6.8 (D) 11.2

8. Which of the following has the value equivalent of 5$ 6 # 2 $ 8 @ 4 ?
(A) 4 # 7, 12 $ 2 # 1 (B) 8 # 2 , 3 $ 6 @ 3 (C) 8 @ 2 , 3 $ 6 # 3 (D) 4 $ 7 , 12 $ 2 # 1

Direction : (9) In the following questions find the relationship that can definitely be deducted on the basis two relationship given. The symbols used are as follows :
□ means 'greater than', Δ means 'less than', - means 'not equal to', + means 'equal to'

9. IF B □ D, D Δ C, C □ A and B + A, therefore
(A) C □ B (B) C Δ B (C) C - B (D) Can't be determined

Directions : (10) In the following questions given below, use the following notations :
A " B means "add B to A"
A ' B means "subtract B from A"
A @ B means "divide A by B"
A , B means "multiply A by B"

10. The total airfare is calculated by adding 15% basic fare as fuel surcharge, 2% of basic fare as IATA charges and Rs. 200 s airport tax to the basic fare. if the basic fare of a section is B, which of the following will represent the total fare ?
(A) B ' (B , 15) @ 100" (B , 2) @ 100" 200
(B) B" (B , 15) @ 100" (B, 2) @ 100" 200
(C) B" (B , 15) @ 100" (B, 2) @ 100" 200
(D) B" (B, 15) @ 100" (B, 2) @ 100" 100

Direction : (11 to 12) The following symbols have been used
× stands for equal to
< stands for not equal to
- stands for greater than
+ stands for not greater than
> stands for less than
= stands for not less than

11. If p × q × r, then it is not possible that
(A) p + q = r (B) p = q + r (C) p + q + r (D) p = q = r

12. If p + q - r, then it is not possible that
(A) p × q = r (B) p + q < r (C) p = q = r (D) p - q - r

Directions : (13 to 14) In the following questions :

Δ means 'is equal to'
□ means 'is not equal to'
+ means 'is greater than'
- means 'is less than'
× means 'is not greater than'
÷ means is not less than
Now select the correct alternative in each of the following questions :

13. a - b - c implies
(A) a - b + c (B) b + a - c (C) c × b + a (D) b + a ÷ c

14. a + b + c does not imply
(A) b - a + c (B) c - b - a (C) c - a + b (D) b - a - c

Directions : (15 to 19): In the following questions the symbol @, $\underline{@}$, =, ⟌ and $\underline{@}$ are used with following meaning :

P@Q → P is greater than Q
P $\underline{@}$ Q → P is either greater or equal to Q
P $\underline{@}$ Q → is smaller than Q
P $\underline{@}$ Q → P is either smaller than or equal to Q
P = Q → P is equal to Q.
Now in each of the following equations, assuming the given statement, to be true, find which of the two conclusions I and II given below them is/are definitely true.
Given answer (A) If only conclusion I is true, give answer (B) it only conclusion II is true, given answer (C) if either I or Ii is true, given answer (D) if neither I nor II is true, give answer (E) if both I and II are true.

15. **Statement :** B @ V, K © C, C $\underline{@}$ B
Conclusions : I. V @ C
II. B @ K

16. **Statement :** K @ T, S = K, T R
Conclusions : I. S @ R
II. T = R

17. **Statement :** U = M, P $\underline{@}$ U, M $\underline{@}$ B
Conclusion : I. P = B
II. P @ B

18. **Statement :** L $\underline{@}$ N, J P, IP $\underline{@}$ L

Conclusions: I. J = L

II. P = N

20. **Statement :** H $\underline{@}$ G, D @ E, H = E

Conclusions : I. D @ H

II. G © D

20. In the correctly worked out multiplication problem at the below, each letter represent a different digit. What is the value of B ?

$$\begin{array}{r} A\ A \\ \times\ A\ B \\ \hline B\ B \end{array}$$

$$\begin{array}{r} A\ A\ X \\ \hline A\ 3\ B \end{array}$$

(A) 1 (B) 2 (C) 4 (D) 5

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	B	D	B	B	D	B	C	A	C
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	A	D	B	D	B	D	C	D	E	B

PUZZLE TEST

Direction : (1 to 5) Study the given information carefully and answer the questions that follow.

There are four people sitting in a row : one each from India, Japan, USA and Germany, but not in that order,

I. They are wearing caps of different colours - green, yellow, red and white, not necessarily in that order.

II. One is wearing a kurta and one a T-shirt

III. The India in wearing a green cap and a jacket.

IV. The American is not seated at either end.

V. The persons with kurta and T-shirt are sitting next to each other.

VI. The persons with kurta wears a red cap and sits next to the Japanese.

VII. The Japanese wears a shirt and is not seated at either end.

VIII. The man with white cap wears T-shirt and is seated at one end.

Ex.1 Who wears the T-shirt ?

(A) Indian (B) Japanese (C) American (D) German

Ex.2 Who is wearing a kurta ?

(A) Indian (B) Japanese (C) American (D) German

Ex.3 What is the colour of the cap worn by the Japanese ?

(A) Red (B) Green (C) Yellow (D) White

Ex.4 Who precedes the man wearing T-shirt ?

(A) Indian (B) Japanese (C) American (D) German

Ex.5 Who precedes the man wearing jacket ?

(A) Indian (B)German (C) Japanese (D) Cannot say

Sol. **(1 to 5) :** According to the question

From III, Indian is wearing a green cap and a Jacket ....(1)

From VI, Kurta is worn along with red cap and sits next to Japanese ....(2)

From VIII, T - Shirt with white cap combination is seated at one end ....(3)

So form (1) (2) (3), VII and I we conclude that the Japanese wear a shirt of yellow colour.

From IV, V, VI and VII, we conclude that the placement of people will be like

(i)	(ii)	(iii)	(iv)
German	American	Japanese	Indian

From (2) and IV, we arrive at the following table with the help of which rest of the questions can be solved very easily.

Nationality	German	American	Japanese	Indian
Clothes	T-shirt	Kurta	Shirt	Jacket
Caps	Whitecap	Redcap	Yellow Cap	Green Cap

Sol.1 (D) German wears the T-shirt.

