DATA SUFFICIENCY AND DFD (DATA FLOW DIGRAM)

- This topic covers most of the topics of reasoning i.e., alphabetical series, coding and decoding, blood relation, direction, ranking etc.
- In data sufficiency, we don't have to find the answer rather we have to analyze the given data and decide whether the given data is sufficient to find an answer or not.
- There are four different cases in data sufficiency:
  - Relationship
  - Dates
  - Comparison
  - Age

Relationships

- This is a typical type of question. The wording is like – How is P related to X?.
- So in this type of cases the confusion is that the students need to judge the relationship without knowing the gender of the persons.
- So, to know how P is related to X, you have to analyse gender of P. This information can be given directly as P is a male/female or indirectly as the following"
  - P is a brother/sister of (say) X.
  - P is the father/mother of (say) X.

Example:

X is the brother of Y and X is the brother of Z. How are Y and Z related?

Solution:

Since X is brother of both Y and Z, it means Y and Z are also brothers or sisters. So, we must know their sex to know who is the brother and who is the sister or both are brothers or both are sisters.

Dates

- Questions asked on Dates are like this - On which day of the week did X reach Agra? or what is date of birth of X?
- In such type of questions, you have to determine a day or a date. In such cases, the data will provide you some knowledge of previous day or date.
- So, a day or a date can be determined if and only if:
  - The day or date of some earlier incident is mentioned.
  - The number of days between that incident and required day is given.
- If one of the above information is missing then data will be insufficient.

Example:

What is the date of birth of Remo? (Assume the memories of Rani and Swapnil are correct.)

a) Rani remembers that Remo's date of birth is between 17th June and 21st June.

b) Swapnil says that Remo's date of birth is after 19th June but before 23rd June.

Solution:

From statement a, we conclude that the possible answers are 18th June, 19th June and 20th June. From statement b we conclude that 18th and 19th June are ruled out. So, 20th June must be the answer.

Comparison

- In this method, the wording of question is, who is the tallest among X, Y and Z? or who is sitting to the left of A when A, B and C are sitting together?
- In these questions, you have to write the name of various persons in ascending or descending order. You have to make comparisons between respective places, heights etc. in a fixed pattern or order.
- To solve this type of question, it is best way to write the data given in the two statements in the form of inequalities and then see if the two can be combined into one single inequality to get the answer.
- Here inequality means not equal to. Statements like $A > B$ may imply A is burdensome than B or A is taller than B or A is sitting to left of B etc.

Example:

Among four friends A, B, C and D, who is the burdensome?

a) B is burdensome than A, but lighter than D.

b) C is lighter than B.

Solution:

Write statement 'a' as – $D>B>A$ Descending order for burdensome

Write statement 'b' as – $B>C$

Now these 2 can be combined as - $D>B>C>A$. So D is burdensome.

Figures

- A figure accompanying a data sufficiency question will confirm to the information given in the question but will not necessarily confirm to the additional information given in the statement.
- Lines those have shown as straight can be assumed to be straight and lines that appear jagged can also be assumed straight.
- Position of points, angles, regions etc. might be assumed.

NOTE – **When we talk of information in a statement, we mean definite information. It should not be indefinite information. What do we mean by definite and indefinite information? A definite information is that which gives exact relation.**

For example, "Suresh's age will be equal to 16 years after four years." is definite information while "Suresh will be less than 20 years old after 4 years" is not.

There are two types of questions in data sufficiency:

- Based on Two statement.
- Based on Three statement.

Based on two statements

Direction: In each of the questions below there is a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give the answer as under:

(1) If statement I alone is sufficient but statement II alone is not sufficient.

(2) If statement II alone is sufficient but the statement I alone is not sufficient.

(3) If each statement alone (either I or II) is sufficient.

(4) If statement I and II together are not sufficient.

(5) If both statements I and II together are sufficient, but neither statement alone is sufficient.

