LOGICAL REASONING

WORD GROUP CATEGORIZATION QUESTIONS

PRACTICE EXERCISE

Directions for Q1 to Q30: Choose the answer option that arranges the given set of words in the 'most' meaningful order. The words when put in order should make logical sense according to size, quality, occurrence of events, value, appearance, nature, process etc.

1. 1. Country 2. Furniture 3. Forest 4. Wood 5. Trees
   (a) 1, 3, 5, 4, 2 (b) 1, 4, 3, 2, 5
   (c) 2, 4, 3, 1, 5 (d) 5, 2, 3, 1, 4

2. 1. Cut 2. Put on 3. Mark 4. Measure 5. Stitch
   (a) 4,3, 1, 5, 2 (b) 3, 1, 5, 4, 2
   (c) 2, 4, 3, 1, 5 (d) 1, 3, 2, 4, 5

3. 1. Lion 2. Dog 3. Duck 4. Insect 5. Deer
   (a) 4, 2, 3, 5, 1 (b) 4, 2, 3, 1, 5
   (c) 4, 3, 2, 5, 1 (d) 4, 3, 2, 1, 5

4. 1. Key 2. Door 3. Lock 4. Room 5. Light-on
   (a) 5, 1, 2, 4, 3 (b) 4, 2, 1, 5, 3
   (c)1, 2, 3, 5, 4 (d) 1, 3, 2, 4, 5

5. 1. Dress 2. Yarn 3. Cotton 4. Stitching 5. Plant
   (a) 5, 3, 2, 4, 1 (b) 3, 5, 2, 1, 4
   (c) 5, 3, 1, 4, 2 (d) 1, 2, 3, 4, 5

6. 1. Vegetables 2. Energy 3. Food 4. Cook 5. Eat
   (a) 13452 (b) 14352
   (c) 43512 (d) 43521

7. 1. Education 2. Promotion 3. Birth 4. Retirement 5. Job
   (a) 3, 1, 5, 4, 2 (b) 3, 1, 5, 2, 4
   (c) 3, 1, 2, 4, 5 (d) 3, 1, 2, 5, 4

8. 1. Probation 2. Interview 3. Selection 4. Appointment letter 5. Advertisement 6. Application
   (a) 5, 6, 2, 3, 4, 1 (c) 5, 6, 4, 2, 3, 1
   (b) 5, 6, 3, 2, 4, 1 (d) 6, 5, 4, 3, 2, 1

9. 1. Cry 2. Mother 3. Food 4. Hungry 5. Child
   (a) 5, 4, 1, 2, 3 (b) 5, 1, 4, 2, 3
   (c) 5, 4, 1, 3, 2 (d) 5, 1, 4, 3, 2

10. 1. Shoulder 2. Elbow 3. Palm 4. Finger 5. Wrist
    (a) 4, 2, 5, 3, 1 (b) 5, 3, 2, 1, 4
    (c) 1, 2, 5, 3, 4 (d) 2, 5, 4, 3, 1

11. 1. Phrase 2. Word 3. Sentence 4. Para
    (a) 2, 1, 4, 3 (b) 2, 1, 3, 4
    (c) 1, 2, 3, 4 (d) 2, 3, 1, 4

12. 1. Birth 2. Education 3. Funeral 4. Marriage 5. Death
    (a) 1, 4, 2, 5, 3 (b) 2, 1, 4, 5, 3
    (c) 1, 4, 2, 3, 5 (d) 1, 2, 4, 5, 3

13. 1. Windows 2. Walls 3. Floor 4. Foundation 5. Roof 6. Room
    (a) 4, 1, 5, 6, 2, 3 (b) 4, 2, 1, 5, 3, 6
    (c) 4, 3, 5, 6, 2, 1 (d) 4, 5, 3, 2, 1, 6

14. 1. Country 2. District 3. State 4. Village 5. Continent
    (a) 5, 4, 3, 2, 1 (b) 1, 3, 2, 5, 4
    (c) 4, 2, 3, 1, 5 (d) 2, 1, 3, 5, 4

15. 1. Plant 2. Fruit 3. Seed 4. Flower
    (a) 3, 2, 4, 1 (b) 3, 1, 2, 4
    (c) 3, 1, 4, 2 (d) 3, 2, 1, 4

16. 1. Frog 2. Eagle 3. Grasshopper 4. Snake 5. Grass
    (a) 1, 3, 5, 2, 4 (b) 3, 4, 2, 5, 1
    (c) 5, 3, 1, 4, 2 (d) 5, 3, 4, 2, 1

17. 1. Atomic Age 2. Metallic Age 3. Stone Age 4. Alloy Age
    (a) 1, 3, 4, 2 (b) 3, 2, 4, 1
    (c) 2, 3, 1, 4 (d) 4, 3, 2, 1

18. 1. Index 2. Contents 3. Title 4. Chapters 5. Introduction
    (a) 3, 2, 5, 1, 4 (b) 2, 3, 4, 5, 1
    (c) 5, 1, 4, 2, 3 (d) 3, 2, 5, 4, 1

19. 1. Gold 2. Iron
3. Sand 4. Platinum
5. Diamond
(a) 2, 4, 3, 5, 1 (b) 3, 2, 1, 5, 4
(c) 4, 5, 1, 3, 2 (d) 5, 4, 3, 2, 1

20. 1. Euphoria 2. Happiness
3. Ambivalence 4. Ecstasy
5. Pleasure
(a) 1, 4, 2, 5, 3 (b) 2, 1, 3, 4, 5
(c) 3, 2, 5, 1, 4 (d) 4, 1, 3, 2, 5

21. 1. Puberty 2. Adulthood
3. Childhood 4. Infancy
5. Senescence
(a) 5, 2, 3, 4, 1 (b) 4, 3, 2, 1, 5
(c) 4, 3, 1, 2, 5 (d) 2, 4, 3, 1, 5

