

Logical Functions & Lookup

1) Write a formula to check if the marks in cell are greater than or equal to 40. If yes, return , otherwise . B2 "Pass" "Fail

→

Objective:

To check whether the marks in cell B2 are greater than or equal to 40.

If yes, return "Pass", otherwise return "Fail".

Formula:

=IF(B2>=40,"Pass","Fail")

Explanation:

- B2>=40 → Checks whether the marks are 40 or above.
- "Pass" → Returned if the condition is TRUE.
- "Fail" → Returned if the condition is FALSE.

Application:

1. Insert a new column named Result.
2. Enter the formula in the first row.
3. Press Enter and drag the formula down to apply it to all records.

The screenshot shows a Microsoft Excel interface. The ribbon is visible at the top with tabs for File, Home, Insert, Draw, Page Layout, Formulas, Data, Review, View, and Help. The Home tab is selected. Below the ribbon is the formula bar with the text '=IF(B2>=40,"Pass","Fail")'. The main area shows a table with columns for Student Name and Marks. Row 1 is a header with 'Student Name' and 'Marks'. Rows 2 through 6 contain data: Riya (Marks 45, Result Pass), Siya (Marks 72, Result Pass), Raju (Marks 55, Result Pass), Rahul (Marks 80, Result Pass), and Ram (Marks 30, Result Fail). The cell C2, which contains the formula, is highlighted with a green border. The rest of the table cells have standard black borders.

	A	B	C	D	E	F	G	H
1	Student Name	Marks	Result					
2	Riya	45	Pass					
3	Siya	72	Pass					
4	Raju	55	Pass					
5	Rahul	80	Pass					
6	Ram	30	Fail					
7								
8								

2) A company gives a bonus if sales are above 40,000 and attendance is greater than or equal to 90%. Write a formula to calculate whether the employee will get a bonus or not .

→ **Objective:** To determine whether an employee is eligible for a bonus.

Conditions:

- Sales > 40,000
- Attendance \geq 90%

Formula:

=IF(AND(B2>40000,C2>=90),"Bonus","No Bonus")

Explanation:

- B2>40000 → Checks if sales exceed 40,000.
- C2>=90 → Checks if attendance is at least 90%.
- AND() → Ensures both conditions are TRUE.
- "Bonus" → Returned if eligible.
- "No Bonus" → Returned otherwise.

Application:

Create a new column **Bonus Status**, apply the formula, and drag down.

The screenshot shows the Microsoft Excel interface with the Home tab selected in the ribbon. The formula bar displays the formula =IF(AND(B2>40000,C2>=90),"Bonus","No Bonus"). The table below has columns for Employee, Sales, Attendance, and Bonus Status. The formula is applied to the Bonus Status column, and the result for Arjun is "Bonus". The formula bar also shows the full formula =IF(AND(B2>40000,C2>=90),"Bonus","No Bonus").

	A	B	C	D	E	F	G	H	I
1	Employee	Sales	Attendance	Bonus Status					
2	Arjun	55000	95	Bonus	=IF(AND(B2>40000,C2>=90),"Bonus","No Bonus")				
3	Simran	65000	85	No Bonus					
4	Rohit	30000	90	No Bonus					
5	Anjali	25000	65	No Bonus					
6									

3) Write a nested IF formula: If marks in are \geq 90 → , \geq 75 → , \geq 50 → , otherwise . B2 "A" "B" "C" "Fail".



❖ Formula: =IF(B2>=90,"A",IF(B2>=75,"B",IF(B2>=50,"C","Fail")) (Assume Marks are in B2)

❖ Explanation:

1. Excel first checks if $B2 \geq 90 \rightarrow$ returns "A"
2. If not, it checks if $B2 \geq 75 \rightarrow$ returns "B"
3. If not, it checks if $B2 \geq 50 \rightarrow$ returns "C"
4. If none of the conditions are true \rightarrow returns "Fail"

❖ How to Apply:

1. Add a new column named **Grade**.
2. Enter the formula in the first row.
3. Press **Enter**.
4. Drag down to apply to all students.

	A	B	C	D	E	F	G	H	I
1	Student Name	Marks	Grade						
2	Raj	85	B	=IF(B2>=90,"A",IF(B2>=75,"B",IF(B2>=50,"C","Fail")))					
3	Neha	96	A						
4	Vivek	57	C						
5	Rani	92	A						
6	Sneha	75	B						
7									

4) Find the Department of Employee ID = E103. Also explain which LOOKUP function is used and why?



Objective:

To retrieve the Department for Employee ID E103.