Sol.2 (C) American is wearing a kurta.

Sol.3 (C) Yellow is the colour of the cap worn by the Japanese.

Sol.4 (C) American precedes the man wearing T-shirt.

Sol.5 (C) Japanese precedes the man wearing jacket.

Directions : (6) Examine the following statements :

I. Either A and B are of the same age or A is older than B.

II. Either C and D are of the same age or D is older than C.

III. B is older than C.

Ex.6 Which one of the following conclusions can be drawn from the above statements ?

(A) A is older than B (B) B and D are of the same age

(C) D is older than C (D) A is older than C

Sol. (D) According to the given statements the following sequence are possible

Either (i) A = B > C = B or (ii) A > B > C, D > C

Directions : (7 to 8) Read the following information carefully and answer the questions given below it.

I. Seven books are placed one above the other in a particular way.

II. The history book is placed directly above the civics book.

III. The geography book is fourth from the bottom and the English book is fifth from the top.

IV. There are two books in between the civics and economic books.

Ex.7 To find the number of books between the civic and the science books, which other extra piece of information is required, from the following ?

(A) There are two books between the geography and the science books.

(B) There are two books between the mathematics and the geography books.

(C) There is one book between the English and the science books.

(D) The civics book is placed before two books above the economic book.

Ex.8 To know which three books are kept above the English book, which of the following additional pieces of information, if any, is required ?

(A) The economics book is between the English and the science books.

(B) There are two books between the English and the history books.

(C) The geography book is above the English book.

(D) No other information is required.

Sol. **(7 to 8) :** According to the given question from II, we get

History
Civics } .....(1) From III, we get

_____
_____
_____
Geography
English } ....(2) From IV (1) and (2), we get
_____
_____
_____

_____
History
Civics
Geography
English
Economics
_____

Since history and civics cannot be at any other place than this, according to the given conditions. On the basis of this very arrangement, rest of the questions can be solved very easily.

7. (C) Clearly, C gives us the clue that the science book is placed at the bottom. Thus, we know that there are three books between the civics and science books.

8. (D) Clearly, history, civics and geography are the three books kept above the English book. To deduce this, no additional information is required.

Directions : (9 to 10) A five -member team that includes Rama, Shamma, Henna, Reena, and Tina, is planning to go to a science fair but each of them put up certain conditions for going. They are as follows :

I. If Rama goes, then at least one amongst Shamma and Henna must go.

II. If Shmma goes, then Reena will not go.

III. If Henna will go, then Tina must go.

IV. If Reena goes, then - Henna must go.

V. If Tina goes, then Rama must go but Shamma cannot go.

VI. If Reena plans not to go fair, then Rama will also not go.

Ex.9 If it sure that Henna will go to the fair, then who among the following will definitely go ?

(A) Rama (B) Shamma (C) Reena (D) Rama and Reena

Sol. (D) It is clear using conditions (I) and (IV). That Rama and Reena will go to the fair.

Ex.10 If Tina does not go to the fair, which of the following statements must be true ?

(i) Henna cannot go

(ii) Shamma cannot go

(iii) Reena cannot go

(iv) Rama cannot go

(A) (i) and (ii) (B) (iii) and (iv) (C) (i), (iii) and (iv) (D) (i) and (iv)

Sol. (C) Using condition III, (i) is true.

Thus, using condition IV, (iii) is true.

And using conditions VI, (iv) is also true.

We cannot say anything about Shamma.

Directions : (11 to 12) Read the given information carefully and asnwer the questions that follow :

Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj, not necessarily in that order. Each boy has one sister and the names of bothers and sisters do not begin with the smae letter. Pinku and Gaurav are not Saroj's or Sangeeta's brothers. Saroj is not Ratan's sister.

Ex.11 Pooja's brother is

(A) Ratan (B) Anil (C) Pinku (D) Gaurav

Ex.12 Which of the following are brother and sister ?

(A) Ratan and Pooja (B) Anil and Saroj (C) Pinku and Sangeeta (D) Gaurav and Rakhi

Sol.(11 to 12) : As given that the names of brothers and sisters do not begin with the same letter and Pinku and Gaurav and not Saroj or Sangeeta's brothers, Pinku cannot be the brother of Pooja and Hence he is the brother of Rakhi.

Now we have that Gaurav cannot be the brother of Saroj, Sangeta or Rakhi. Therefore Gaurav is the brother of Pooja. As given that Saroj is not Ratan's sister and Rakhi and Pooja can also not be the sister's of Ratan (From above conclusions), Ratan is the brother of Sangeeta. Anil will have to be the brother of saroj as this is the only valid combination left. Therefore, we have this table finally.

Brother	Sister
Pinku	Rakhi
Gaurav	Pooja
Ratan	Sangeeta
Anil	Saroj

Sol.11 (D) Gaurav is Pooja's brother

Sol.12 (B) Anil and Saroj are brother and sister.

Direction : (13) The ages of Mandar, Shivku, Pawan and Chandra are 32, 21, 35 and 29 years, not in order Whenever asked they lie of their own age but tell the truth about others.

(i) Pawan says, "My age is 32 and Manda's age is not 35"

(ii) Shivku says, "My age is not 209 and Pawan's age is not 21"

(iii) Mandar says, "My age is 32."

Ex.13 What is Chandra's age ?

(A) 32 years (B) 35 years (C) 29 years (D) 21 years

Sol. (A) From the first statement, it is clear that Pawan's age is not 32 years and Mandar's age in not 35 years. From the second statement, it is clear that shivku's age is 29 years and Pawan's age is not 21 years. Thus, from these two statements we get Pawan's age as is 35 years. Now from the third statement, Mandar's age is not 32 years. thus, Mandar's age is 21 years. Hence, we get Chandra's age as 32 years.

PRACTICE EXERCISE

Directions : (1 to 5) Read the following information carefully and answer the questions that follow.

I. There are six students (A, B, C, D, E and F) in a group. Each student can opt for only three choices out of the six which are music, reading, painting, badminton, cricket and tennis.