22. 1. Grain 2. Plant
3. Sandwich 4. Bread
5. Dough
(a) 1, 2, 5, 4, 3 (b) 2, 1, 4, 5, 3
(c) 2, 1, 5, 4, 3 (d) 2, 1, 4, 5, 3

23. 1. Never 2. Sometimes
3. Generally 4. Seldom
5. Always
(a) 5, 2, 1, 3, 4 (b) 5, 2, 4, 3, 1
(c) 5, 3, 2, 1, 4 (d) 5, 3, 2, 4, 1

24. 1. Boil 2. Sugar
3. Kettle 4. Water
5. Tea leaves
(a) 3, 5, 1, 4, 2 (b) 3, 4, 1, 5, 2
(c) 3, 5, 4, 1, 2 (d) 3, 4, 5, 1, 2

25. 1. Kaziranga sanctuary 2. Asia
3. Rhinoceros 4. India
5. Assam
(a) 2, 4, 1, 3, 5 (b) 2, 4, 5, 3, 1
(c) 2, 4, 3, 1, 5 (d) 2, 4, 5, 1, 3

26. 1. Divide 2. Divisions
3. Devine 4. Divest
5. Direct
(a) 5, 4, 3, 1, 2 (b) 5, 4, 1, 3, 2
(c) 1, 2, 3, 4, 5 (d) 3, 5, 4, 1, 2

27. 1. Bound 2. Bonus
3. Bunch 4. Board
5. But
(a) 1, 4, 2, 3, 5 (b) 2, 4, 3, 5, 1
(c) 4, 2, 1, 3, 5 (d) 4, 3, 5, 2, 1

28. 1. Necrology 2. Necromancy
3. Necropolis 4. Necrophilia
5. Neighbour
(a) 2, 1, 4, 3, 5 (b) 1, 2, 3, 5, 4
(c) 1, 2, 4, 3, 5 (d) 2, 1, 3, 4, 5

29. 1. Aqueous 2. Aquarium
3. Aquiline 4. Aquatic
5. Arrive
(a) 4, 3, 2, 1, 5 (b) 1, 2, 3, 4, 5
(c) 2, 4, 1, 3, 5 (d) 3, 1, 4, 2, 5

30. 1. Enigma 2. Enjoy
3. Enjoin 4. Enlarge
5. Engulf
(a) 2, 4, 3, 5, 1 (b) 5, 1, 3, 2, 4
(c) 5, 1, 2, 4, 3 (d) 5, 1, 4, 2, 3

WORD GROUP CATEGORIZATION QUESTIONS

PRACTICE EXERCISE

Directions for Q1 to Q30: Choose the word which is different from the rest.

1. (a) Treachery (b) Fraud
(c) Deceit (d) Swindle
(e) Morbid

2. (a) Feathers (b) Tentacles
(c) Scales (d) Pseudopodia
(e) Flagella

3. (a) Pine (b) Fir
(c) Banyan (d) Deodar
(e) Spruce

4. (a) Decantation (b) Filtration
(c) Centrifugation (d) Sublimation
(e) Condensation

5. (a) Goitre (b) Typhoid
(c) Rickets (d) Anaemia
(e) Scurvy

6. (a) Nephrology (b) Entomology
(c) Astrology (d) Mycology
(e) Pathology

7. (a) Rigveda (b) Yajurveda
(c) Atharvaveda (d) Ayurveda
(e) Samveda

8. (a) Potassium (b) Silicon
(c) Zirconium (d) Gallium
(e) Germanium

9. (a) Oyster (b) Clam (c) Scallop (d) Mussel

10. (a) Deck (b) Quay (c) Stern (d) Bow (e) Mast

11. (a) Chameleon (b) Crocodile (c) Alligator (d) Locust (e) Salamander

12. (a) Sheep (b) Gazelle (c) Ibex (d) Shrew (e) Tapir

13. (a) Record (b) Shorthand (c) Morse (d) Codes (e) Semaphore

14. (a) Blaze (b) Glint (c) Simmer (d) Shimmer (e) Glimmer

15. (a) Verse (b) Rhyme (c) Couplet (d) Rhetoric (e) Stanza

16. (a) Mandible (b) Rib (c) Sternum (d) Ulna (e) Pinna

17. (a) Gasoline (b) Methane (c) Asphalt (d) Paraffin wax (e) Diesel

18. (a) Cancel (b) Change (c) Repeal (d) Revoke (e) Rescind

19. (a) Gorges (b) Bars (c) Canyons (d) Meanders (e) Rapids

20. (a) Hydrazine (b) Warfarin (c) Malathion (d) Agrosan (e) Sulphur

21. (a) Thiamine (b) Niacin (c) Trypsin (d) Riboflavin (e) Ascorbic acid

22. (a) Birch (b) Spruce (c) Cedar (d) Maple (e) Ebony

23. (a) Kwashiorkor (b) Cretinism (c) Marasmus (d) Goitre (e) Osteomalacia

24. (a) Sandstone (b) Basalt (c) Granite (d) Pumice

25. (a) Attlee (b) Bevin (c) Chamberlain (d) Churchill

26. (a) Albatross (b) Ostrich (c) Pelican (d) Penguin

27. (a) Beaches (b) Lagoons (c) Bars (d) Moraines

28. (a) Malaria (b) Plague (c) Dengue (d) Tetanus

29. (a) Colt (b) Sty (c) Stable (d) Kennel

30. (a) Keats (b) Wordsworih (c) Tolstoy (d) Ghalib (e) Tagore

CRYPTARITHMETIC

Introduction:

Cryptarithmetic is also known as verbal arithmetic or alphametric or cryptarithm or word addition. Cryptarithmetic is a mathematical puzzle in which the given letters are assigned with some hidden numbers. We have to solve the given question by finding the hidden numbers which are assigned to the specific letters or special characters.

General rules:

(1) Only 0 – 9 numbers will be assigned to each letter.

(2) The maximum sum of two single digit numbers will be equal to or less than 18.

(3) There should be only one solution to that given problem.

Approach:

The approach to solve questions in this topic is simply through trial and error. However, we can look out for clues like carry value for addition or subtraction as explained in example 1.

