

Spreadsheets

Conditional Functions (IF & Nested)

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Conditional Functions

Objectives

To understand the use of conditional based functions.

To understand the logical test, true and false elements of conditional statements.

To understand the need to use absolute cell referencing in some calculations.

Outcomes

Time

Pupils will complete the following activities:

- Task 1: IF Statement
- Task 2: Nested Statements
- Task 3: IF Statement (And)
- Task 4: IF Statement (OR)
- Task 5: IF Statement (Extracting Values)

150
100
50
0

Task 1- IF Statements

1. Logical Test

2. True

3. False

=IF(D5<20,"Under Target","On Target")

	A	B	C	D	E
		Brand	Name	Sold	Sales Target
4					
5		Samsung	s3	22	On Target

22 is not less than 20
Logical Test is False

1. Logical Test

If the units sold is less than 20

2. If the statement is true then "Under Target" will be printed in the cell.

Examples: 17, 7, 6, 19, 10

2. If the statement is false then "On Target" will be printed in the cell.

Examples: 21, 23, 32, 45,

Task 2- Nested IF Statements

The **Nested if** will check the **first logical Test**. If the **first test is false** then it will check the **next logical test**. If **both tests are false** then the **false value will be shown**. If a **logical test is true** then the **true statement will be printed**.

Task 2: Nested IF Statements																
		Charge per mile														
	Fast Cars	£ 2.00														
	Karwa	£ 5.00														
	Street Car	£ 10.00														
	Basic Fare	£ 5.00														
Name	Miles	Taxi Service	Taxi Fare													
Ahmed	5															
Sara	13															
Abdulla	2															
Mohammed	19															
Salma	12															

Use a nested if statement to work out the Taxi Service & Taxi Fare Add <u>Basic Fare</u> to (<u>Taxi Charge per Mile</u> * <u>Miles</u>):																
If Miles is less than 7 miles use Fast Cars Taxi service																
Equal to or more than 7 and less than 16 miles use Street Cars service																
More than or equal to 16 miles use Karwa taxi service																

<<<	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	>>>		
	C12<7																						
	"Fast Cars"							C12<16															
								"Street Cars"															FALSE
																						Karwa	

=IF(C12<7,"Fast Cars", IF(C12<16,"Street Cars", "Karwa"))



Task 2- Nested IF Statements

Task 2: Nested IF Statements

	Charge per mile
Fast Cars	£ 2.00
Karwa	£ 5.00
Street Cars	£ 10.00
Basic Fare:	£ 5.00

Cells need to absolute cell referenced.

Use a nested if statement to work out the **Taxi Service & Taxi Fare**
 Add Basic Fare to (Taxi Charge per Mile * Miles):

If Miles is **less than 7 miles** use **Fast Cars** Taxi service
 Equal to or more than 7 and **less than 16 miles** use **Street Cars** service
 More than or equal to 16 miles use **Karwa** taxi service

Name	Miles	Taxi Service	Taxi Fare
Ahmed	5	Fast Cars	
Sara	13	Street Cars	
Abdulla	2	Fast Cars	
Mohammed	19	Karwa	
Salma	12	Street Cars	

<<< 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 >>>

C12<7	
C12*C5	C12<16
	C12*C7
	FALSE
	C12*C6

- 1) Identify the **Taxi Service** based on **Miles**
- 2) **Miles** will then be **multiplied** by the **Taxi service charge per mile**.

Example:

If miles is 5 then it will be multiplied by the contents of C5 (Fast Cars Charge)

- 3) **Basic fare** will be added also.

$$=IF(C12<7,C12*\$C\$5, IF(C12<16,C12*\$C\$7, C12*\$C\$6))+\$C\$9$$

Basic Fare

Task 3 – (And) IF Statements

AND

Checks whether all arguments are TRUE, and returns TRUE if all arguments are TRUE

	A	B	C	D	E	F	G
4			English P1	English P2			
5	Pupil Name	House	%	%	Pass/Fail		
6	Abdulla	Red	95	51			

To achieve a Pass both grades have to be more than 50

`=IF(AND(C6>50,D6>50),"Pass","Fail")`

1. Logical Test

2. True

3. False

	G	H	I	J	K	L	M	N
			Maths P1	Maths P2	Maths P3			
	Pupil Name	House	%	%	%	Pass/Fail		
	Abdulla	Red	45	67	65			
	Ahmed	Green	86	54	43			

To achieve a pass all grades need to be greater than 50.

`=IF(AND(I6>50,J6>50,K6>50),"Pass","Fail")`

1. Logical Test

2. True

3. False

Task 3 – (And) IF Statements

Use the most appropriate functions to complete the tasks shown below.

		English P1	English P2	
Pupil Name	House	%	%	Pass/Fail
Abdulla	Red	95	51	Pass
Ahmed	Blue	85	76	
Ali	Green	34	68	
Essa	Red	23	67	
Fares	Blue	54	56	
Iker	Red	72	76	
Ibrahim	Blue	55	58	
Khalid	Green	67	64	
	Total			
	Highest			
	Lowest			
	Average			
	Count Pass			
	Count Fail			
	Count Blue House			
	Count Red House			
	Count Green House			
		SUMIF (Total %)		
		English P1	English P2	
	Red			
	Blue			
	Green			

Sum, Max, Min & Average

Count IF Function – Refer to the correct ranges

Sum IF Function – Refer to the correct ranges (Papers)

Task 4 – (Or) IF Statements

	A	B	C	D	E	F	G
4			History P1	History P2			
5	Pupil Name	House	%	%	Foundation/Higher		
6	Abdulla	Red	66	23			If students have scored less than 35 in any of the exams they will be entered for the foundation exam.
7	Ahmed	Blue	53	64			
8	Ali	Green	43	23			If students have achieved more than 35 in both exams they will then be entered for the higher paper.
9	Essa	Red	32	53			
10	Fares	Blue	54	64			
11	Iker	Red	32	35			
12	Ibrahim	Blue	53				

2. True

=IF(OR(C6<35,D6<35),"Foundation","Higher")

3. False

1. Logical Test

		History P1	History P2	
Pupil Name	House	%	%	Foundation/Higher
Abdulla	Red	66	23	Foundation

Checks whether any of the arguments are TRUE, and returns TRUE or FALSE.

Returns FALSE only if all arguments are FALSE

OR

Student will be entered for foundation since History P2 test % is less than 35.

Task 5 – (Extract) IF Statements

	A	B	C	D	E
1	Extract and IF Functions				
2					
3					
4			Free Lunch	School Bus	Free Dinner
5	Student Code	Pupil Name	Yes/No		
6	112300AA	Abdulla			

Student code starts with 1 and ends in AA

1. Logical Test

```
=IF(AND(LEFT(A6,1)="1",RIGHT(A6,2)="AA"),"Yes","No")
```

2. True

3. False

Student Code

1st character on the Left is equal to "1"

112300AA

Last 2 characters on the Right is equal to "AA"

Student Code	Pupil Name	Yes/No
112300AA	Abdulla	Yes

Output is Yes - True

Plenary – Refer to the Lesson Objectives

Objectives

To understand the use of conditional based functions.

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To understand the need to use absolute cell referencing in some calculations.

Plenary Task (Q&A)

Review the following activities:

- Task 1: IF Statement
- Task 2: Nested Statements
- Task 3: IF Statement (And)
- Task 4: IF Statement (OR)
- Task 5: IF Statement (Extracting Values)