II. A, C and F like reading.

III. D does not lie badminton, but likes music.

IV. Both B and E like painting and music.

V. A and D do not like painting, but they like cricket.

VI. All students except one like badminton.

VII. Two students like tannins.

VIII. F does not like cricket, music and tennis.

1. Which pair of students has the same combination of choices ?

(A) A and C (B) C and D (C) B and E (D) D and F

2. Who among the following students like both tennis and cricket ?

(A) A and B (B) C (C) B and D (D) D

3. How many students like painting and badminton ?

(A) 1 (B) 2 (C) 3 (D) 4

4. Who among the following do not like music ?

(A) A, C and D (B) A, B and C (C) A, C and F (D) B, D and F

5. Which of the following is the most popular choice ?

(A) Tennis (B) Badminton (C) Reading (D) Painting

6. R earns more than H but not as much as T, M earns more than R. Who earns least among them ?

(A) R (B) T (C) H (D) M

7. Harish is taller than Manish but shorted than Suresh. Manish is shorter than Anil but taller than Raghu. Who among them is the shortest having regard to height ?

(A) Anil (B) Manish (C) Raghu (D) Cannot be determined

Direction : (8 to 11) Read the following paragraph carefully and choose the correct alternative.

The office staff of XYZ corporation presently consist of three females A,B,C and five males D,E F, G, H. The management is planning to open a new office in another city using three males and two females of the present staff. To do so they plan to separate certain individual who do not function well together. The following guidelines were established

1. ***Females A and C are not to be together***
2. ***C and E should be separated***
3. ***D and G should be separated***
4. ***D and F should not be part of a team.***

8. If A is chosen to be moved, which of the following cannot be a team ?
(A) ABDEH (B) ABDGH (C) ABEFH (D) ABEGH

9. If C and F are to be moved to the new office, how many combinations are possible ?
(A) 1 (B) 2 (C) 3 (D) 4

10. If C is chosen to the new office, which number of the staff cannot e chosen to go with C ?
(A) B (B) D (C) F (D) G

11. Under the guidelines, which of the following must be chosen to go to the new office >
(A) B (B) D (C) E (D) G

12. If D goes to the new office, which of the following is/ar true ?
I. C cannot be chosen
II. A cannot be chosen
III. H must be chosen
(A) I only (B) II only (C) I and II only (D) I and III only

Direction : (13 to 17)

(i) There is a group of six persons P, Q, R, S, T and U from a family. They are Psychologist, Manager, Lawyer, Jeweler, Doctor and Engineer.
(ii) The Doctor is grandfather of U, who is a Psychologist.
(iii) The Manager S is married to P.
(iv) R, the Jeweler is married to the Lawyer.
(v) Q is the mother of U and T.
(vi) There are two married couples in the family.

13. What is the profession of T ?
(A) Doctor (B) Jeweller (C) Manager (D) None of these

14. How is P related to T ?
(A) Brother (B) Uncle (C) Father (D) Grandfather

15. How many male members are their in the family ?
(A) One (B) Three (C) Four (D) Data inadequate

16. What is the profession of P ?

(A) Doctor (B) Lawyer (C) Jeweller (D) Manager

17. Which of the following is one of the pairs of couples in the family ?

(A) PQ (B) PR (C) PS (D) Cannot be determined

Directions : (18 to 19) Answer the questions on the basis of the information given below. 5 friends Nitin, Reema, Jai, Deepti and Ashutosh are playing a game of crossing the roads. In the beginning, Nitin, Reema and Ashutosh are on the one side of the road and Deepti and jai are on the other side. At the end of the game, it wad found the Reema and Deepti are on the one side and Nitin, Jai and Ashutosh are on the other side of the road. Rules of the game are as follows :

I. One "Movement" means only one persons crosses the road from any side to the other side.

II. Not two persons can cross the road simultaneously from any side to the other side.

III. Two persons from the same side of the roads cannot move in consecutive "movements".

IV. If one person crosses the road in a particular movement, he or she cannot immediately move back to the other side.

V. Jai and Reema did not take part in first 3 movements.

18. What is the minimum possible number of movements that took place in the entire game ?

(A) 3 (B) 4 (C) 5 (D) 6

19. If number of movements are minimized in the game, then which of the following combination of friends can never be together on one particular side of the road during the course of the game ?

(A) Nitin, Reema and Deepti (B) Nitin, Jai and Deepti

(C) Deepti, Jai and Ashutosh (D) Ashutosh, Nitin and Deepti

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	C	D	C	C	B	C	C	B	A	B
Que.	11	12	13	14	15	16	17	18	19	
Ans.	A	A	D	D	D	A	C	A	D	

SEATING ARRANGEMENT

Directions : (1 to 5) Study the given information and answer the questions that following :

(i) P,Q,R,S,T,U and V are sitting is a row facing East.

(ii) R is on the immediate right of S.

(iii) Q is at an extreme end and has T as his neighbor.

(iv) V is between T and U.

(v) S is sitting third from the south end.

Ex.1 Who is sitting to the right of T ?

(A) P (B) C (C) C (D) U

Ex.2 Which of the following pairs of people are sitting at the extreme ends ?

(A) PQ (B) PS (C) QR (D) UB

Ex.3 Name the persons who is at the third place from the north end.

(A) T (B) U (C) V (D) S

Ex.4 Immediately between which of the following pairs of people is S sitting >

(A) PR (B) PU (C) RT (D) RU

Ex.5 Which of the conditions (i) to (iii) given above is not required to find out the place in which P is sitting ?

(A) I (B) ii (C) iii (D) All are required

Sol. **(1 to 5)**

From the above information the sitting arrangement is as shown

1. (B) Clearly, V is sitting to the right of T.

2. (A) Clearly P and Q are sitting at the extreme ends.

3. (C) Clearly V is at the third place from the north ends.

4. (D) Clearly S is immediately between R and U.

5. (D) Clearly, all the conditions (i) to (v) given above is required to find out the place in which P is sitting.

Direction : (6 to 8) : Six Persons P,Q,R,S,T and U are sitting in a circle facing one another front to front. P is sitting gin front of Q, Q is sitting to the right of T and left of R, P is to the left U and right of S.

