

# Logical Reasoning - II

## PROBLEM SOLVING

### Example

Directions (questions 1–4):: Read the information given below to answer the Question

- Mohan’s reading schedule consists of reading only subject on a given day of week.
- The subject are Physics, Chemistry, Mathematics, Biology, and Social Science.
- Monday to Saturday are reading days including
- one day only for play. Sunday is a complete holiday for Mohan.
- Mathematic day is neither on the first day on the last day but earlier than the chemistry day.
- Biology day is ob the immediate next day of chemistry day
- Physics day is on the immediate next previous day of the play day.
- Biology day and Social Science day have a gap of two days between them.
- Social Science day on the immediate next say of the play day.

1. Which of the following day is the play day ?

- (a) Monday (b) Tuesday  
(c) Wednesday (d) Thursday

2. Which of the following day is the play day ?

- (a) One (b) Two  
(c) Three (d) Four

3. Which day is Social Science day ?

- (a) Monday (b) Tuesday  
(c) Wednesday (d) Thursday

4. Which of the following is the correct statement?

- (a) Biology day is after Chemistry day  
(b) Physics day is on Wednesday

### Answer

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

### Example

**Directions (questions 1–5):** Read the information given below to answer the questions. A, B, C, D, E, F, G and H want to have a dinner on a round table and they have worked out the following seating arrangements.

- A will sit beside C.
- H will sit beside A.
- C will sit beside E.
- F will sit beside H.
- E will sit beside G.
- D will sit beside F.
- G will sit beside B.
- B will sit beside D.

1. Which of the following is wrong?

- (a) A will be to the immediate right of C  
(b) D will be to the immediate left of B  
(c) E will be to the immediate right of A  
(d) F will be to the immediate left of D

2. Which of the following is correct?

- (a) B will be to the immediate left of D  
(b) H will be to the immediate right of A  
(c) C will be to the immediate right of F  
(d) B will be to the immediate left of H

3. A and F will become neighbours if:

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- (a) B agrees to change her sitting position  
(b) C agrees to change her sitting position  
(c) G agrees to change her sitting position  
(d) H agrees to change her sitting position
4. During sitting:
- (a) A will be directly facing C  
(b) B will be directly facing C  
(c) A will be directly facing B  
(d) B will be directly facing D
5. H will be sitting between:
- (a) C and B            (b) A and F  
(c) D and C            (d) E and G

### Answer

1. (c)    2. (b)    3. (d)    4. (c)    5. (b)

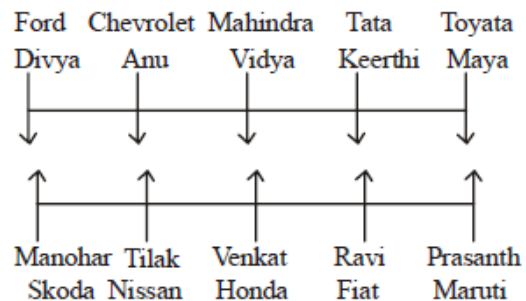
### Example

Ten friends attended a marriage, five of them Venkat, Manohar, Ravi, Prasanth and Tilak are sitting in a row facing North and other five friends Vidya, Maya, Divya, Keerthi and Anu are sitting in a row facing south not exactly in the same order. Each friend in a row is facing exactly one from the other row. One of them is using a Skoda Car. Manohar sits opposite to his friend who is using a Ford Car and sits at one of the extremes. The friend who uses a Honda car, is not Ravi who sits second to the right of Manohar. Venkat sits exactly in the middle of Ravi and the friend who uses a Nissan car is not Manohar. Keerthi does not sit at the extreme end but uses a Tata car and sits opposite the friend who uses a Fiat Car. The one who uses a Maruthi car sits opposite to the friend who is to the immediate left of Keerthi. The friend who uses a Toyota Car but not Anu, sits opposite Prasanth. Tilak does not sit at any of the extremes, but sits opposite the friend who uses a Chevrolet car, and is sitting adjacent to Divya and the friend who uses a

Mahindra car. Vidya neither uses Chevrolet nor Toyota cars.