1. **Who scored highest among P, Q, R, S and T?**

    I. Q scored more than S, but not as much as R.

   II. T scored more than R, but not more than P.

   Correct Answer: (5)

   Explanation:

   According to the question:

   I.   R>Q>S
   II. P>T>R

   So, P>T>R>Q>S
   P scored the highest.
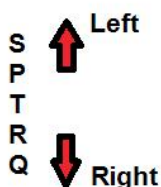   Therefore, to find the answer, both statements are required.

2. **Five friends P, Q, R, S and T are standing in a row facing east. Who is standing at the extreme left end?**

    I. R is between T and Q.

   II. Only P is between S and T. R is immediate to the right of T.

   Correct Answer: (5)

   Explanation:

   According to the question:

S is at the extreme left end.

Therefore, to find the answer, both statements are required.

3. **Mahima's flat is on which floor of the five floors apartment?**
   I. Her flat is exactly above Gita's flat whose flat is exactly above Nitin's first floor.
   II. Jayesh's flat which is adjacent to Mahima's flat which is exactly above Ahmed's flat who is on the second floor.

   Correct Answer: (3)

   Explanation:

   I. Mahima 3 floor, Gita 2 floor, Nitin - 1 floor
   II. Jayesh 4 floor, Mahima 3 floor, Ahmed 2 floor

   So, anyone statement is sufficient to give the answer.

4. **Which code word stands for 'good' in the coded sentence 'sin co bye' which means 'He is good'?**
   I. In the same code language, 'co mot det' means 'They are good'.
   II. In the same code language, 'sin mic bye' means 'He is honest'.

   Answer: (3)

   Explanation:

   In the given statement and I, the common word is 'good' and the common code word is 'co'. So, 'co' is the code for 'good'.

   In the given statement and II, the common words are 'He' and 'is' and the common codewords are 'sin' and 'bye'. So 'sin' and 'bye' are the codes for 'He' and 'is'.

   Thus, in the given statement, 'co' is the code for 'good'.

Based on three statements

Direction: In each of the following problems, there is one question and three statements I, II and III given below the question. You have to decide whether the data given in the statements are sufficient to answer the question. Read all the statements carefully and find which of the statements is/are sufficient to answer the given question. Choose the correct alternative in each question.

1. **What is Suman's rank from the top in a class of forty students?**
   I. Suman is 3 ranks below Deepak from the top.
   II. Deepak's rank from the bottom is 23.
   III. Suman is 3 ranks above Deepak from the bottom.

   1) Any two of the three
   2) Only I and II
   3) Only II and III
   4) All I, II and III
   5) Only II and either I or III

   Correct Answer: (5)

   Explanation:

   From II, we conclude that in a class of 40, Deepak ranks 23rd from the bottom i.e., 18th from the top.

   From I and II, we find that Suman is 3 ranks below 18th rank from the top i.e., she ranks 21st from the top.

   From II and III, we find that Suman is 3 ranks above 23rd rank from the bottom i.e. she ranks 20th from the bottom or 21st from the top.

2. **Five persons - A, B, C, D and E are sitting in a row. Who is sitting in the middle?**
   I. B is between E and C.
   II. B is to the right of E.
   III. D is between A and E.

   1) Only I and II
   2) Only II and III
   3) Only I and III
   4) All I, II and III
   5) None of these

   Correct Answer: (4)

   Explanation:

   From I, the order is: E, B, C or C, B, E

   From II, the order is: E, B

   From III, the order is: A, D, E

Combining the above three, we get the order as: A, D, E, B, C

Clearly, E is sitting in the middle.

3. **How is the girl in the photograph related to Kunal?**
   I.   Pointing to the photograph, Kunal said, "She is the mother of my father's only granddaughter".
   II. Kunal has no siblings.
   III. Pointing to the photograph, Kunal said, "She is the only daughter-in-law of my mother."

   1) Any two of the three
   2) Only I and II
   3) Only II and III
   4) Either only III or only I and II
   5) None of these

Correct Answer: (4)

Explanation:

From I, we conclude that the girl is either Kunal's or his brother's wife. But, according to II, Kunal has no siblings. So, from both I and II, we conclude that the girl is Kunal's wife.

From III, we find that the girl is the only daughter-in-law of Kunal's mother. But, according to II, Kunal has no siblings. So, from both III and II, we conclude that the girl is Kunal's wife.