Throughout this chapter, the answers are obtained through trial and error method and hence detailed solution is not provided for the questions.

EXAMPLES

1.
$$\begin{array}{cccccc} & & C & U & T \\ + & C & O & P & Y \\ \hline P & A & S & T & E \end{array}$$

Find the value of PASTE.

(a) 10658 (b) 10258 (c) 10758 (d) 10958

Answer: [a]

Solution:

Pointers: Here, we see that C + (some carry value) = A which gives a carry value = P. So, we can say that P should be 1 as the maximum of sum of two single digit numbers can be less than or equal to 18.

So, considering P=1 we see that U + P + (with/without carry) = T

We can also take cues from the options and the question itself. Here, T and E has to be 5 and 8 as evident from the options. So, T + Y = 8. So, the possible combination of (T,Y) is only (5,3) [1 is taken by P and 8 is taken by E]

By trying (3, 5) combination, we get

```
  C U 5
+ C O 1 3
    5 8
```

So,

```
  C 4 5
+ C O 1 3
    5 8
```

So, U can be 4.

```
  C 4 5
+ C O 1 3
P A S 5 8
```

Now, we have used 1, 3, 4, 5 and 8. The remaining numbers are 0, 2, 6, 7 and 9.

C has to be 9 so that it can give P with a carry value

Here, C + O should have a carry value so that we get S and A, P(as a result of the carry value)

9 + 2 = 11 (not possible, 1 already taken by P)

9 + 6 = 15 (not possible, 5 s already taken by T.

Trying 9 + 7 = 16 (taking maximum values to get carry value)

```
  9 4 5
+ 9 7 1 3
1 0 6 5 8
```

2.

```
  M A K E
+     M Y
T R I P
```

Find the value of TRIP.

(a) 8053 (b) 8035 (c) 3580 (d) 3850

Answer: [b]

```
  7 9 6 1
+     7 4
8 0 3 5
```

PRACTICE EXERCISE

1. Decrypt the code P A S C A L.

```
  B A S I C +
  L O G I C
P A S C A L
```

(a) 142345 (b) 108204
(c) 126523 (d) None of these

2. Decrypt the code Z I T H E R.

```
  C E L L O +
    H O R N
Z I T H E R
```

(a) 104862 (b) 125647
(c) 134762 (d) None of these

3. Decrypt the code F O L D E R.

```
  C R A S H +
  E R R O R
F O L D E R
```

(a) 236481 (b) 248915
(c) 154987 (d) None of these

4. Decrypt the code E U R O P A.

```
S A T U R N +
  T I T A N
T R I T O N
E U R O P A
```

(a) 984521 (b) 948563
(c) 984556 (d) 9484586

5. Decrypt the code L H A L.

```
    H O W
      W E ×
H A I L
P A L
L H A L
```

(a) 5105 (b) 3543
(c) 4104 (d) None of these

6. Decrypt the code M A P O E.

```
      A P T
        T O ×
-------------
    M O V E
M V D T
-------------
M A P O E
-------------
```

(a) 24360 (b) 25486
(c) 28451 (d) None of these

7. Decrypt the code J O H N S O N.

```
    L Y N D O N
              B ×
-----------------
J O H N S O N
-----------------
```

(a) 3546456 (b) 3420840
(c) 3215425 (d) None of these

8. Decrypt the code T Y S O L.

```
      A S K
        T O ×
-------------
    K A R L
O S A K
-------------
T Y S O L
-------------
```

(a) 74860 (b) 74682
(c) 74398 (d) 74895

9. Decrypt the code D I C E D.

```
      A I D
        A D ×
-------------
    R I A D
D D C D
-------------
D I C E D
-------------
```

(a) 68476 (b) 18961
(c) 68956 (d) 59625

10. Decrypt the code P O S T.

```
    S T O P
- P A S T
-------------
  P O S T
-------------
```

(a) 9284 (b) 4392
(c) 4892 (d) None of these

11. Decrypt the code S N U B.

```
  C O U N T
- C O I N
-----------
    S N U B
-----------
```

(a) 6795 (b) 9567
(c) 9805 (d) 5790

12. Decrypt the code D Y N A.

```
          K M
      ------------
A K A | D A D D Y
        D Y N A
      ------------
          A R M Y
          A R K A
      ------------
              R A
      ------------
```

(a) 4025 (b) 1605
(c) 4680 (d) 1050

13. Decrypt the code L I N K.

```
          K T
      ------------
N E T | L I N K
        N E T
      ------------
        K E K K
        K T E C
      ------------
            K E Y
      ------------
```

(a) 2345 (b) 4275
(c) 6542 (d) 6041

14. Decrypt the code A P P L E.

```
A P P L E
- T H A T
---------
    E A T
---------
```

(a) 20035 (b) 31140
(c) 10038 (d) 32241

15. Decrypt the code M A T.

```
      E Y E
        M A T ×
-------------
    S Y I A
  G M T A
A I R Y
-------------
A A S M A A
-------------
```

(a) 634 (b) 327 (c) 201 (d) 305

16. Decrypt the code P A S.

```
      P A S
      R B Q ×
-------------
    S B K W
  A S A A
S E P B
-------------
S Q S K A W
-------------
```

(a) 543 (b) 345
(c) 421 (d) 273

17. Decrypt the code N A M E.

```
    H E
    E H ×
---------
    H E
  H H A
---------
H N M E
---------
```

(a) 1207 (b) 2907
(c) 1907 (d) 1709

18. Decrypt the code M O N E Y.

```
  S E N D
+ M O R E
---------
M O N E Y
---------
```

(a) 10453 (b) 10851
(c) 10652 (d) 15620

19. Decrypt the code H G B C.

```
    A B C
×     D E
---------
  F E C
D E C
---------
H G B C
---------
```

(a) 5650 (b) 4625
(c) 2510 (d) 5210

20. Decrypt the code H U N T.

```
    N O
× G U N
---------
    N O
---------
H U N T
---------
```

(a) 1082 (b) 1253
(c) 8201 (d) 2081

DATA ARRANGEMENT

Arrangement is the process of putting things in a specific order or sequence so as to satisfy the given constraints. In Data arrangement, we are generally asked to arrange a group of people according to the given conditions. Each arrangement question typically begins with a paragraph which describes a particular situation and introduces a set of terms. This introduction will give you an idea of what you are expected to do with that particular question. This will be followed by a couple of short statements which will provide the rules or constraints to be applied to the particular terms and situation. There are three types of clues involved in arrangement questions. They are:

1. Direct clues: In this type, the relationship between two terms will be directly mentioned in the statements.
2. Indirect clues: These are rules which can be converted to direct clues through reasoning, once all the other direct clues are identified.
3. Scenario clues: Once all the direct and indirect clues are incorporated into the logical framework, the rest of the problem can be simplified to two or three scenarios, which on further analysis will lead us to the correct solution.

Types of Arrangement:

Linear arrangement

Circular arrangement

Cross variable relationship

LINEAR ARRANGEMENT

A Linear arrangement can be defined as a straight line arrangement typically involving not more than two dimensions. The key factor to be noted here is that arrangements are done only on one axis. When A is said to be on the left or ahead of B, in a linear arrangement, it cannot be assumed that A is to the immediate left of B or immediately ahead of B unless it is mentioned so specifically.

The directions given are relative in nature as it depends on from whose perspective the test-taker is deciding the directions. For example, if four people P, Q, R, S are sitting at a table from left to right in the same order, then Q is sitting to the left of R but to the right of P. Change in orientation, left and right, depends on two possible scenarios i.e. whether the test-taker assumes people to be facing the direction he is facing or whether he assumes them to be facing the opposite direction. But as long as consistency is maintained in incorporating the directions, this fact should not change the solution as the two scenarios are mirror images of each other.

Why should I learn data arrangement?

Arrangement puzzles which appear in the Logical Reasoning section of Aptitude papers is to assess the test-taker's ability to comprehend complex data and filling out the information gaps using the given clues and the set of constraints.

EXAMPLES

Directions for Q1 to Q5: Read the given information carefully and answer the questions that follow.

Eleven friends Manu, Nima, lavanya, Preethi, Arjun, Reeta, Sita, Tara, Usha, Vijay and Watson are sitting in the first row of the stadium watching a cricket match.

(i) Tara is to the immediate left of Preethi and third to the right of Usha.

(ii) Vijay is the immediate neighbour of Manu and Nima and third to the left of Sita.

(iii) Manu is the second to the right of Arjun, who is at one of the ends.

(iv) Reeta is sitting next to the right of Preethi and Preethi is second to the right of lavanya.

1. Who is sitting in the centre of the row?
(a) Nima (b) lavanya (c) Sita (d) Usha

2. Which of the following people are sitting to the right of Sita?
(a) Lavanya, Tara, Preethi, Arjun
(b) Lavanya, Tara, Preethi, Reeta
(c) Usha, Nima, Vijay, Manu
(d) Usha, Lavanya, Tara, Preethi, Reeta

3. Which of the following statements is true with respect to the above arrangement?
(a) There are three persons sitting between Preethi and Sita
(b) Watson is between Manu and Vijay.
(c) Nima is sitting between Vijay and Usha
(d) Sita and Lavanya are neighbours sitting to the immediate right of Tara

4. Who are the immediate neighbours of Tara?
(a) Lavanya, Preethi (b) Lavanya, Reeta
(c) Nima, Usha (d) Vijay, Usha

5. Which of the following pairs of friends is sitting at the ends?
(a) Reeta and Watson (b) Arjun and Preethi
(c) Reeta and Arjun (d) Nima and Watson

Solutions for Q1 to Q5:

The arrangement is

Arjun	Watson	Manu	Vijay	Nima	Usha	Sita	Lavanya	Tara	Preethi	Reeta

1. Ans: [d]
Usha is sitting in the centre of the row.

2. Ans: [b]
Lavanya, Tara, Preethi, Reeta

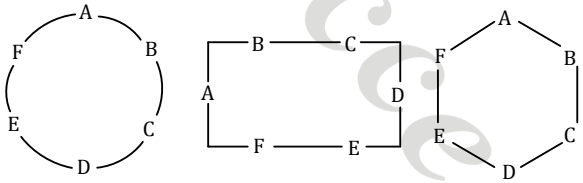
3. Ans: [c]
Nima is sitting between Vijay and Usha

4. Ans: [a]
Lavanya, Preethi

5. Ans: [c]
Reeta and Arjun

CIRCULAR ARRANGEMENT

A Circular arrangement can be defined as an arrangement having a closed loop. Typical examples include situations where arrangements are made around a table. The table can be of any shape and need not necessarily be circular. This is illustrated by the following diagrams.



There can be two ways of seating people in a circle, where people are sitting:-

(i) facing inwards – towards the centre of the circle

(ii) facing outwards – away from the centre of the circle

Left movement is called anti - clockwise rotation.

Right movement is called clockwise rotation.

EXAMPLES

Directions for Q1 to Q5: Read the given information carefully and answer the following questions.

Anu, Biju, Chitra, Dilip, Eshwar, Faizal, Gowri and Hari are sitting around a circular table with equal distance between them, facing the centre but not necessarily in the same order. Anu sits second to the right of Gowri. Only 2 persons are sitting between Anu and Hari. Chitra sits second to the left of Hari. Only 3 persons sit between Hari and Faizal. Biju sits on the immediate left of Dilip.