1. Who uses the Mahindra Car?  
(a) Venkat            (b) Anu  
(c) Vidya            (d) Divya
2. Keerthi is how many places away from the one who uses the Ford car?  
(a) One            (b) Three  
(c) Four            (d) Two
3. Who sits third to the left of the one who uses the Chevrolet?  
(a) Anu            (b) Maya  
(c) Divya            (d) Vidya
4. Which one does not belong to the group?  
(a) Maruthi            (b) Skoda  
(c) Honda            (d) Mahindra
5. Which is the car used by Maya?  
(a) Toyota            (b) Chevrolet  
(c) Mahindra            (d) Ford

### Answer



1. (c) Vidya  
2. (b) Three  
3. (b) Maya  
4. (d) Mahindra  
5. (a) Toyota

### Example

Seven film buffs – Aamna, Archana, Aradhana, Anu, Aahana, Anuja and Aashna -

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attend a showing of classic movies. Three films are shown, one directed by Satyajit Ray, one by Stanley Kubrick, and one by Steven Spielberg. Each of the film buff see only one of the three films. The films are shown only once, one film at a time. The following restrictions must apply:

- Exactly twice as many of the film buffs see the Stanley Kubrick film as the Satyajit Ray film.
  - Aamna and Aahana do not see the same film as each other.
  - Archana and Anu do not see the same film as each other.
  - Anuja and Aashna see the same film as each other.
  - Aradhana sees the Stanley Kubrick film.
  - Aamna sees either the Satyajit Ray film or the Steven Spielberg film.
1. Which one of the following could be an accurate matching of film buffs to films?
    - (a) Aamna: the Steven Spielberg film; Archana: the Satyajit Ray film; Anuja: the Satyajit Ray film
    - (b) Anu: the Steven Spielberg film; Aahana: the Steven Spielberg film; Anuja: the Steven Spielbergfilm
    - (c) Anu: the Stanley Kubrick film; Aahana: the Stanley Kubrick film; Aashna: the Stanley Kubrickfilm
    - (d) Archana: the Stanley Kubrick film; Aahana: the Steven Spielberg film; Anuja: the Satyajit Ray film
  2. Each of the following must be false EXCEPT
    - (a) Aahana is the only film buff to see the Satyajit Ray film.
    - (b) Aahana is the only film buff to see Stanley Kubrick film.

- (c) Aashna is the only film buff to see the Steven Spielberg film.
  - (d) Exactly three film buffs see the Stanley Kubrick film.
3. Which one of the following could be a complete and accurate list of the film buffs who do Not see the Stanley Kubrick film?
    - (a) Aamna, Aahana
    - (b) Aamna, Archana, Aahana
    - (c) Aamna, Anu, Aashna
    - (d) Aamna, Anuja, Aashna
  4. If exactly one film buff sees the Steven Spielberg film, then which one of the following must be true ?
    - (a) Aamna sees the Satyajit Ray film.
    - (b) Anu sees the Satyajit Ray film.
    - (c) Anuja sees the Stanley Kubrick film.
    - (d) Archana sees the Satyajit Ray film.
  5. Which of the following must be true ?
    - (a) Archana, Aradhana and Anuja do not all see the same film.
    - (b) Archana sees a different film than Anuja does.
    - (c) Aamna sees a different film than Archana does.
    - (d) Aamna, Aradhana and Anu do not all see the same film.
  6. If Anuja sees the same film as Aamna does, then which one of the following could be true ?
    - (a) Aahana sees the Stanley Kubrick film.
    - (b) Aashna sees the Satyajit Ray film.
    - (c) Archana sees the Stanley Kubrick film.
    - (d) Aamna sees the Satyajit Ray film.
  7. Each of the following could be a complete and accurate list of the film

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buffs who see the Satyajit Ray film