Ex.6 Who is sitting opposite to R ?
(A) P (B) Q (C) S (D) U

Ex.7 Who is sitting opposite to S ?
(A) U (B) T (C) R (D) Q

Ex.8 Who is sitting between P are R ?
(A) S (B) T (C) U (D) Q

Sol. **(6 to 8):** Clearly, the circular arrangement is an shown

6. (D) Clearly U is opposite to R

7. (B) Clearly T is opposite to S

8. (A) Clearly S is sitting between P are R

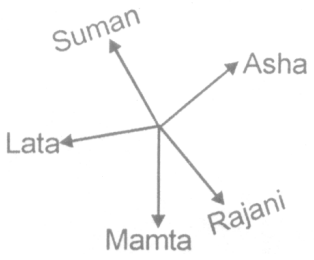
Direction : (9 to 11) Read the following information and answer the questions given below it. Five girls are standing in a circle facing the centre. Suman is between Lata and Asha. Mata is to the right of Lata.

Ex.9 Who is the left of Asha if Rajani is the fifth girl ?
(A) Mamta (B) Suman (C) Lata (D) Rajani

Ex.10 If Suman and Mamta interchange their positions, who will be fourth to the left of Rajani ?
(A) Lata (B) Suman (C) Asha (D) Mamta

Ex.11 If Rajani and Asha interchange their position, then which of the following statements will be the correct one ?
(A) Suman would be third to the left of Mamta (B) Asha would be between Lata and Rajani
(C) Lata would be second to the right of Asha (D) None of these

Sol. **(9 to 11) :**



9. (D) Clearly, Rajani is the left of Asha if Rajani is the fifth girl.

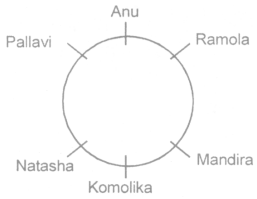
10. (C) Clearly, If Suman and Mamta interchange their positions, Asha will be fourth to the left of Rajani.

11. (D) Clearly, If rajani and Asha interchange their positions, than alternatives (A), (B), (C) will not be correct.

Direction : (12) Six friends are sitting around a circular table at equal instances from each other. Ramola is sitting two places right of Komolika who is exactly opposite to Anu. Anu is sitting on the immediate left of Pallavi, who is exactly opposite to Mandira, Natasha is also sitting gat the table.

Ex.12 Which of the following statements is not correct?
(A) Natasha and Ramola are exactly apposite to each other.
(B) Mandira and Natasha are at equal distance from Komolika.
(C) Angle subtended by Mandira and Natasha is same as the angle subtended by Ramola and Pallavi at the centre of the table.
(D) Natasha is on the immediate left of Pallavi.

Sol. (D) On the basis of the analysis of the given information, Natasha is on the immediate left of Pallavi.



PRACTIVE EXERCISE

Directions : (1 to 5) Read the following information carefully and answer the question given below:
(i) Six flats on a floor in two rows facing north and south are allotted to P,Q,R,S,T and U.
(ii) Q gets a north facing flat and is not next to S.
(iii) S and U get diagonally opposite flats.
(iv) R next to U, gets a south facing flat and T gets a north facing flat.

1. Whose flat is between Q and S ?
(A) T (B) U (C) R (D) P

2. The flats of which of the pairs other than SU, is diagonally opposite to each other ?
(A) PT (B) QP (C) QR (D) TS

3. In the flats of T and P are interchanged, whose flat will be next to that of U ?
(A) Q (B) T (C) P (D) R

4. Which of the combinations get south facing flats ?
(A) URP (B) UPT (C) QTS (D) data inadequate

5. To arrive at the answers to the above questions, which of the following statements can be dispensed with ?
(A) None (B) Only (i) (C) only (ii) (D) (iii) only

Directions : (6 to 8) Study the given information carefully and answer the questions that follow :
In a swimming race, five participants - A, B, C, D and E take part. Lane 1 is extreme left and lane 5 is extreme right. The following conditions exists.
I. B and E not swimming adjacent to each other.
II. D is not in one of the extreme (outermost) lanes.
III. A is to the left of C.

6. If B in lane 3, A in lane 1, then C could be in
(A) lane 4
(B) lane 2
(C) lane 2 or 4
(D) Situation violates the conditions

7. If B is lane 4 and C is lane, then E could be in
(A) lane 1 (B) lane 2
(C) lane 1 or 2 (D) Situation violates the conditions.

8. If D is to the left of A, then D can be in
(A) lane 2 (B) lane 3 only (C) lane 2 or 3 (D) None of these

Direction : (9 to 11) : A, B, C and D are to be seated in a row. But C and D cannot be together. Also B cannot be at the third place.

9. Which of the following must be false ?
(A) A is a the first place (B) A is at the second place
(C) A is at third place (D) A is at the fourth place

10. If A is not at the third place, then C has which of the following option ?
(A) The first place only (B) The third place only
(C) The first and third place only (D) Any of the places

11. If A and B are together, then which of the following must be necessarily true ?
(A) C is not at the first place (B) A is the third place
(C) D is at the first place (D) C is at the first place

Direction : (12) Refer to the data below and answer the questions that follows :
There are nine chairs in a row, each numbered 1 to 9 from left to right. Six friends are sitting on these chairs Megha, Sapna and Riya are neither sitting at chair 1 nor at chair numbered 9. Beena and megha does not have anybody sitting adjacent to them. There is only one empty chair between Megha and Riya. Charu is adjacent to both Jiya and Riya. Sapna is sitting at the seat numbered 2.

12. Megha is sitting on which of the following chairs ?
(A) 4 (B) 5 (C) 7 (D) 8

Directions : (13) Six friends Anil, Shehul, Rajesh, Kiran, Milind and Vinay are sitting around a circular table. Following information about their seating arrangement is given.