1. Who among the following sits second to the right of Faizal?
(a) Biju (b) Chitra
(c) Dilip (d) Gowri
(e) None of these

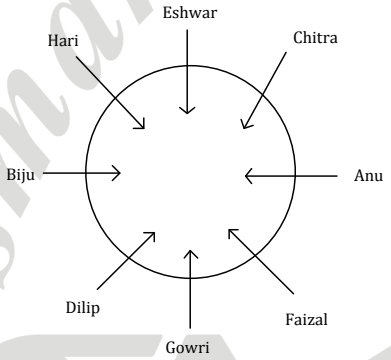
2. If all the persons are made to sit in alphabetical order in clockwise direction, starting from Anu, the positions of how many, excluding Anu, would remain unchanged?
(a) One (b) Two
(c) Three (d) Four
(e) None of these

3. Which of the following statements is true with respect to Eshwar?
   (a) Eshwar is an immediate neighbour of Biju
   (b) Only one person sitting between Eshwar and Faizal
   (c) Only 3 persons sitting between Eshwar and Gowri
   (d) Anu sits third to the right of Eshwar
   (e) All the given statements are true

4. Who among the following represent the immediate neighbour of Gowri?
   (a) Eshwar, Dilip (b) Hari, Chitra
   (c) Hari, Dilip (d) Dilip, Faizal
   (e) None of these

5. Four of the following are alike as per the given arrangement and thus form a group, which of the following does not belong to that group?
   (a) Hari, Anu (b) Gowri, Hari
   (c) Chitra, Gowri (d) Biju, Chitra
   (e) Faizal, Dilip

Solutions for Q1 to Q5:



1. Ans: [b]
   Chitra

2. Ans: [a]
   One

3. Ans: [c]
   Only 3 persons sitting between Eshwar and Gowri

4. Ans: [d]
   Dilip, Faizal

5. Ans: [e]
   Faizal, Dilip
   There are two persons between the given pairs of persons except in the case of (e) where there is only one person.

CROSS VARIABLE RELATIONSHIP

Complex arrangements are arrangements which involve more than two dimensions. The approach for these problems should be very similar to that of the linear arrangement problems except for the fact that the logical framework for interpreting the problem assumes special significance in this case. A lot of information needs to be comprehended in a complex arrangement problem and hence, care should be taken to ensure that an appropriate framework which will aid smooth fitting and assimilation of data would be used.

EXAMPLES

Directions for Q1 to Q5: Read the following information carefully and answer the following questions.

There are seven persons Aravind, Balu, Calvin, David, Edward, Fahad and Guru and they all play different games viz. Hockey, Baseball, Football, Javelin, Karate, Rugby and Tennis but not necessarily in the same order. Each person takes rest at different days of the week starting from Monday to Sunday but not necessarily in the same order. Only one person takes rest on each day. Only two persons take rest before Calvin. Only one person takes rest between Calvin and the one who plays Karate. Only one person takes rest between the one who plays Karate and the David who plays Tennis. More than two persons take rest between David and the one who plays Football. Less than two persons take rest between the one who plays Football and the one who plays Karate. The one who plays Hockey does not take rest immediately before or immediately after the day on which Calvin takes bed rest. Three persons take bed rest between Fahad and the one who plays Hockey. The one, who plays Javelin, takes rest immediately before Fahad. Two persons take rest between Balu and Guru. Balu takes rest before Guru. The one who plays Rugby takes rest after Thursday. Edward takes rest before Friday. Balu does not play Javelin.

1. Who among the following takes rest on Saturday?
   (a) Guru (b) Fahad
   (c) David (d) Aravind
   (e) None of These

2. Who among the following plays Rugby?
   (a) Guru (b) Fahad
   (c) David (d) Aravind
   (e) Balu

3. Edward plays which of the following games?
   (a) Baseball (b) Football
   (c) Hockey (d) Javelin
   (e) Rugby

4. Which of the following combinations of person-game and day is correct?
   (a) Calvin-Javelin-Wednesday
   (b) Balu-Rugby -Monday
   (c) Edward-Hockey-Monday
   (d) David-Tennis-Sunday
   (e) None of These

5. Aravind takes rest on which of the following days?
   (a) Thursday (b) Tuesday
   (c) Saturday (d) Sunday
   (e) None of These

Solutions for Q1 to Q5: From the given information, the combinations of person-game-rest day are as follows.

REST DAY	PERSON	GAME
MONDAY	BALU	HOCKEY
TUESDAY	EDWARD	BASEBALL
WEDNESDAY	CALVIN	FOOTBALL
THURSDAY	GURU	JAVELIN
FIRDAY	FAHAD	KARATE
SATURDAY	ARAVIND	RUGBY
SUNDAY	DAVID	TENNIS

1. Ans: [d]
   Aravind

2. Ans: [d]
   Aravind

3. Ans: [a]
   Baseball

4. Ans: [d]
   David-Tennis-Sunday

5. Ans: [c]
   Saturday

PRACTICE EXERCISE

Directions for Q1 to Q5: Study the following information carefully to answer the given questions.

Eleven students, A, B, C, D, E, F, G, H, I, J and K are sitting in the first row of the class facing the teacher.

(i) D who is to the immediate left of F is second to the right of C.
(ii) A is the second to the right of E, who is at one of the ends.
(iii) J is the immediate neighbour of A and B and third to the left of G.
(iv) H is to the immediate left of D and third to the right of I.

1. Who is sitting in the middle of the row?
   (a) B (b) C (c) I (d) G

2. Which of the following statements is true in the context of the above seating arrangements?
   (a) There are three students sitting between D and G.
   (b) K is between A and J.
   (c) B is sitting between J and I.
   (d) G and C are neighbours sitting to the immediate right of H.

3. Which of the following group is sitting to the right of G?
   (a) CHDE (b) CHDF (c) IBJA (d) ICHDF

4. In the above seating arrangement, which of the following statements is superfluous?
   (a) (i) (b) (iv) (c) (ii) (d) None

5. If E and D, C and B, A and H and K and F interchange their positions, which of the following pairs of students is sitting at the ends?
   (a) D and E (b) D and K
   (c) D and A (d) K and F

Directions for Q6 to Q10: Study the following information carefully to answer the given questions.