DFT (Data Flow Chart)
- DFD represents a situation in the form of a flowchart (pictorial representation).
- A sequence of movements or actions of people or things involved in a complex system or activity will be indicated by a DFD.
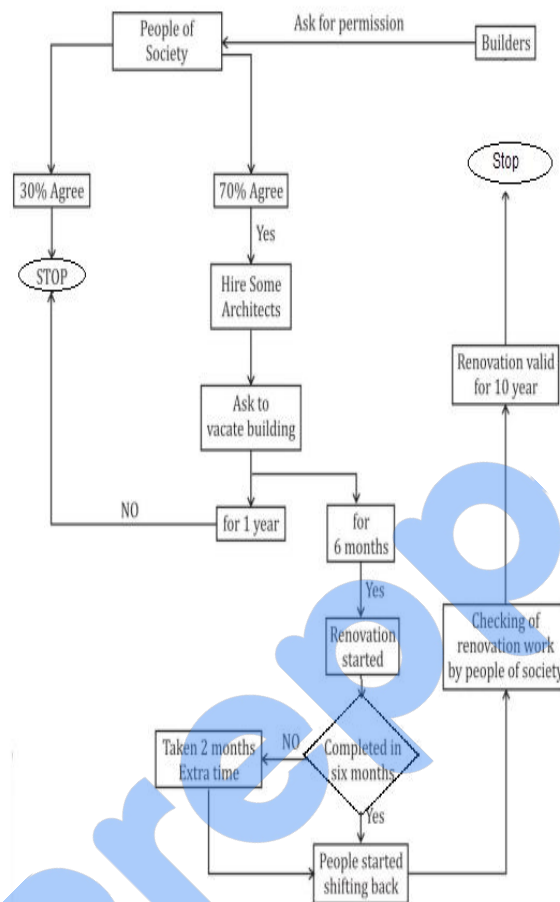
How to Solve DFD Questions?
- STEP 1 - View the DFD carefully and understand what it is implying. You should be 100% clear about the idea conveyed.
- STEP 2 - Now find for any secret or hidden information from the DFD.
- STEP 3 - Use logical ability to come to a reasonable conclusion.
- STEP 4 - Make sure that the conclusion you draw has been deciphered on the basis of the DFD only. Your own thoughts, ideas or perception are not to be taken into consideration.
- STEP 5 - Write the answer to the given DFD Questions.

DFD Questions: Significance of Shapes Used

Shapes have a significance in a DFD. If shapes are used in the exam, you should understand the meaning very clearly.

RECTANGLE	Rectangles signify specific instructions or actions.
DIAMOND	Diamonds signify where decisions need to be made.
ELONGATED CIRCLE	Elongated circles signify the beginning or end of a process.
PARALLELOGRAM	Parallelograms signify input and output. This can include materials, services or people.

Direction (Q1-Q5): Analyzing and deciphering the information/data is utmost important while solving these types of questions which are based on the following diagram. You have to study the given diagram and then answer the questions.

Q1. Which condition is sufficient to make sure that renovation work is valid for 10 years?
1) After the investigation by the people of the society.
2) After asking their neighbours.
3) After hiring required architects.
4) After taking 2 months extra time.
5) None of these

Correct Answer: 1

Q2. Builder asks for society to vacate their house for 1 year what is the reaction of people?
1) They all agree for renovation.
2) They do not agree for renovation.
3) People say that the architect will leave his work in the middle.
4) People are ready to vacate their house only for 3 months.
5) None of these

Correct Answer: 1

Q3. After/before which step Builder should have taken legal permission from concerned authority for renovation work?

1) After hiring required architects.
2) Before asking people of society to vacate their house.
3) After taking permission from people of society.
4) After asking people of society to vacate their house.
5) Cannot be determined.

Correct Answer: 3

Q4. Which condition is sufficient to make sure that renovation work will be completed in 6 months?

1) Concerned authority is regularly visiting renovation site for the cross-check of work.
2) Builders are planning to make renovation make valid for 15 years.
3) Data insufficient
4) People of society have given the ultimatum to builders to complete renovation in six months otherwise they will go on hunger strike.
5) None of these.

