

# CAT 2025

## MBA FASTRACK BATCH

Lecture - 04

Logical Reasoning

Games & Tournaments-2

By- GOURAV GUPTA



## RECAP OF THE LAST LECTURE



Q & T - 1

Avg  $\rightarrow 21-22$

Good  $\rightarrow 24-25$

Excellent  $\rightarrow 27+$

20 ↓

# TOPICS

*to be covered*

1

Basics of Round Robin Tournaments

2

Questions on Round Robin Tournaments

No. of matches =  ${}^nC_2 = {}^4C_2 = 6$  A, B, C, D

A-B

B-C

A-C

B-D

A-D

C-D

Single



## Round Robin Tournaments

$$4(3)/2 = 6$$

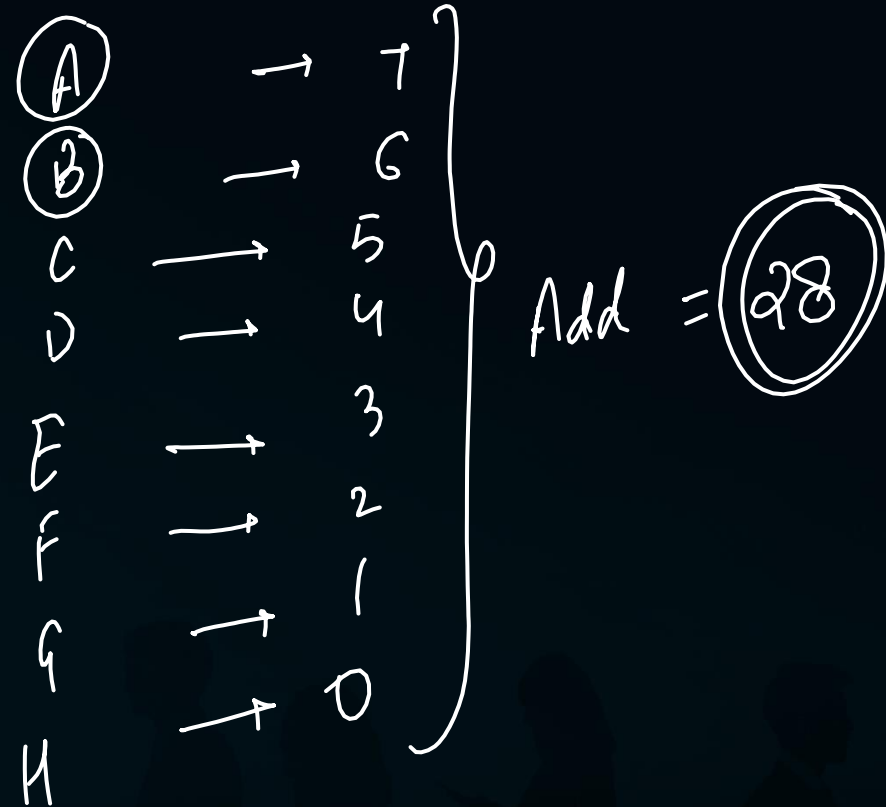
$$\frac{n(n-1)}{2}$$

**In this type of tournament, every team plays with every other team.**

8 Teams →

$$8C_2 = 28$$

$$\frac{n(n-1)}{2} = \frac{8 \times 7}{2} = 28$$



# Basics



5 Teams. (A B C D E)

10 Matches.

Win / loss.  $M = W + L$

No Draw

win  $\rightarrow +2$  points

loss  $\rightarrow 0$  points

(A)-B      B-(C)      (C)-D      (D)-E  
 A-(C)      (B)-D      C-(E)  
 (A)-D      B-(E)  
 (A)-E

Team	Played	Wins	Losses	Points
A	4	3	1	6
B	4	1	3	2
C	4	3	1	6
D	4	1	3	2
E	4	2	2	4
$\frac{20}{2} = 10$		<u>10</u>	<u>10</u>	<u>20</u>

# Basics



5 Teams. 10 Matches

Win  $\rightarrow +2$

Loss  $\rightarrow +0$

Draw  $\rightarrow +1$

A-B

B-D

A-C

B-E

A-D

C-D

A-E

C-E

B-C

D-E

Team	Played	Won	Draw	Loss	Points
A	4	1	2	1	4
B	4	2	1	1	5
C	4	1	1	2	3
D	4	2	1	1	5
E	4	0	3	1	3
	$\frac{20}{2} = 10$	6	$\frac{8}{2} = 4$	6	20

$$M = W + D$$

$$10 = 6 + 4$$

$$M = L + D$$

$$10 = 6 + 4$$

$$W/L \longrightarrow +2 + 0 = \textcircled{2}$$

$$\text{Draw} \longrightarrow 1 + 1 = \textcircled{2}$$



If there are  $N$  number of teams participating in the tournament, then total number of matches in the single round robin is  $C(N, 2) = N * (N-1)/2$

If there are no draws, then the total number of wins or losses is equal to the total number of matches.