I. Rajesh is to the immediate left of Kiran.

II. Neither Milind nor Kiran is the immediate neighbor of Shehul.

III. Anil is sitting between Milind and Shehul.

IV. Anil is not sitting exactly opposite to Rajesh.

13. Which of the following seating arrangements is definitely true according to the above information (take in anticlockwise direction)

(A) Vinay, Shehul, Anil, Milind, Rajesh, Kiran (B) Vinay, Anil, Milind, Shehul, Rajesh, Kiran.

(C) Vinay, Milind, Anil, Shehul, Rajesh, Kiran (D) None of these

Directions : (14 to 18) Read the following information carefully and answer the questions given below it.

I. Eight persons E,F,G,H,I,J,K and L are seated around a square table - two on each side.

II. There are three lady members and they are not seated next to each other.

III. J is between L and F.

IV. G is between I and F.

V. H, a lady member, is second to the left of J.

VI. L, a male member, is seated opposite of E, a lady member

VII. There is a lady member between F and I.

14. Who among the following is seated between E and H ?

(A) F (B) I (C) J (D) None of these

15. How many persons are seated between K and F ?

(A) One (B) Two (C) Three (D) Cannot be determined

16. Who among the following are the three lady members ?

(A) E, G and J (B) E, H and G (C) G, H and J (D) Cannot be determined

17. Who among the following is to the immediate left of F ?

(A) G (B) I (C) J (D) Cannot be determined

18. Which of the following is true about J ?

(A) J is a male member (B) J is a female member

(C) Sex of J cannot be determined (D) Position of J cannot be determined

Direction : (19 to 23) Study the following information to answer the given questions.

(i) Eight friends A, B, C, D, E, F, G and H are seated is a circle facing centre.

(ii) D is between B and G and F is between A and H.

(iii) E is second to the right of A.

19. Which of the following is A's position ?

(A) left of F (B) Right of F (C) Between E and F (D) can't be determined

20. Which of the following is C's position ?

(A) Between E and A (B) Between G and E

(C) Second to the left of B (D) Can't be determined

21. Who are the neighbors of D ?

(A) B and C (B) C and E (C) B and G (D) B and G or B and H

22. If the positions of B and G and D and A are interchanged then who is sitting between B and G in new position.

(A) D (B) A (C) H (D) E

23. If B sitting opposite to C and H is sitting opposite to E then find who is sitting opposite to F ?

(A) B (B) G (C) A (D) D

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	A	B	D	A	A	C	D	A	A	C	B	C
Que.	13	14	15	16	17	18	19	20	21	22	23	
Ans.	D	D	C	B	C	A	B	A	C	B	B	

BLOOD RELATIONS

Problems on Blood Relations involve analysis of information showing blood relationship among members of a family. In the question, a chain of relationship is given in the form of information and on the basis of this information relation between any two members of the chain in asked. Students are supposed to be familiar with the knowledge of different relationship in a family.

Grandfather's son	Father or uncle
Grandmother's son	Father or uncle
Grandfather's only son	Father
Grandfather's only son	Father
Mother's of Father's mother	Grandmother
Mother's or Father' father	Grandfather
Grandfather's only daughter –in – law	Mother
Grandmother's only daughter in law	Mother
Mother's or Father's son	Brother
Mother's or Father's daughter	Sister
Mother's or Father's brother	Uncle
Mother's or Father sister	Aunt
Husband's or wife's sister	Sister-in-law
Husband's or wife' brother	Brother-in-law
Son's wife	Daughter-in-law
Daughter's husband	Son-in-law
Brother's son	Nephew
Brother's daughter	Niece
Uncle or Aunt's son or daughter	Cousin
Sister's husband	Brother-in-law
Brother's wife	Sister-in-law

Ex.1 if P $ Q means P is the father of Q, P # Q means P is mother of Q, & P * Q means P is the sister of Q. Then how is Q related to N if N # L $ P * Q

(A) grandson (B) granddaughter (C) nephew (D) data inadequate

Sol. (D) The sex of Q is not given hence the exact relation ship b/w N & Q cannot be established.

Ex.2 A is the brother of B,C is the brother of A. To establish a relationship between B & C, Which of the following information is required.

I Sex of C II Sex of B

(A) only I is required (B) only II is required

(C) both I and Ii are required (D) Neither required

Sol. (B) It is clear that C is the Brother of B but how B is related to C depends on the sex of B.

Ex.3 Pointing towards a man in the photograph, lady said "the father of his brother is the only son of my mother". How is the man related to lady ?

(A) Brother (B) Son (C) Cousin (D) Nephew

Sol. **(D)** The father of this brother means "his father " is the only son of my mother means" my brother". It means lady is the father's sister of the man's father.

Directions ; (4 to 7)

A + B means 'A is father of B'

A - B means 'A is wife of B'

A × B means 'A is brother of B'

A ÷ B means 'A is daughter of B'

Ex.4 P ÷ R + S + Q, which of the following is true ?

(A) P is daughter of Q (B) B is aunt of P (C) P is aunt of Q (D) P is mother of Q

Sol. **(C)** 'S + Q' & 'R + S' means R is the grandfather of Q. Now P ÷ R means P is daughter of R. This clearly means P is aunt of Q

Ex.5 If P - R + Q, which of the following is true

(A) P is mother of Q (B) Q is daughter of P (C) P i aunt of Q (D) P is sister of Q

Sol. **(A)** P - R + Q, represents R is the father of Q, and P is the wife of R, ∴ P is the mother of Q

Ex.6 P × R ÷ Q, which of the following is true ?

(A) P is uncle of Q (B) P is father of Q (C) P is brother of Q (D) P is son of Q

Sol. **(D)** R is the daughter of Q & P is brother of R, ∴ P is son of Q

Ex.7 If P × R - Q which of the following is true.

(A) P is brother in law of Q (B) P is brother of Q

(C) P is uncle of Q (D) P is father of Q

Sol. **(A)** Clearly, P is related as brother in law to Q.

Ex.8 Soni, who is Dubey's daughter, says to Preeti, "Your mother Shyama is the youngest sister of my father, Dubey's Father's Third child is Prabhat". How is Prabhat related to Preeti ?

(A) Uncle (B) Father (C) grandmother (D) Father is law

Sol. **(A)** Preeti's mother shyama is youngest sister of Dubey & sister of Prabhat. Therefore Prabhat is Preeti's uncle.

