Blood Relations

Concepts: In Blood Relation problems, information is provided about people and their relations using which the reasoning has to be done. Blood relation problems can be categorized into few types which we will learn as a part of this topic but before doing so there are few concepts in Blood Relation problems that need to be understood.

1. A family tree is always drawn vertical with people in the same generation been shown at the same level.
2. In Blood relation problems, the gender of a person cannot be arrived at using the name, it has to be reasoned out.
3. In the English language, Uncle could mean any of the following:

a. Father's brother : elder or younger

b. Mother's brother : elder or younger

c. Father's sister's husband : elder or younger

d. Mother's sister's husband : elder or younger

The same will be true for the relation aunt also.

4. The differentiating factor is that relations from the Father's side are called Paternal and relations from the Mother's side are called Maternal. Ex. Maternal Grandfather would mean Mother's Father.
5. In Blood Relation problems, a couple would mean 2 people of the opposite gender married to each other.
6. Husband and Wife are called Spouse of each other. In the informal language, they are also called as better half of each other.
7. Children of the same parents are called siblings. We need to understand that the word siblings can be used in different ways:

a. If someone says, "we are 3 siblings, it indicates that there are 3 children including the speaker."

b. If someone says, "I have 3 siblings, it means that the speaker has in all 3 brothers or sisters combined making a total of 4 children.

8. An unmarried man is called a Bachelor while an unmarried woman is called a Spinster.

9. A woman who has lost her husband is called a widow while a man who has lost his wife is called a widower.

10. All relations due to marriage to someone are called relations-in-law. For example Brother-in-law can mean someone's sister's husband or for a man it could also mean wife's brother.

11. While children of the same parents are called siblings as indicated in the details above, a child one of whose parents is a sibling of one of the parents of another child will be called as cousins of each other.

12. In Blood relation problems, it is important to understand the question from the reference point of view.

As an example, let us say that A is the Father of B and the brother of C. Also, C is the Mother of D. Now let us look at the following questions:

Q1 : How is C related to B?

The answer would be Aunt because C is the Sister of B's Father A.

Q2 : How is B related to C?

Please understand that Question 2 is asking the relation of B with C and is therefore different from Question 1 above. Also, we do not know the gender of B and so B could be either the Nephew or Neice of C. The correct answer to Question 2 will be Cannot be Determined.

Q3 : How is B related to D?

Answer will be Cousin as the word Cousin does not require to specify the Gender.

Types of Problems in Blood Relations:

Type 1 : The first type of problem is in the form of a set of information that needs to be compiled and then the questions answered. This type will usually have 3 to 4 questions to be answered as per the given data.

Type 2 : The 2nd type of questions are those asked as stand alone ones about a person looking at a photograph of another person and expressing the relation between them in words.

Example : Looking at the photograph of a boy a man said, "His Father's Mother's only son is the Father-in-law of my wife". How is the boy in the photograph related to the man.

In such questions, the right strategy is to either start with reference to the person speaking or about whom the person is speaking. Both are used in answering the questions depending on the ease of using any one of them.

In many questions, we also use the strategy of starting from either ends and then joining the data to get to the required answer.

Let us try to attempt the given example.
The boy's father's mother's only son is the boy's father. The man says that the boy's father is the father-in-law of his wife ie the boy's father must also be his father. Now the tricky part. The answer to the question will depend on whether the man in question who is the speaker has any brother or not. If he does not have any brother, then the boy in the photograph is the man himself which can be possible or the boy in the photograph could be the man's brother.

The correct answer to the question using the given data will be cannot be determined.
Type 3 : The 3rd type of questions are those where relations are expressed using Mathematical symbols for example A+B means A is the brother of B, A-B means A is the Father of B and so on.

Example : If A+B means A is the Father of B and BxC means B is the sister of C, then which among the following is definitely true?

a. C is the brother of B.
b. C is the daughter of A.
c. A is the Father of C.
d. None of These.

In the question given, we do not know the gender of C and therefore both options (a) as well as option (b) cannot be said to be definitely true but irrespective of the gender, A has to be the Father of C.

Correct answer is Option (c).

We will look at all the all the 3 types in our exercise.