In case of draws, the total number of matches is given by:  $(\text{Total number of wins or loss}) + (\text{Total number of draws})/2$

Read the following data and answer the given questions.



In a football tournament six teams A, B, C, D, E, and F participated. Every pair of teams had exactly one match among them. For any team, a win fetches 2 points, a draw fetches 1 point, and a loss fetches no points. Both teams E and F ended with less than 5 points. At the end of the tournament points table is as follows (some of the entries are not shown):

Teams	Played	Wins	Losses	Draws	Points
A	5	3	0	2	8
B	5		2		6
C	5		2		5
D	5		1		5
E	5		1		
F	5				

It is known that: (1) team B defeated team C, and (2) team C defeated team D

## Analysis

Teams	Played	Wins	Losses	Draws	Points
A	5	3	0	2 ✓	8
B	5	3	2	0	6
C	5	2	2	1 ✓	5
D	5	1	1	3 ✓	5
E	5	0	1	4	4
F	5	0	3	2 ✓	2

$$30/2 = 15$$

9

9

$$12/2 = 6$$

30

1  
0  
0  
2  
0  
1

A-E  
C-E  
D-E  
F-E

D-A

D-F

Draw

A-E

A-D



In a football tournament six teams A, B, C, D, E, and F participated. Every pair of teams had exactly one match among them. For any team, a win fetches 2 points, a draw fetches 1 point, and a loss fetches no points. Both teams E and F ended with less than 5 points. At the end of the tournament points table is as follows (some of the entries are not shown):

It is known that: (1) team B defeated team C, and (2) team C defeated team D

## QUESTIONS



#Q1. **Total number of matches ending in draw is**

A. 12

B. 4

C. 5

~~D. 6~~

#Q2. **Which team has the highest number of draws**

A. A

B. C

C. D

~~D. E~~

#Q3. **Total points Team F scored was**

A. 0

B. 1

~~C. 2~~

D. 3

#Q4. **Which team was not defeated by team A**

A. B

B. C

C. D

D. F

#Q5. **Team E was defeated by**

A. Teams A and B only

C. Only team B

B. Only team A

D. Teams A, B and D only

## QUESTION-1



#Q. **Total number of matches ending in draw is**

A. 12

B. 4

C. 5

D. 6

## QUESTION- 2



#Q. **Which team has the highest number of draws**

- A. A
- B. C
- C. D
- D. E

## QUESTION- 3



#Q. **Total points Team F scored was**

- A. 0
- B. 1
- C. 2
- D. 3

## QUESTION- 4



#Q. **Which team was not defeated by team A**

- A. B
- B. C
- C. D
- D. F



## QUESTION- 5



- #Q. **Team E was defeated by**
- A. Teams A and B only
  - B. Only team A
  - C. Only team B
  - D. Teams A, B and D only



Teams = 8 ✓

Matches = 28 ✓

Win/loss.

Top 4 Teams Qualify  
for next Round.

$$\textcircled{A} \rightarrow 7 - 1 = 6 - 1 = 5$$

$$B \rightarrow 6$$

$$C \rightarrow 5$$

$$\textcircled{D} \rightarrow 4 + 1 = 5$$

$$E \rightarrow 3 + 1 = 4$$

$$F \rightarrow 2$$

$$G \rightarrow 1$$

$$H \rightarrow 0$$

① **Minimum number of wins required so that team may qualify**

A	→	7	}	(18)
B	→	6		
C	→	5		
D	→	2	}	(10)
E	→	2		
F	→	2		
G	→	2		
H	→	2		

$$\underline{28} - \underline{18} = \underline{(10)}$$

③ ✓  
 (2) ✓✓

(2)

Minimum number of wins required so that team will qualify

A	→	7	-	1	=	6
B	→	6			=	6
C	→	5	+	1	=	6
D	→	4				
<hr/>						
E	→	3				
F	→	2				
G	→	1				
H	→	0				

4 win X  
 → 5 win X  
 // 6 win

## Basics

3

**Maximum Number of Wins despite which won't qualify**

5

% →  
Ratio →  
Averages →

A large, hand-drawn curly bracket on the right side of the text, grouping the three items: percentage, ratio, and averages.



THANK  
*You*