Ex.9 Pointing toward a man in the photograph, Archana said, "he is the son of the only son of my grandmother ". How is man related to Archana ?

(A) Cousin (B) Nephew (C) Brother (D) Son

Sol. **(C)** Only son of Archana's grandfather means Archana's father & his son is Archana's brother.

Ex.10 Pointing towards a woman in the photograph, Rajesh said "the only daughter of her grandfather (Paternal) in my wife ". How is Rajesh related to that woman

(A) uncle (Fufa) (B) Father (C) Maternal uncle (D) Brother

Sol. **(A)** Rajesh is the husband of woman's father's sister.

PRACTIVE EXERCISE

1. Aaskah said to Mohit, "That boy in blue shirt is younger of the two brothers of the daughter of my father's wife". How is the boy in blue shirt related to Aakash".

(A) Father (B) Uncle (C) Brother (D) Nephew

2. Pointing to a person, Rohit said to Neha, "his mother is the only daughter of your father. "How is neha related to that person ?

(A) Aunt (B) Mother (C) Daughter (D) Wife

3. 'P + Q' means 'P is the brother of Q', 'P - Q means P is the mother of Q and 'P × Q' means 'P is the sister of Q'/ Which of the following means that M is the material uncle of R ?

(A) M - R + K (B) M + K - R (C) M + K × Q (D) None of these

4. 'A + B' means 'A is the son of B', 'A - B' means 'A is the wife of B'. 'A × B' means 'A is the brother of B', 'A ÷ B' means 'A is the mother of B', 'A = B' means 'A is the sister of B'. Which of the following represents P is the material - uncle of Q ?

(A) R × P ÷ Q (B) P × R ÷ Q (C) P + R ÷ Q (D) P + R × Q

5. Amit said, "This girls is the wife of the grandson of my mother." How is Amit related to the girl ?
(A) Father (B) Father-in-law (C) Grandfather (D) Husband

6. Neelam, who is Rohit's daughter, says to Indu, "Your mother Reeta is the younger sister of my father, who is the third child of Sohanji." How is Sohanji related to Indu ?
(A) Maternal - uncle (B) Grandfather (C) Father (D) Father-in-law

7. Pointing to a girl in the photograph, ? Ramesh said "Her mother's brother is the only son of my mother's father." How is the girl's mother related to Ramesh ?
(A) Mother (B) Sister (C) Aunt (D) Grandmother

8. Pointing to a man in a photograph, Anita said "His brother's father is the only son of my grandfather" How is the Anita related to the man in the photograph ?
(A) Mother (B) Aunt (C) Sister (D) Daughter

9. Pointing to his son's portrait, a man said to a woman, "His mother is the only daughter of your mother". How was the woman related to the man ?
(A) Sister (B) Mother (C) Wife (D) Daughter

10. Introducing a man, a woman said, "His wife is the only daughter of my father ". How that man was related to the woman ?
(A) Brother (B) Father-in-law (C) Maternal Uncle (D) Husband

11. If Anil is the brother of the son of Sunil's son, what is the relationship between Anil and Sunil ?
(A) Cousin (B) Brother (C) Nephew (D) Grandson

12. Pointing to a person, a man said to a woman, "His mother is the only daughter of your father". How was the woman related to the person ?
(A) Sister (B) Mother (C) Wife (D) Daughter

Directions : (13 to 15)P,Q,R,S,T,U,V & W are the family member. Q is the sister of V and V is the brother of R.T. is the wife of P, whose father is W.S. is the husband of Q and U is the son of V.P. is the father of Q.

13. How **U** is related with **T** ?
(A) Son (B) Mother (C) Grandson (D) Nephew

14. How **S** is related with **R** ?

(A) Son (B) uncle (C) Brother-in-law (D) Brother

15. How **W** is related with **R** ?

(A) Grand father (B) uncle (C) Son (D) Brother

Directions : (16 to 18) A,B,C,D,E & F are related to each other as given here. B is F's daughter-in-law. D is A's only grand child. C is D's only uncle. A has two children F and C, one male & one female (not necessarily in the same order). E is the Father of C.

16. Who is the grand mother of D ?

(A) B (B) A (C) C (D) D

17. Who is the mother-in-law of B ?

(A) C (B) D (C) E (D) F

18. If a girls G is marred into the family, what is the relationship between G and D ?

(A) Mother (B) Aunt (C) Mother-in-law (D) Grand mother

Directions : (19 to 22) Read the following information carefully and answer the questions given below :

There are six children playing football namely A, B, C, D, E and F. A and E are brothers. F is the sister of E. C is the only son of A's uncle. B and D are the daughter of fhe brother of C's father.

19. How is C related to F ?

(A) Cousin (B) Brother (C) Son (D) Uncle

20. How many male players are there ?

(A) One (B) Three (C) Five (D) Six

21. How many female players are there ?

(A) Two (B) Three (C) Five (D) one

22. How is D related to A ?

(A) Uncle (B) Sister (C) Niece (D) Cousin

Directions : (23 to 27) Study the information given below and answer the questions that follow :

There is a family of six persons A, B, C, D, E and F. They are Lawyer, Doctor, Teacher Salesman, Engineer and Accountant. There are two married couples in the family. D, the Salesman is married to the Lady Teacher. The Doctor is married to the Lawyer. F, the Accountant is the son of B and brother of E. C, the Lawyer is the daughter-in-law of A. E is the unmarried Engineer. A is the grandmother of F.