Eight people P, Q, R, S, T, U, V and W are sitting in a row of chairs facing South. Each of them is drinking a different beverage – Tea, Coffee, Juice, Mineral Water, Lemonade, Cola, Coconut Water and Milk, but not necessarily in the same order. Q is sitting second to the left of U. The person drinking milk is an immediate neighbour of U. Only one person sits between the person drinking mineral water and P. The person drinking coffee is on the immediate right of the person drinking mineral water. W is second to the right of U. S is drinking milk. R and T are immediate neighbours. Neither R nor T is drinking mineral water. The person drinking lemonade is on the immediate left of Q. The person drinking cola is at the extreme East. The person drinking coffee is second at the extreme West. The person drinking coconut water is an immediate neighbour of the person drinking mineral water. R is in the sixth position to the left of the person drinking tea at the extreme West.

6. Who is second to the left of P?
   (a) Q (b) V (c) S (d) T

7. What is the position of V with respect to the person drinking milk?
   (a) Second to the right (b) Second to the left
   (c) Third to the right (d) Third to the left

8. Who among the following is drinking coconut water?
   (a) Q (b) U (c) V (d) W

9. Three of the following four are alike in a certain way based on the given arrangement and hence form a group. Which of the following does not belong to the group?
   (a) Mineral water-T (b) Cola-U
   (c) Lemonade-V (d) Tea-S

10. Which of the following person is drinking tea?
    (a) P (b) R (c) V (d) T and S

Directions for Q11 to Q15: Study the following information carefully to answer the given questions.

Seven friends Kiran, Mahesh, Rajesh, Abhi, Ganesh, Prasad and Parveen are sitting in a circle. Kiran, Mahesh, Rajesh, Abhi, Prasad and Parveen are sitting at equal distances from one another. Rajesh is sitting after two places right of Prasad, who is sitting one place right of Abhi. Kiran forms an angle of 90 degrees from Ganesh and an angle of 120 degrees from Mahesh. Mahesh is just opposite Parveen and is sitting on the left of Ganesh.

11. Who is the only person sitting between Rajesh and Mahesh?
    (a) Prasad (b) Abhi (c) Ganesh (d) Kiran

12. Ganesh is not sitting at equal distance from
    (a) Mahesh & Prasad (b) Abhi & Kiran
    (c) Rajesh & Prasad (d) All of the above

13. Ganesh is sitting ..... of Parveen.
(a) to the left (b) two places right
(c) to the right (d) three places left

14. The angle between Ganesh and Mahesh in the clockwise direction is
(a) 30 degree (b) 210 degree
(c) 180 degree (d) 90 degree

15. Which of the following statements is not correct?
(a) Prasad is between Mahesh and Kiran.
(b) Mahesh is two places away from Parveen.
(c) Ganesh is sitting opposite to Prasad.
(d) All the above

Directions for Q16 to Q20: Study the following information carefully to answer the given questions.

Eight friends M, N, O, P, U, V, W and X are sitting in two circles in such a manner that each member of the inner circle sits exactly opposite to the member of the outer circle. The members sitting in the outer circle are U, V, W and X and all of them are facing towards the centre while the members of the inner circle are M, N, O and P and they are facing away from the centre. Each of them likes a different colour, viz Red, Yellow, Blue, Green, White, Black, Orange and Purple, but-not necessarily in the same order.

P likes neither Yellow nor White and faces W, who likes neither Black nor Purple. The person who likes Orange faces the person who likes Red. M, who likes Green, faces the immediate neighbor of the person who likes Blue.

W sits second to the left of X. The persons who like White and Red are in separate circles. The person who likes Black sits on the immediate left of X. V, who does not like Blue, does not face M.

The persons who likes Black and Purple are immediate neighbors, and one of them faces N, who likes Yellow. The persons who like Orange and Green sit in the same circle but they are not immediate neighbors.

16. Which of the following colours does U like?
(a) Red (b) Purple (c) Blue (d) Green

17. Who among the following likes White?
(a) M (b) O (c) V (d) W

18. Who among the following does V face?
(a) The one who likes Yellow
(b) The one who likes Blue
(c) The one who likes Green
(d) The one who likes Orange

19. In a certain way if 'M' is related to 'Green' and 'P' is related to 'Orange', then which of the following is 'N' related to?
(a) Yellow (b) Purple
(c) Blue (d) Cannot be determined

20. Three of the following four are alike in a certain way and hence form a group. Which is the one that does not belong to that group?
(a) Blue (b) White (c) Purple (d) Black

Directions for Q21 to Q25: Study the following information carefully to answer the given questions.

Eight friends Akil, Bima, Ezhil, Kaviya, Manoj, Jai, Kamal and Lalitha are sitting around a circular table facing the centre. All of them have a different profession Teacher, Engineer, Doctor, Advocate, Journalist, Judge, HR and Manager but not necessarily in the same order. Jai is third to the right of Kaviya, who is not HR and Manager. The one who is Judge is an immediate neighbour of Kamal and Ezhil. The one who is HR is second to the left of Jai, who is Advocate. The one who is Manager is opposite to Jai. Lalitha is not an immediate neighbour of either Ezhil or Jai but is third to the right of Bima. The persons who are Judge and Doctor sit opposite to each other. Lalitha is an Engineer. The one who is HR sits third to the left of the Doctor. The one who is Teacher and the one who is Manager are immediate neighbours. Akil is not a Teacher. Manoj is second to the right of Akil, who is an immediate neighbour of Jai and Lalitha.

21. Which of the following is the profession of Bima?
(a) Engineer (b) Journalist
(c) HR (d) Doctor

22. Who among the following is HR?
(a) Ezhil (b) Kamal
(c) Lalitha (d) Either Ezhil or Kamal

23. If Kamal is third to the right of Manoj, then who among the following is immediate left of Bima?
(a) Jai (b) Manoj (c) Ezhil (d) Kamal

24. Which of the following combinations is true?
(a) Bima-Judge (b) Manoj-Advocate
(c) Akil-Engineer (d) Kaviya-Judge

25. Who sits between the Journalist and the Doctor?
(a) Advocate (b) Engineer
(c) Judge (d) Manager

Directions for Q26 to Q30: Study the following information carefully to answer the given questions.