Using VLOOKUP:

=VLOOKUP("E103",A2:C5,3, FALSE)

Explanation:

- "E103" → Lookup value
- A2:C5 → Table range
- 3 → Department column index
- FALSE → Exact match

Using XLOOKUP (Modern Method):

=XLOOKUP("E103",A2:A5,C2:C5)

Why XLOOKUP is Preferred:

- No need for column number
- Works left or right
- More flexible and reliable

The screenshot shows the Microsoft Excel ribbon with the 'Home' tab selected. Below the ribbon is the formula bar with cell reference E7. The main area displays a table with columns A through I. Column A contains EmpID, column B contains Name, column C contains Department, and column D contains the formula 'Vlookup'. The formula in cell D3 is '=VLOOKUP("E103",A2:C5,3, FALSE)'. The formula in cell D4 is '=XLOOKUP("E103",A2:A5,C2:C5)'. The table has rows numbered 1 to 7.

	A	B	C	D	E	F	G	H	I
1	EmpID	Name	Department	Vlookup	XLOOKUP				
2	E101	Raju	IT	Finance	Finance				
3	E102	Riya	HR	=VLOOKUP("E103",A2:C5,3, FALSE)	=XLOOKUP("E103",A2:A5,C2:C5)				
4	E103	Roshni	Finance						
5	E104	Sejal	Sales						
6									
7									

5) If a salesperson achieves sales of ₹45,000, use the VLOOKUP function to determine the commission rate applicable.

→

Fourmula: =VLOOKUP(45000,A2:B5,2,TRUE)

Explanation:

- 45000 → Sales amount
- A2:B5 → Commission table
- 2 → Commission rate column
- TRUE → Approximate match

Result:

- ₹45,000 falls between **20,000 and 50,000**
- So commission rate = **10%**

The screenshot shows the Microsoft Excel ribbon with the 'Home' tab selected. Below the ribbon is the formula bar with the text '=VLOOKUP(45000,A2:B5,2,TRUE)'. The main area shows a table with three columns: Sales Amount, Commission Rate, and a third column which is currently empty. The first row has headers 'Sales Amount' and 'Commission Rate'. The second row contains values 0 and 5%. The third row contains values 20000 and 10%. The fourth row contains values 50000 and 15%. The fifth row contains values 80000 and 20%. The sixth row is empty. The 'Commission Rate' column is highlighted with a green border.

	A	B	C	D
1	Sales Amount	Commission Rate		
2	0	5%	10%	
3	20000	10%		
4	50000	15%		
5	80000	20%		
6				

6) Write an IF function to check whether an employee has Exceeded their allowed leave balance.

- If Leaves Taken > Allowed Leaves, display "Exceeded".
- Otherwise, display "OK".

→

Formula :- =IF(B2>C2,"Exceeded","OK")

Explanation:

- $B2 > C2 \rightarrow$ Checks if taken leaves are more than allowed leaves
- "Exceeded" \rightarrow If condition is TRUE
- "OK" \rightarrow If condition is FALSE

✓ Apply the Formula:

1. Insert a new column named **Leave Status**.
2. Enter the formula in the first row.
3. Press **Enter**.
4. Drag down to apply to all employees.

	A	B	C	D	E	F	G	H	I
1	Employee Name	Leaves Taken	Leaves Allowed	Leave Status					
2	Alex	10	12	OK					
3	Bob	10	15	OK					
4	Anna	8	12	OK					
5									
6									
7									
8									
9									
10									
11									
12									

7) Find the salary of EmpID = E105 using INDEX-MATCH Function.

→

Formula:- =INDEX(B2:B5, MATCH("E105", A2:A5, 0))

II Explanation:

◆ MATCH("E105", A2:A5, 0)

- Searches for **E105** in EmpID column
- 0 means exact match
- Returns the row position

◆ INDEX(B2:B5, row_number)

- Returns the salary from the Salary column based on row position

8) Use the XLOOKUP function to find the Department of the employee with Emp ID = E303.

→

◆ Step 1:

Click on the cell where you want the result (for example, **D2**).

◆ Step 2:

Type the XLOOKUP formula:

=XLOOKUP("E303", A2:A5, B2:B5)

✓ How the Formula Works

○ Breakdown:

- "E303" → Lookup value (Employee ID we are searching for)
- A2:A5 → Lookup array (EmpID column)
- B2:B5 → Return array (Department column)

Excel:

1. Searches for **E303** in column A
2. Finds it in the second row
3. Returns the corresponding value from column B
4. Result = **IT**

The screenshot shows the Microsoft Excel interface with the following details:

- Clipboard:** Includes Paste, Copy, Cut, and Format Painter buttons.
- Font:** Set to Calibri, Size 11, with bold (B), italic (I), underline (U), and font color (A) options.
- Alignment:** Set to center alignment with horizontal and vertical options.
- Number:** Set to General, with currency (\$), percent (%), and decimal (0.00) options.
- Formula Bar:** Displays the formula =XLOOKUP("E303", A2:A5, B2:B5).
- Table Data:** A table with columns A (EmpID) and C (Department). Row 2 contains E101 and HR. Row 3 contains E303 and IT. Row 4 contains E106 and Sales. Row 5 contains E301 and Finance. Row 6 is empty. Row 7 starts with a partial value.