23. How is E related to F ?

(A) Brother (B) Sister (C) Cousin (D) Cannot be determined

24. What is the profession of B ?

(A) Teacher (B) Doctor (C) Lawyer (D) Cannot be determined

25. What is the profession of A ?

(A) Lawyer (B) Teacher (C) Doctor (D) Cannot be determined

26. Which of the following is one of the couples ?

(A) F and D (B) D and B (C) E and A (D) None of these

27. How is D related to F ?

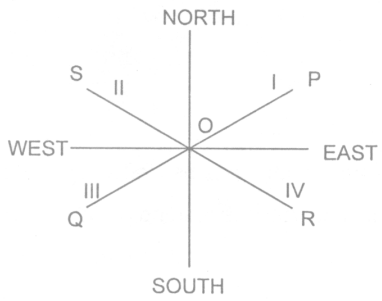
(A) Grandfather (B) Father (C) Uncle (D) Brother

ANSWERS

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans.	C	B	B	B	B	B	A	C	C	D	D
Que.	12	13	14	15	16	17	18	19	20	21	22
Ans.	B	C	C	A	B	D	B	A	B	B	D
Que.	23	24	25	26	27						
Ans.	D	B	B	D	A						

➤➤➤DIRECTION SENSE TEST ◄◄◄

There are four directions such as North, South, East and West. The word NEWS came from North, East, West and South. There are four regions : North-East (i); North-West (ii) ; South-East (iii); South-West (iv)



The directions OP, OS, OQ, and OR are :

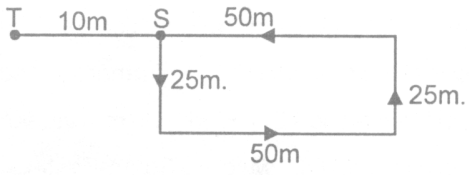
North-East direction ; North-West direction ; South-West direction ; and South-East direction respectively.

NOTE : The candidate must distinguish between the regions and directions, i.e., between North-East regions and North-East direction. If you move with your face Eastwards, your left hand is towards North and your right hand is towards South. Similarly the positions of the directions of the hand can be fixed when you move in any of the other three directions.

Ex.1 Starting from a point 'S', Mahesh walked 25 metres towards South. he turned to his lef and walked 50 metres. He then again turned to his left and walked 25 metres, He again turned to left and walked 60 metres and reached a point 'T'. How far is Mahesh from the point 'S' and in which direction?

(A) 1 metres West (B) 25 metres North (C) 10 metres East (D) 25 metres West

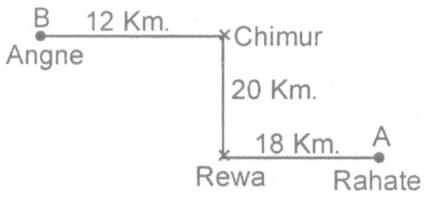
Sol. (A) Mahesh is at a distance of 10 metres away and in West direction from his starting point S.



Ex.2 Village Cimur is 20 km, to the North of village Rewa. Village Rahate is 18 km to the East of village Rewa. Village Angne is 12 km to the West of Chimur. If Sanay starts from village Rahate and goes to village Angne, in which direction is he from his starting point ?

(A) North (B) North-West (C) South (D) South-East

Sol. (B) From the figure it is clear that A and B denote the starting and finishing points respectively. B is to the North-West of Point A.

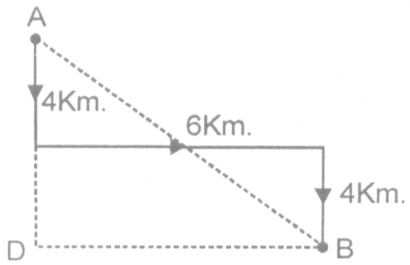


Ex.3 Ravi traveled 4 km straight towards south. He turned left and traveled 6 km straight, then turned right and traveled 4 km straight. How far is he from the starting point ?

(A) 8 km (B) 10 km (C) 12 km (D) 18 km

Sol. (B) B is the finishing point and is 10 km. from the point A. The Aerial distance of A from B is 1 km, calculated as below $(AB)^2 = (AD)^2 + (DB)^2 = (8)^2 + (6)^2 = 64 + 36 = 100$

$\therefore$ AB = 10 km.

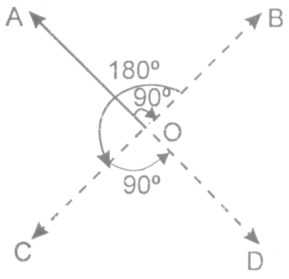


Ex.4 A man is facing North-West. he turns 90^0 in the clockwise direction , then 180^0 in the anticlockwise direction and then another 90^0 in the same direction. Which direction is he facing now ?

(A) South (B) South - West

(C) West (D) South-East

Sol. (D) As shown in Fig. the man initially faces in the direction OA. On moving 90^0 clockwise, he faces in the direction OB. On further moving 180^0 anticlockwise, he faces in the direction OC. Finally on moving 90^0 anti-clockwise, he faces in the direction OD, whish is South-East.



Ex.5 Kishen walks 10 km towards North. Form there, he walks 6 km towards South. Then, he walk 3 km towards East. How far and in which direction is he with reference to his starting point ?

(A) 5 km, North (B) 5 km, North - East (C) 7 km - East (D) 7 km, West

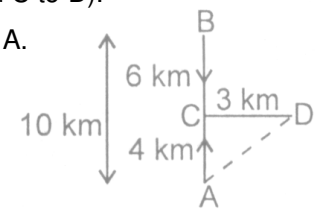
Sol. (B) The movements of Kishen are as shown in Fig. (A to B, B to C and C to D).

AC = (AB - BC) = (10 - 6) km = 4 km. clearly, D is to the North-East of A.

∴ Kishen's distance from starting point

A = AD = $\sqrt{AC^2 + C^2} = \sqrt{4^2 + 3^3} = \sqrt{26} = 5\,\text{km}.$

So, Kishen is 5 km to the North-East of his starting point.

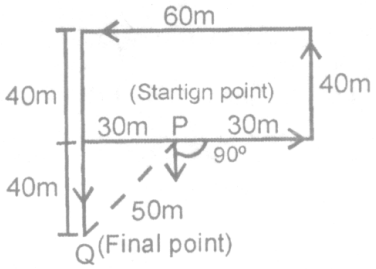


Ex.6 I am facing south. I turn 90^0 in the anti-clockwise direction and walk 30 m and then turning north I walk 40 m and then turning west I go 60 m. Then turning left I walk 80 m. How far am I from the starting point ?