12 People are sitting in 2 parallel rows containing 6 people each in such a way that there is an equal distance between adjacent persons. In row 1 – P, Q, R, S, T and V are seated and all of them are facing South. In row 2 – A, B, C, D, E and F are seated and all of them are facing North. A sits 3rd to right of D. Neither A nor D sits at extreme ends. T faces D. V does not face A and V does not sit at any of the extreme ends. V is not an immediate neighbor of T. B sits at one of the extreme ends. Only 2 people sit between B and E. E does not face V. 2 persons sit between R and Q. R is not an immediate neighbor of T. C does not face V. P is not an immediate neighbor of R.

26. Who among the following sits at extreme ends of the rows?
(a) C, A (b) P, R (c) C, B (d) Both B and C

27. How many persons are seated between T and S?
(a) 1 (b) 2 (c) 3 (d) More than 3

28. Who among the following faces D?
(a) P (b) Q (c) T (d) S

29. Who among the following sits between Q and S?
(a) V (b) R (c) P (d) T

30. Which of the following statements is not true?
(a) Q sits between T and V.
(b) E is an immediate neighbour of D and F.
(c) F is immediate left of A.
(d) 2 people sit between T and R.

Directions for Q31 to Q33: Study the following information carefully to answer the given questions.

A group of 6 coffee house owners in the city decide to arrange weekly meets in order to devise a strategy to grow together. They decide to meet for six days a particular week, Monday to Saturday. Every day, they meet at one of the 6 coffee houses in the city. Each day, they select a coffee house of one particular owner. There are three male owners, A, B and C and three female owners. D, E and F. They decide to meet keeping in mind the following.

1. Men and women will alternately get to select a coffee house.
2. They will meet at the E's coffee house before they meet at C's coffee house.
3. They meet at A's coffee house before they meet at F's coffee house.
4. They meet at D's coffee house on Monday, and B's coffee house on Tuesday.

31. Each of the following be true except,
(a) the owners meet at E's coffee house on Wednesday
(b) the owners meet at F's coffee house on Friday
(c) the owner's meet at A's coffee house on Thursday
(d) the owner's meet at A's coffee house later than they meet at C's coffee house

32. On Thursday, the owners meet at the coffee house of
(a) A (b) E (c) F (d) C

33. F's coffee house is used on
(a) Thursday (b) Friday
(c) Wednesday (d) Saturday

Directions for Q34 to Q37: Study the following information carefully to answer the given questions.

In a Public Sector Undertaking Township, there are five executives – Ambrish, Amit, Rohit, Manu and Tarun and they stay in flats, numbered 1 to 5.

1. Two of them play Cricket while the other three play different games viz. Football, Tennis and Chess.
2. One Cricket player and a Chess player stay in the third flat, whereas the other three stay in different flats, i.e. 2nd, 4th and 5th.
3. Two of these five players are mechanical engineers while the other three are quality inspector, design engineer, and power engineer respectively.
4. The chess player is the oldest in age while one of the cricket players, who plays at the national level, is the youngest in age.
5. The age of the other cricket player, who plays at the regional level, lies between the football player and the chess player.
6. Manu is a regional level player and stays in the 3rd flat while Tarun is a quality inspector and stays in the 5th flat.
7. The football player is a design engineer and stays in the 2nd flat.
8. Amit is a power engineer and plays Chess while Ambrish is the mechanical engineer and plays Cricket at the national level.

34. Who stays in the 4th flat?
(a) Ambrish (b) Amit
(c) Rohit (d) Manu

35. Which sport does Tarun play?
(a) Chess (b) Foot ball
(c) Cricket (d) Tennis

36. Who plays football?
(a) Ambrish (b) Amit
(c) Rohit (d) Manu

37. Who stay in the same flat?
(a) Ambrish and Amit (b) Manu and Tarun
(c) Amit and Manu (d) Rohit and Tarun

Directions for Q38 to Q40: Study the following information carefully to answer the given questions.

There are 7 family members A, B, C, D, E, F and G are sitting in a row facing North. There are 3 couples in the family. A is on the immediate right of his mother-in-law. C has 2 children. F sits second to the left of his father E who is third to the right of D, who is second to the right of B.

The one who is wife of C does not sit on the extreme ends of the row. D is daughter of B, who is wife of C. The one who is wife of E sits at an extreme end of the row. E is brother-in-law of D. F is the nephew of A.

38. Who among the following sits third to the left of C?
(a) A (b) B (c) C (d) D

39. Who among the following sits second to the right of B?
(a) A (b) B (c) C (d) D

40. How is D related to F?
(a) Mother (b) Sister
(c) Sister in law (d) Daughter

BLOOD RELATIONS

This topic involves an analysis of certain blood relations and then deriving inferences on the basis of the given information. Here, the relationship can be divided into two main categories, namely Maternal and Paternal.

The relations on the mother's side are called Maternal while the relations on the father's side are called Paternal.

Relations on Paternal side:

1. Father's father → Grandfather
2. Father's mother → Grandmother
3. Father's brother → Uncle
4. Father's sister → Aunt
5. Children of uncle/aunt → Cousins
6. Wife of uncle → Aunt
7. Husband of aunt → Uncle

Relations on Maternal side:

1. Mother's father → Maternal grandfather
2. Mother's mother → Maternal grandmother
3. Mother's brother → Maternal uncle
4. Mother's sister → Aunt
5. Children of maternal uncle/aunt → Cousins
6. Wife of maternal uncle → Maternal aunt
7. Husband of maternal aunt → Maternal uncle

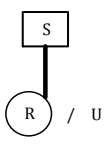
Other relations

1. Sibling's children → niece(girl)/nephew(boy)
2. Spouse's siblings → brother-in-law/sister-in-law
3. Sibling's spouse → brother-in-law/sister-in-law

EXAMPLES

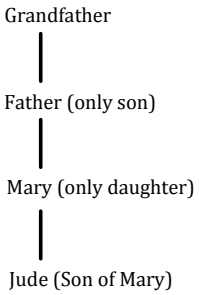
1. Pointing out to a woman, a man said, "She is my nephew's maternal grandmother." How is the woman related to the man's sister who has no other sister?
   (a) Cousin (b) Sister-in-law
   (c) Mother (d) Mother-in-law
   Ans: [c]
   Clearly, the woman is the grandmother of man's sister's son i.e., the mother of the mother of man's sister's son i.e., the mother of man's sister.