Blood Relations Sets Based

Practice Exercise : Level 1

Set 1 : There are 6 people A,B,C,D,E and F in a family. There are 2 married couples. Further information is as follows:

1. A is the Grandson of D and the brother of F.
2. C is the daughter-in-law of E.
3. E is the Grandfather of F.

Q1 : How is D related to C?

a. Mother b. Sister c. Mother-in-law d. Cannot be Determined

Q2 : How many male members are there in the family?

a. 3 b. 4 c. 5 d. Cannot be Determined

Q3 : Which among the following is a pair of siblings?

a. A-E c. D-E c. A-F d. None of These

Q4 : How is F related to B?

a. Son c. Daughter c. Nephew d. Cannot be Determined

Q5 : If there is another member G who is the brother of D, how is B related to G?

a. Nephew c. Neice c. Uncle d. Cannot be Determined

Set 2 : In a family there are 6 people P,Q,R,S,T and U. The family consists of P, his married son, daughter-in-law, unmarried son, grand-daughter and unmarried daughter. Further information is as follows:

1. U's sister-in-law is unhappy with her but her brother-in-law Q supports her.

2. R has a good relationship with his Father.
3. T spends time playing with her aunt.

Q6 : Who is the sister-in-law of S?

a. T b. U c. R d. Cannot be Determined

Q7 : How is T related to Q?

a. Sister b. Neice c. Daughter d. None of These

Q8 : Who could have said this to whom, "I am the sister of the husband of your Mother" ?

a. T to S
b. S to Q
c. S to P
d. S to T

Q9 : How many female members are there in the family?

a. 3 b. 4 c. 5 d. Cannot be Determined

Q10 : Which among the following is not a pair of siblings?

a. Q and R b. S and Q c. S and T d. S and R

Set 3 : 8 people A,B,C,D,E,F,G and H are playing a game sitting across a circular table. There are 4 pairs of couples A-E, B-F, C-G and D-H among them. Also, A and B are siblings and C and H are also siblings. Further information is as follows:

1. No person sits adjacent to a spouse or sibling.
2. While A is sitting opposite to H, B is sitting opposite to D.
3. H is 2nd to the left of D.
4. C is sitting to the immediate left of A.

Q11 : Who is the person sitting opposite to G?

a. C b. F c. E d. H

Q12 : Which of the following is true about the position of E?

a. To the immediate right of H.

b. 2nd to the left of G.

c. 3rd to the right of A.

d. None of These

Q13 : What is the maximum position separating a couple?

a. 1 b. 2 c. 3 d. Cannot be Determined

Q14 : Which person is 3rd to the left of A?

a. F b. D c. E d. B

Q15 : Which among the following is definitely false about the position of B?

a. 2nd to the right of A.

b. 3rd to the left of his spouse.

c. To the immediate right of E.

d. 3rd to the right of C.

Blood Relations : Other Types of Problems

Practice Exercise : Level 1

Q1 : Pointing to the photograph of a lady, a man said, "She is the wife of the Father-in-Law of my wife". How is the man's son related to the lady in the photograph?

a. Son b. Grandson c. Brother d. None of These

Q2 : If Alok is the brother of the daughter of Reena's son, then how is Alok related to the daughter of Reena's Husband?

a. Nephew b. Son c. Grandson d. Cannot be Determined

Q3 : A is the Father of B's sister C. D is the daughter of B's wife and E is the son of C. How is D related to E?

a. Sister b. Sibling c. Cousin d. Cannot be Determined

Q4 : Pointing to a boy, a lady said to a man, "He is the brother of my daughter's sister and I am the sister of your daughter". How is the man related to the boy's sister?

a. Father b. Uncle c. Brother d. Grandfather

Q5 : Aisha and Rahul are siblings. Mohan is the son-in-law of Aisha's father and Shanti is the daughter of Rahul's sister. How is Shanti related to Aisha's husband?

a. Daughter b. Neice c. Sister d. Cannot be Determined

Q6 : Pointing to the photograph of a man, a man said to a boy, "His Father is the Grandfather of my sister and his sister is the wife of my Father". How is the man in the photograph related to the other man's sister?

a. Grandfather b. Uncle c. Father d. Cannot be Determined

Directions for Questions 7-10:

A+B means A is the Brother of B

AxB means A is the Husband of B

A-B means A is the daughter of B

A/B means A is the wife of B.

Q7 : What does the relation P-QxR mean?

a. R is the Mother of P

b. R is the sister of P.

c. R is the Father of P.

d. None of These

Q8 : What does the relation P/Q+R-S mean?

a. S is the Father-in-law of P.

b. R is the brother-in-law of P.

c. S is the Mother of Q.

d. P is the daughter-in-law of S.

Q9 : How will we depict the relation Q is the sister-in-law of R?

a. Q+P-R/S

b. Q/P+R-S

c. Q+P+R/S

d. None of These

Q10 : How will the relation "A is the daughter-in-law of B" be depicted?

a. A/C+D-B

b. A+C+D-B

c. A-B+C-D

d. None of These

Grouping or Condition Based

Concept : In this category of problems, a set of conditions is given on the basis of which teams or groups are to be formed.

Important : Since the number of teams or groups that can be formed can be substantial, our approach to these type of problems is the reverse of what we have learnt in arrangement based problems.