(A) 30 m (B) 40 m (C) 50 m (D) 210 m

Sol. (C) According to the statement

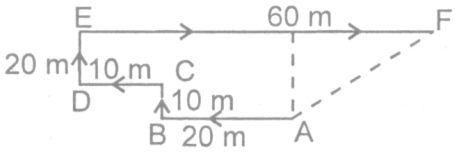
Hence, the answer is 50 m



Ex.7 I am facing South. I turn right and walk 20 m. Then I turn right again and walk 10 m. Then I turn left and walk 10 m and then turning right walk 20 m. Then I turn right again and walk 60 m. In which direction am I form the starting point ?

(A) North (B) Northwest (C) East (D) Northeast

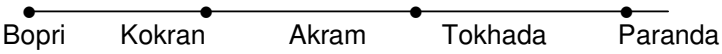
Sol. (D) The movements of the person are from A to F, as shown in fig. Clearly, the final position is F which is to the Northeast of the starting point A.



Ex.8 The town of Paranda is located on Green lake. The town of Akram is West of Paranda. Tokhada is East of Akram but West of Paranda. Kokran is East of Bopri but West of Tokhada and Akram. If they are all in the same district, which town is the farthest West ?

(A) Paranda (B) Kokran (C) Akram (D) Bopri

Sol. (D) Bopri is the farthest West.

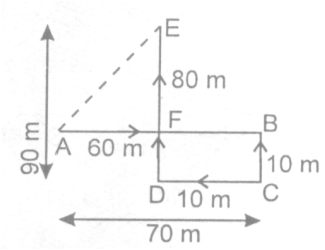


Ex.9 Sanjay went 70 metres in the East before turning to his right. he went 10 metres before turning to his right again and went 10 metres from this point. From there he went 90 metres to the North. How far was he form the starting point?

(A) 80 metres (B) 100 meters

(C) 140 metres (D) 260 metres

Sol. (B) The movement of Sanjay from A to E are as shown in Fig.



Now, AF = (AB - FB)

= (AB - DC) = (70 - 10) m = 60 m.

EF = (DE - DF) = (DE - BC)

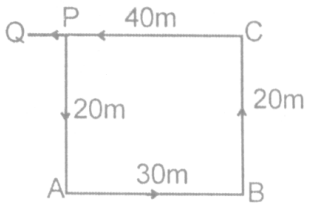
= (90 - 10) m = 80m.

Required distance = $AE = \sqrt{AF^2 + EF^2} = \sqrt{(60)^2 + (80)^2} = 100m$

Ex.10 Starting from a point P, Sachin walked 20 metres towards South. He turned left and walked 30 metres. He then turned left and walked 20 metres. he again turned left and walked 40 metres and reached a point Q. How far and in which direction is the point Q from the point P ?

(A) 20 metres West (B) 10 metres East (C) 10 metres West (D) 10 metres North

Sol. (C) The movements of sachin are as shown in figure clearly, distance from starting point to final position

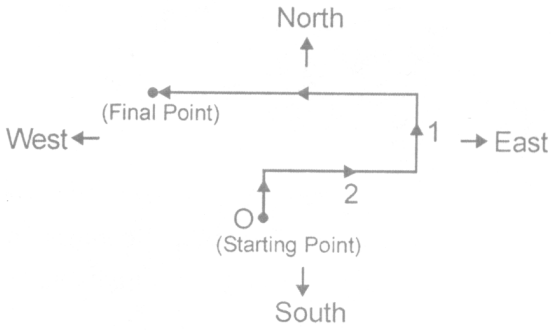


Ex.11 Shanshikant walks northwards. After a while, he turns to his right and cover a distance of 2 kms. Then turns to his left and cover a distance of one kms, then he turns to his left again. In which direction is he moving now ?

(A) North (B) South (C) East (D) West

Sol. **(D)** According to the given information :

Hence he is moving the West direction finally



PRACTICE EXERCISE

1. One evening before sunset two friends Amit and Sunit were talking to each other face to face. If Sunil's shadow was exactly to his left side, which direction was Amit facing ?
(A) North (B) South (C) West (D) Data inadequate

2. A postman was retuning to the post office which was in front of him to the North. When the post office was 100 meters away from him, he turned to the left and moved 50 metres to deliver the last letter at shantivilla. He then moved in the same direction for 40 metres, turned to his right and moved 100 metres. How many metres was he away from the post office ?
(A) 0 (B) 90 (C) 150 (D) 100

3. Two buses start from the opposite points of a main road, 150 kms apart. The first bus runs for 25 kms and takes a turn right and runs for 15 kms. It then, turns left and runs for another 25 kms and takes the direction back to reach the main road, In the meantime, due to a minor breakdown, the other but has run only 35 kms along the main road What would be the distance between the two buses at this point ?
(A) 75 kms (B) 870 kms (C) 65 kms (D) 85 kms

4. A man is facing west. He turns 45^0 in the clockwise direction and then another 180^0 in the same direction and then 270^0 in the anticlockwise direction. Which direction is he facing now ?
(A) South (B) North-West (C) West (D) South-West

5. A started from a place. After walking for a kilometer, he turns to the left, then walking for a half km. he again turns to left. Now, he is going Eastward direction. In which direction, did he originally start ?
(A) West (B) East (C) South (D) North

6. Form point P, Akshay starts walking towards East. After walking 30 metres, he turns to his right and walks 10 metres. He then turns to his right and walks for 30 metres. He again turns to his right and walks 30 metres. He again turns to his right and walks 30 metres. How far is he from Point P and in which direction ?
(A) Point P itself (B) 10 metres North (C) 20 metres West (D) 20 metres North

7. A walks 10 metres towards East and then 10 metres to his right. Then every time turning to his left, he walks 5, 15 and 15 metres respectively. How far is he now from his starting point ?
(A) 5 metres (B) 10 metres (C) 15 metres (D) 20 metres

8. A and B start from a fixed point. A moves towards North and after walking 3 Kms turns to his right and covers 4 Kms. B moves towards West and walks 5 Kms and then turns to his right and walks 3 Kms. Now how far are A and B from each other ?
(A) 1 Kms (B) 5 Kms (C) 8 Kms (D) 9 Kms