Correct Answer: 3

Q5. Which step of renovation is logically missing in Data flow diagram?

1) If only 30% people get agree for renovation then Builders should again try to convince people.
2) Builders should take legal permission from concerned authority for renovation.
3) To complete renovation Builder should take 3-4 time duration slot.
4) Before vacating house people should take suggestions from their relatives.
5) None of these.

Correct Answer: 2

Practice Questions:

1. In a state library, 10% of the books are added every year. What was the number of books that the library had in 1994?

I. During 1996, the library had 1, 00,000 books.

II. During 1995, 10,000 books were added.

A) If the detail in point I individually is adequate to answer the question while the detail in point II individually is not adequate to answer the question.

B) If the detail in point II individually is adequate to answer the question, while the detail in point I individually is not adequate to answer the question.

C) If the detail either in point I individually or in the point II individually is adequate to answer the question.

D) If the detail given in both the points together are not adequate to answer the question.

E) If the detail in both the points I and II together are needed to answer the question.

Answer: C

Explanation:

Both I and II individually are adequate to answer the question. Hence option C is the answer.

2. Ravi Yadav scored an aggregate of 80 marks in English, mathematics and computer. How much did he get in mathematics?

I. His aggregate in English and computer is 45.

II. He got 40 marks in computer.

A) If the detail in point I individually is adequate to answer the question while the detail in point II individually is not adequate to answer the question.

B) If the detail in point II individually is adequate to answer the question, while the detail in point I individually is not adequate to answer the question.

C) If the detail either in point I individually or in the point II individually is adequate to answer the question.

D) If the detail given in both the points together are not adequate to answer the question.

E) If the detail in both the points I and II together are needed to answer the question.

Answer: A

Explanation:

From point I we can get the marks in mathematics by subtracting total marks of all three subjects to the total marks in two subjects. But from II we can't get any answer. Hence option A is correct.

3. **The summation of ages of O, M, and N is 50 years. What is N's age?**

I. O is 30 years old.

II. N is 10 years bigger than M.

A) If the detail in point I individually is adequate to answer the question while the detail in point II individually is not adequate to answer the question.

B) If the detail in point II individually is adequate to answer the question, while the detail in point I individually is not adequate to answer the question.

C) If the detail either in point I individually or in the point II individually is adequate to answer the question.

D) If the detail given in both the points together are not adequate to answer the question.

E) If the detail in both the points I and II together are needed to answer the question.

Answer: E

Explanation:

Both I and II are necessary to answer the question. By subtracting O's age 30 years to 50, we get 20 years. Then from II comparing N's age and M's age we can get the answer. Hence option E is correct.

4. **Ravish, Anoop and Sandeep's wage is in the scale 4:5:7, respectively. How much is Anoop's wage?**

I. The difference between Anoop and Sandeep's wage is double that of Ravish and Anoop.

II. Anoop gets 4000 less than that of Sandeep.

A) If the detail in point I individually is adequate to answer the question while the detail in point II individually is not adequate to answer the question.

B) If the detail in point II individually is adequate to answer the question, while the detail in point I individually is not adequate to answer the question.

C) If the detail either in point I individually or in the point II individually is adequate to answer the question.

D) If the detail given in both the points together are not adequate to answer the question.

E) If the detail in both the points I and II together are needed to answer the question.

Answer - B

Explanation

By subtracting Anoop's wage and calculating with the scale given we can get the answer. Hence, option B is the correct answer.

5. What is the difference in the ages of P and L?

I. P is 20 years bigger than M.

II. M is 2 years lesser than Z.

A) If the detail in point I individually is adequate to answer the question while the detail in point II individually is not adequate to answer the question.

B) If the detail in point II individually is adequate to answer the question, while the detail in point I individually is not adequate to answer the question.

C) If the detail either in point I individually or in the point II individually is adequate to answer the question.

D) If the detail given in both the points together are not adequate to answer the question.

E) If the detail in both the points I and II together are needed to answer the question.

Answer: D

Explanation:

Detail given in I and II are not adequate to answer the questions. Hence, option D is the correct answer.