EXCEPT

- (a) Aamna, Archana
- (b) Anuja, Aashna
- (c) Anu, Aahana
- (d) Aamna, Anu

### Answer

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

### Example

A couple decided to organize a party and invited a few of their friends. Only the host and hostess were sitting at the opposite ends of a rectangular table with three person on each side. The pre-requisite of the sitting arrangement was that each person must be seated so that at least on one side he/she has a person of the opposite sex. Romeo is opposite to Sonakshi, who is not the hostess. Ruchir has a woman on his right and is sitting opposite to a woman. Jia is sitting to the hostess's right, next to Vikram. One person is seated between Mahima and Rajni, who is not the hostess. The men were Romeo, Ruchir, Vikram and Rajnikant while the women were Mahima, Rajni, Sonakshi and Jia.

1. The eighth person present, Rajnikant must be
  - I. The host
  - II. Seated to Sonakshi's right
  - III. Seated opposite to Rajni
  - (a) Only III            (b) I and II
  - (c) Only I            (d) Only II
2. If each person is placed directly opposite to his/her spouse, which of the following pairs must be married ?
  - (a) Ruchir and Mahima
  - (b) Rajni and Rajnikant

(c) Mahima and Vikram

(d) Ruchir and Jia

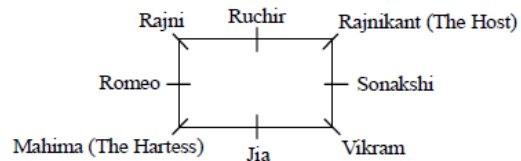
3. Which of the following persons is definitely not seated next to a person of same sex ?

- (a) Mahima            (b) Sonakshi
- (c) Rajnikant        (d) Romeo

4. If Ruchir would have exchanged his seat with a person sitting four places to his left, which of the following would have been true after the exchange?

- I. No person of the opposite sex was seated between two persons of same sex
  - II. One side of the table consisted entirely of persons of the same sex
  - III. Either the host or the hostess changed their seats
- (a) Only I            (b) Only II
  - (c) I and II        (d) II and III

### Answer



1. (b) The eighth person present, Rajnikant must be the Host and seated to Sonakshi's right.
2. (d) If each person is placed directly opposite to his/her spouse, then Ruchir and Jia pairs must be married.
3. (b) Sonakshi is definitely not seated next to a person of same sex.
4. (a) If Ruchir would have exchanged his seat with a person sitting four places to his left, then no person of the opposite sex was seated between two persons of same sex would have been true after the exchange.

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**Example**

Nine players - G, H, I, J, K, L, M, N and O – have to be put in three teams. Each team will consist of three players and each player will appear only once in a team. The teams must be arranged according to the following conditions.

- I and N must be in the same team.
  - K and L must be in the same team.
  - O and J cannot be in the same team.
  - M must be in the second team.
  - Either J or M or both must be in the team with H.
1. Which of the following cannot be true?
    - (a) M is in 1st team and H is in the 3rd
    - (b) O is in 3rd team
    - (c) I is in 2nd team
    - (d) H is in the 3rd team
  2. All of the following could be in the same team as K, except
    - (a) G                      (b) J
    - (c) I                        (d) M
  3. If J and K are in the 3rd team, which of the following players must be in 2nd?
    - (a) L                        (b) I
    - (c) G                        (d) H
  4. Which of the following players could be in a team together?
    - (a) K, I, M                (b) N, I, J
    - (c) G, J, M                (d) G, L, O
  5. The 3rd team could consist of the following except
    - (a) G, H, J                (b) K, L, J
    - (c) K, L, O                (d) G, I, J

**Answer**

**AMIE(I)      STUDY CIRCLE(REGD.)**

**A FOCUSED APPROACH**

Team 1st	INO	INJ	NIG	KLO	KLG	KLJ	GHJ
Team 2nd	MHO	MHJ	INM	MKL	GMH		
Team 3rd	INO	INJ	NIG	KLO	LKG	KLJ	GHJ

1. (a) M is in 1st team and H is in 3rd cannot be true.
2. (c) All of the following could be in the same team as K, except I.
3. (d) If J and K are in the 3rd team, then H player must be in 2nd.
4. (b) N, I, J players could be in a team together.
5. (d) The 3rd team could consist of the following except G, I, J.