In arrangement based problems done earlier (whether deterministic or non-deterministic), we would first solve the problem to whatever extent possible and then try and answer the questions asked. In a Grouping or Condition based problem, we would take the general conditions given alongwith the additional conditions and do it question by question.

It is equally important to understand the conditions given. Let us try to look at the differences.

Example 1 : A will be in the Team only if B is also selected. The given statement means that if A is in the Team, then B has to be definitely a part of the team but if B is in the Team, A may or may not be in the team.

Example 2 : C and D will always be selected together. This means that either both C and D will be selected or none of them will get selected.

Example 3 : Exactly one from E and F will get selected. This would mean if E is selected, then F will not get selected and if F is selected, E will not get selected.

Example 4 : At least one of G and H will be a part of the team. This means the team will either have exactly one of G or H or the team will have both G and H.

Grouping or Condition Based

Practice Exercise : Level 1

Set 1 : A chef is preparing sauces using 8 different ingredients-H,J,K,L,M,N,O and P. According to the recipes, the following requirements apply to the use of ingredients:

1. If J is used, both K and P must be used.
2. M and N must always be used together.
3. If K is used, at least 2 from H,J,O must also be used.
4. K and N cannot be used together.
5. M,O and P cannot all be used in the same dish.
6. H,L and P cannot all be used in the same dish.

Q1 : Which of the following is an acceptable combination of ingredients for a sauce?

a. H,J,K,O b. H,L,M,P c. L,M,N,P d. K,L,M,O

Q2 : In a sauce in which J is used, what is the minimum number of additional ingredients that would meet recipe requirements?

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

Q3 : Which ingredient must be omitted from the combination H,J,K,L,P to meet the recipe requirements?

a. H b. J c. K d. L

Q4 : Exactly how many of the 8 ingredients mentioned can be used as the only ingredient of a sauce?

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

Q5 : Which of the following cannot be included in a sauce that contains M?

a. H b. L c. N d. J

Set 2 : K,L,M,N,P,Q,R,S,U and W are the only 10 members in a department. There is a proposal to form a team from within the members of the department, subject to the following conditions:

1. A team must include exactly one from P,R,S.
2. A team must include either M or Q but not both.
3. If a team includes K, then it must also include L and vice versa.
4. If a team includes one from S,U,W, then it must also include the other two.
5. L and N cannot be members of the same team.
6. L and U cannot be members of the same team.

The size of a team is defined as the number of members in the team.

Q6 : Who cannot be a member of a team of size 3?

a. L b.M c. N d. P

Q7 : Who cannot be a member of a team of size 5?

a. K b. L c. M d. P

Q8 : What would be the size of the largest possible team?

a. 8 b. 7 c. 6 d. 5

Q9 : What could be the size of a team that includes K?

a. 2 or 3 b. 2 or 4 c. 3 or 4 d. only 4

Q10 : In how many ways can a team be constituted so that the team includes N?

a. 6 b. 3 c. 4 d. 5

Set 3 : A Farmer plants exactly 5 different vegetables ie Beans, Carrot, Karela, Peas and Spinach. Every year, exactly 3 kinds of vegetables are planted under the following conditions:

1. If Carrot is planted, he also plants Beans that year.
2. If he plants Karela one year, it is not planted next year.

3. In any year, the farmer plants not more than one of the vegetables planted in the previous year.

Q11 : If the farmer plants Beans, Carrot, Peas one year, which of the following can be planted next year?

a. Carrot, Karela, Peas
b. Karela, Peas, Spinach
c. Beans, Carrot and Spinach.
d. Beans, Carrot and Karela.

Q12 : Which of the following is a possible sequence for the farmer to plant in two successive years?

a. Beans, Carrot, Karela ; Carrot, Peas, Spinach
b. Beans, Carrot, Peas; Beans, Carrot, Spinach
c. Beans, Peas, Spinach; Beans, Carrot, Karela
d. Carrot, Peas, Spinach; Beans, Karela, Peas.

Q13 : If the farmer plants Beans, Carrot and Peas in one year and Peas in the second year, which of the following must be planted in the second year?

I. Beans II. Carrot III. Karela IV. Spinach

a. I and II b. III and IV c. II and III d. II and IV

Q14 : Which of the following is/are true?

I. The farmer must plant each vegetable at least once in any two year period.
II. Every year after the first year, he must plant exactly one of the vegetables planted in the previous year.
III. The farmer never plants the same vegetable in three successive years.

a. Only I b. Only II c. Only III d. Both I and II

Q15 : If the farmer plants Beans, Carrot and Karela in the first year, which of the following must be planted in the 3rd year?

a. Beans, Carrot, Karela
b. Beans, Carrot, Peas.

c. Beans, Karela, Peas.

d. Beans, Peas, Spinach.