2. R and U are two children of S. The father of U is S but S's son is not R. How is R related to S?
   (a) Niece (b) Daughter (c) Son (d) Sister
   Ans: [b]



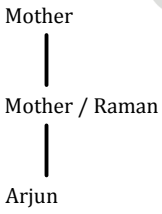
   R is not the son of S. So, R is the daughter of S.

3. Mary pointing to a boy in a photograph says, "Jude is the son of the only daughter of the only son of my father's father." How is the Mary related to the Jude?
   (a) Daughter (b) Sister
   (c) Cousin (d) None of these
   Ans: [d]



   So, Mary is the mother of Jude.

4. Raman says that the mother of Arjun is the only daughter of Raman's mother. How is Arjun related to Raman's mother?
   (a) Grandson (b) Son
   (c) Nephew (d) Maternal grandson
   Ans: [d]



5. If P * Q means P is the mother of Q: P × Q means P is the husband of Q', then which of the following will show that 'P is the father of Q'?
   (a) Q * M × P (b) Q * P
   (c) P × M * Q (d) P * Q
   Ans: [c]
   P × M means P is the husband of M.
   M * Q means M is the mother of Q.
   Therefore P × M * Q means P is the father of Q.

PRACTICE EXERCISE

1. If A + B means A is the mother of B; A x B means A is the father of B; A $ B means A is the brother of B and A @ B means A is the sister of B then which of the following means P is the son of Q?
   (a) Q + R @ P @ N (b) Q + R * P @ N
   (c) Q x R $ P @ N (d) Q x R $ P $ N

2. A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the mother of D. There is only one daughter to the husband of E. what is the relation between D and B?
   (a) Brother (b) Cousin (c) Uncle (d) Father

3. Pointing to a photograph, Rekha says to Lalli, "The girl in the photo is the second daughter of the wife of only son of the grandmother of my younger sister." How this girl of photograph is related to Rekha?
(a) Cousin (b) Sister (c) Niece (d) Mother

4. Pointing to a photograph Arun said, 'She is the mother of my brother's son's wife's daughter.' How is Arun related to the lady?
(a) Uncle (b) Daughter-in-law
(c) Cousin (d) None of these

5. Pointing to a photograph of a boy Suresh said, "He is the son of the only son of my mother. "How is Suresh related to that boy?
(a) Brother (b) Uncle
(c) Cousin (d) Father

6. Pointing to a photograph Lata says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Lata?
(a) Brother (b) Uncle
(c) Cousin (d) Data inadequate

7. Pointing to a photograph Bajpai said, "He is the son of the only daughter of the father of my brother." How Bajpai is related to the man in the photograph?
(a) Nephew (b) Brother
(c) Father (d) Maternal Uncle

8. Pointing to a photograph X said to his friend Y, "She is the only daughter of the father of my mother." How X is related to the person in the photograph?
(a) Daughter (b) Son
(c) Nephew (d) Cannot be determined

9. If A + B means A is the mother of B; A – B means A is the brother of B; A % B means A is the father of B and A x B means A is the sister of B, which of the following shows that P is the maternal uncle of Q?
(a) Q – N + M x P (b) P + S x N – Q
(c) P – M + N x Q (d) Q – S % P

10. If A is the brother of B; B is the sister of C; and C is the father of D, how is D related to A?
(a) Brother (b) Sister
(c) Nephew (d) Cannot be determined

11. If A + B means A is the brother of B; A – B means A is the sister of B and A x B means A is the father of B. Which of the following means that C is the son of M?
(a) M – N x C + F (b) F – C + N x M
(c) N + M – F x C (d) M x N – C + F

12. Introducing a boy, a girl said, "He is the son of the daughter of the father of my uncle." How is the boy related to the girl?
(a) Brother (b) Nephew
(c) Uncle (d) Son in law

13. If D is the brother of B, how is B related to C?
To answer this question which of the statements is/are necessary?
1. The son of D is the grandson of C.
2. B is the sister of D.
(a) Only 1 (b) Only 2
(c) Either 1 or 2 (d) Both 1 and 2 are required

14. I am only son for my parents. The man in the picture is my father's son. Who is he?
(a) He Himself (b) Father
(c) Brother (d) None of these

15. If A + B means A is the sister of B; A x B means A is the wife of B, A % B means A is the father of B and A – B means A is the brother of B. Which of the following means T is the daughter of P?
(a) P x Q % R + S – T (b) P x Q % R – T + S
(c) P x Q % R + T – S (d) P x Q % R + S + T

16. Pointing to a woman, Abhijit said, "Her granddaughter is the only daughter of my brother." How is the woman related to Abhijit?
(a) Sister (b) Grandmother
(c) Mother-in-law (d) Mother

17. Amit said – "This girl is the wife of the grandson of my mother". How is Amit related to the girl?
(a) Father (b) Grandfather
(c) Husband (d) Father-in-law

18. A and B are children of D. Who is the father of A?
To answer this question which of the statements from (1) and (2) is necessary?
1. C is the brother of A and the son of E.
2. F is the mother B.
(a) Only 1
(b) Only 2
(c) Either 1 or 2
(d) Both 1 and 2 are required

19. Pointing towards a man, a woman said, "His mother is the only daughter of my mother." How is the woman related to the man?
(a) Mother (b) Grandmother
(c) Sister (d) Daughter

20. If P $ Q means P is the brother of Q;
P # Q means P is the mother of Q;
P * Q means P is the daughter of Q;
in A # B $ C * D, who is the father?
(a) D (b) B
(c) C (d) Data inadequate