**Example**

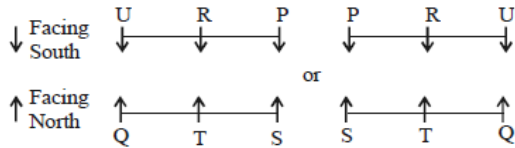
Read the following information carefully and choose the most appropriate option in the questions given below.

- Six flats on a floor in two rows facing North and South are allotted to P, Q, R, S, T and U.
  - Q gets a North-facing flat and is not next to S.
  - S and U get diagonally opposite flats.
  - R, next to U gets a South-facing flat and T gets a North-facing flat.
1. Which of the following combination gets South-facing flats?
    - (a) U, P, T                (b) Q, T, S
    - (c) Data inadequate (d) U, R, P
  2. Whose flat is between Q and S?
    - (a) U                        (b) R
    - (c) P                        (d) T
  3. If the flats of T and P are interchanged, who's flat will be next to that of U?
    - (a) T                        (b) P
    - (c) R                        (d) Q

**Answer**

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1. (d) U, R, P combination gets south-facing flats.
2. (d) Flat T is between Q and S.
3. (b) If the flats of T and P are interchanged, then R flat will be the next to that of U.

### Example

Read the following information carefully and choose the appropriate option in the questions given below.

- There is a group of five persons – A, B, C, D and E.
  - One of them is a Singer, one is a Dancer, one is a Painter, one is a Teacher and one is a Doctor.
  - Three of them – A, C and Doctor prefer rice to chapatti and two of them – B and the Painter prefer chapatti to rice.
  - The Teacher, D and A are friends to one another but two of these prefer chapatti to rice.
  - The Singer is C's brother.
1. Who is a Singer?  
(a) C                      (b) D  
(c) A                      (d) B
  2. Who is a Teacher?  
(a) D                      (b) C  
(c) E                      (d) B
  3. Who is a Dancer?  
(a) E                      (b) C  
(c) A                      (d) D

### Answer

Person	Profession	Preference
A	Singer	Rice to Chapatti
B	Teacher	Chapatti to Rice
C	Dancer	Rice to Chapatti
D	Painter	Chapatti to Rice
E	Doctor	Rice to Chapatti

1. (c) A is a Singer.
2. (d) B is a Teacher.
3. (b) C is a Dancer.

### Example

A family consists of six members H, I, J, K, L and M. There are two married couples, I is a doctor and father of L. M is grandfather of J and is a contractor. K is grandmother of L and is a housewife. There is one doctor, one contractor, one nurse, one housewife and two students in the family.

1. What is the profession of H?  
(a) Doctor                      (b) Student  
(c) Doctor or Nurse      (d) Nurse
2. Who is the husband of H?  
(a) I                              (b) M  
(c) J                              (d) None of these
3. Which of the following are two married couples?  
(a) LK, JM                      (b) MK, IH  
(c) MK, JH                      (d) MK, IL
4. Who is the sister of L?  
(a) J  
(b) H  
(c) K  
(d) Information Insufficient

### Answer

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Members	Profession	Relation	Sex
H	Nurse	Wife of I	Female
I	Doctor	Father of L, Husband of H	Male
J	Student	—	—
K	House wife	Grandmother of L	Female
L	Student	—	—
M	Contractor	Grandfather of J and Husband of K	Male

- (d) H is nurse.
- (a) I is the husband of H.
- (b) M, K and I, H are married couple.
- (d) As, gender of J is not known, so the data is insufficient.

**Example**

A science student has exactly four flasks - 1, 2, 3 and 4 - originally containing a red, a blue, a green, and an orange chemical, respectively. An experiment consists of mixing exactly two of these chemicals together by completely emptying the contents of one of the flasks into another of the flasks. The following conditions apply:

- The product of an experiment cannot be used in further experiments.
  - Mixing the contents of 1 and 2 produces a red chemical.
  - Mixing the contents of 2 and 3 produces an orange chemical.
  - Mixing the contents of 3 with the contents of either 1 or 4 produces a blue chemical.
  - Mixing the contents of 4 with the contents of either 1 or 2 produces a green chemical.
- If the student performs exactly one experiment, which one of the following could be the colours of the chemicals in resulting three non-empty flasks ?  
(a) blue, blue, green  
(b) blue, orange, orange  
(c) blue, orange, red

- (d) green, green, red
- If the student performs exactly two experiments, which one of the following could be the colours of the chemicals in the resulting two non-empty flasks ?  
(a) blue, blue      (b) blue, orange  
(c) blue, red      (d) green, red
  - If the student performs exactly one experiment and none of the resulting three non-empty flasks contains a red chemical, which one of the following could be the colours of the chemicals in the three flasks?  
(a) blue, blue, green  
(b) blue, green, green  
(c) blue, green, orange  
(d) blue, orange, orange
  - If the student performs exactly one experiment and exactly one of the resulting three non-empty flasks contains a blue chemical, which one of the following must be the colours of the chemicals in other two flasks ?  
(a) both green  
(b) both orange  
(c) both red  
(d) one green and one red
  - If the student will perform exactly two experiments and after the first experiment exactly one of the resulting three non-empty flasks contains an orange chemical, then in the second experiment the student could mix together the contents of flasks  
(a) 1 and 2      (b) 1 and 3  
(c) 2 and 3      (d) 3 and 4
  - If the student performs exactly one experiment and none of the resulting three non-empty flasks contains an orange

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chemical, then the student must have mixed the contents of

- (a) flask 1 with flask 2
- (b) flask 2 with flask 4
- (c) flask 2 with one of the other flasks
- (d) flask 4 with one of the other flasks

**Answer**

1. (d) If the student performs exactly one experiment, then green, green, red could be the colours of the chemicals in resulting three non-empty flasks.
2. (c) If the student performs exactly two experiments, then blue, red could be the colours of the chemicals in the resulting two non-empty flasks.
3. (b) If the student performs exactly one experiment and none of the resulting three non-empty flasks contains a red chemical, then blue, green, green could be the colours of the chemicals in the other flasks.
4. (a) If the student performs exactly one experiment and exactly one of the resulting three non-empty flasks contains a blue chemical, then both green must be the colour of the chemicals in other two flasks.
5. (d) If the student will perform exactly two experiments and after the first experiment exactly one of the resulting three non-empty flasks contains an orange chemical then in the second experiment the student could mix together the content of flasks 3 and 4.
6. (d) If the student performs exactly one experiment and none of the resulting three non-empty flasks contains an orange chemical, then the student must have mixed the content of flask 4 with one of the other flasks.

**Example**

Six people A, B, C, D, E and F live on a six-storey building each on one floor. The following statements describe where they stay.

- B lives on floor 6.
  - A is equally far from C and E.
  - F is an engineer.
  - D is two floors above F.
  - C does not live next to an engineer.
1. Which of the following is true?
    - (a) C lives on floor number 4
    - (b) A is exactly between D and F
    - (c) E is on floor number 5
    - (d) B is on floor number 5
  2. If statement (v) is disregarded which floor does A stay on?
    - (a) 5                                  (b) 4
    - (c) 3                                  (d) 1
  3. Which of the following is not true?
    - (a) F is not next to D
    - (b) C lives between B and D
    - (c) E lives on floor number 2
    - (d) B is on floor number 6
  4. If C does not live next to an engineer is invalid, how many types of arrangements are possible?
    - (a) 2                                  (b) 3
    - (c) 1                                  (d) 5

**Answer**

<b>Floors</b>	<b>6</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Persons</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>A</b>	<b>F</b>	<b>E</b>

1. (b) From the table, it is clear that A is exactly between D and F.
2. (c) Floor number 3.
3. (c) E lives on floor number 2 is not true.



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4. (a) If we ignore the last statement, then two types of arrangements are possible.

#### Example

Diana is three times older than Jackson. Edward is half the age of Stephen. Jackson is older than Edward.

- Which one of the following can be inferred?
  - Jackson is older than Stephen
  - Diana is older than Stephen
  - Diana may be younger than Stephen
  - None of the above
- Which one of the following information will be sufficient to estimate Diana's age?
  - Edward is 10 year old
  - Both Jackson and Stephen are older than Edward by the same number of years.
  - Both A and B
  - None of the above

#### Answer

- (b) From the given information,  
 $D = 3J$ ;  $2E = S$  and  $J > E$   
Since,  $D = 3J$ , Hence  $D > J > 2E$  ( $J > E$ )  
But  $2E = S$ , hence  $D > S$   
So, according to this, Diana is older than Stephen.
- (c) Let the age of Jackson and Stephen both be  $(10 + x)$  yr. Now,  $2E = S$ . Hence,  
 $2 \times 10 = 10 + x \Rightarrow x = 10$  yr. Hence,  
Jackson's age =  $10 + x = 20$  yr and  
Diana's age =  $3 \times 20 = 60$  yr

#### Example

Read the information given below to answer the questions.

- In a family of six person, there are people from three generations. Each person has separate profession and also each one likes different colours. There are two couples in the family.
  - Charan is a CA and his wife neither is a doctor nor likes green colour.
  - Engineer likes red colour and his wife is a teacher.
  - Vanita is mother-in-law of Namita and she likes orange colour.
  - Mohan is grandfather of Raman and Raman, who is a principal likes black colour.
  - Sarita is grand daughter of Vanita and she likes blue colour. Sarita's mother likes white colour.
- Who is an Engineer? .
    - Sarita
    - Vanita
    - Namita
    - Mohan
  - What is the profession of Namita?
    - Doctor
    - Engineer
    - Teacher
    - Cannot be determined
  - Which of the following is the correct pair of two couples?
    - Mohan - Vanita and Charan - Sarita
    - Vanita - Mohan and Charan - Namita
    - Charan - Namita and Raman - Sarita
    - Cannot be determined
  - How many ladies are there in the family?
    - Two
    - Three
    - Four
    - None of these
  - Which colour is liked by CA?
    - White
    - Blue
    - Black
    - None of these

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**Answer**

Grandparents	Parents	Children
Mohan (Engg) (Red)	Charan (CA)	Raman (Principal) (Black)
Vanita (Teacher) (Orange)	Namita (white)	Sarita (Blue)

1. (d)    2. (d)    3. (b)    4. (b)    5. (d)

**Example**

Read the following information carefully and answer the questions given below:

Five friends Satish, Rajesh, Rehman, Rakesh and Vineet- each presents one paper to their class on Physics, Zoology, Botany, English or Geology - one day a week, Monday through Friday.

- Vineet does not present English and does not give his presentation on Tuesday.
  - Rajesh makes the Geology presentation and does not do it on Monday or Friday.
  - The Physics presentation is made on Thursday.
  - Rehman makes his presentation, which is not on English, on Wednesday.
  - The Botany presentation is on Friday and not by Rakesh.
  - Satish makes his presentation on Monday.
1. What, day is the English presentation made?  
(a) Friday                      (b) Monday  
(c) Tuesday                    (d) Wednesday
  2. What presentation does Vineet do?  
(a) English                      (b) Geology  
(c) Physics                      (d) Botany
  3. What day does Rakesh make his presentation on?  
(a) Monday                      (b) Tuesday  
(c) Wednesday                (d) Thursday

**Answer**

Person	Days	Subject
Satish	Monday	English
Rajesh	Tuesday	Geology
Rehman	Wednesday	Zoology
Rakesh	Thursday	Physics
Vineet	Friday	Botany

1. (b) On Monday is the English presentation made.
2. (d) Vineet does Botany presentation.
3. (d) Rakesh makes his presentation on Thursday.