Essential Functions - part 2

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Essential Functions - part 2

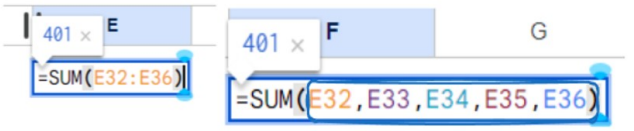
Formulae = a + b + c
a - b + c
a * b + c / d

perimeter = 2(l + b)
area = l * b

Rectange

Formulae can be replaced with Functions:

- SUM()

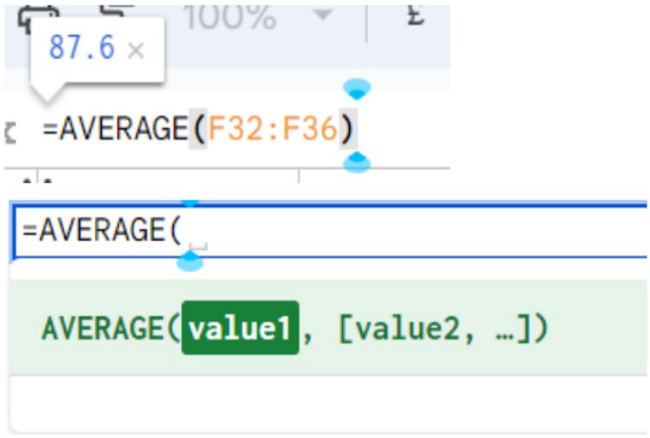


SUM(value1, [value2, …])

multiple value

optional

- AVERAGE()



- COUNT()

Science	and science	Who scored above 90 in maths or english
95	FALSE	FALSE
88	FALSE	FALSE
92	TRUE	TRUE
78	FALSE	FALSE
85	TRUE	FALSE

401 839 87.6

=COUNT(F32:F36)

5

75	80	95	FALSE	FALSE
80	75	88	FALSE	FALSE
95	88	92	TRUE	TRUE
68	82	78	FALSE	FALSE
88	76	85	TRUE	FALSE

401 401 839

15

=COUNT(D32:F36)

=COUNTA(C32:C36)

COUNTA(value1, [value2, …])

me			
	Jane Smith	80	
on	Mark Johnson		
ns	Sara Williams	68	
n	Chris Brown	88	

Count() - is used for counting the numerical values present in a cell.

COUNTA() - is used for counting the text values present in a cell.

=COUNTA(C32:C36)

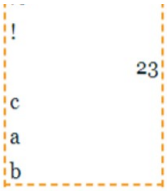
"23" - text

7

=COUNTA(C48:C54)

$
%
!

23



CountBlank() - will provide, how many empty cells are there in a selected row

Maths	English
75	80
80	75
	88
68	82
88	76

1 ×

=COUNTBLANK(D32:D36)

To sum up the difference between formulas and functions:

1. **User-Defined vs. Pre-Built:**
   - **Formulas:** Created by the user based on specific requirements.
   - **Functions:** Pre-built and provided by Google Sheets to perform specific tasks.
2. **Structure:**
   - **Formulas:** Custom expressions combining operators, cell references, and values.
   - **Functions:** Have a predefined structure with a function name and arguments enclosed in parentheses.

3. **Examples:**
   - **Formulas:**
     - Calculating the sum of values in a range: `=A1 + B1`
     - Finding the average: `=(A1 + B1) / 2`
     - Applying conditional logic: `=IF(A1 > B1, "A1 is greater", "B1 is greater")`
   - **Functions:**
     - Calculating the sum of values in a range: `=SUM(A1:B1)`
     - Finding the average: `=AVERAGE(A1:B1)`
     - Applying conditional logic: `=IF(A1 > B1, "A1 is greater", "B1 is greater")`
4. **Flexibility:**
   - **Formulas:** Provide more flexibility as they are user-defined and can be highly customized.
   - **Functions:** Offer quick and easy solutions for common tasks but may have limitations regarding customization.

Formula

$$A = P(1 + \frac{r}{n})^{nt}$$

A = final amount
P = initial principal balance
r = interest rate
n = number of times interest applied per time period
t = number of time periods elapsed

((2*a^2) + b^2 * c^2) /1000

S.I = (p*r*t)/100

The "IF" function:

The "IF" function in Google Sheets is a powerful tool for conditional logic. It allows you to make decisions in your data by evaluating a condition and returning one value if the condition is true and another value if the condition is false.

Syntax:

"Good"

another value if the condition is false.

Syntax:

```
=IF(logical_expression, value_if_true, value_if_false)
```

"Good"

"Bad"

- **logical_expression:** The condition you want to evaluate.
- **value_if_true:** The value to be returned if the condition is true.
- **value_if_false:** The value to be returned if the condition is false.

F	G	
MARKET SHARE (%)	If market share >60,then good e bad	if market shar
37	=IF(F14>60,"Good","Bad")	
73	Good	
71	Good	
72	Good	
48	Bad	
16	Bad	
51	Bad	
91	Good	
29	Bad	
26	Bad	
81	Good	
82	Good	
47	Bad	
84	Good	
22	Bad	

Market Cond (>) 60

0 - Not Clear
1 - Clear

True

False

```
=IF(F14>60,"Good","Bad")
```

```
IF(logical_expression, value_if_true, value_if_false)
```

The "IFS" Function:

The `IFS` function in Google Sheets evaluates multiple conditions and returns a value corresponding to the first true condition. It takes the form:

```
=IFS(condition1, value1, condition2, value2, ..., conditionN, valueN)
```

- `condition1`, `condition2`, ..., `conditionN`: The conditions that are evaluated.
- `value1`, `value2`, ..., `valueN`: The values returned if the corresponding condition is true.

```
=IFS(F14<=40,"Low",F14<=75,"Mid",F14>75,"High")
```

G	H
market hare hen good e bad	if market share<=40, then low, <=75, then mid else high
Bad	Low
Good	Mid
Good	Mid
Good	Mid

Change the query to : Nested IF

ood	Mid
ood	Mid
ood	Mid
Bad	Mid
Bad	Low
Bad	Mid
ood	High
Bad	Low
Bad	Low
ood	High

Change the query to : Nested IF

```
=IF(
```

IF(logical_expression, value_if_true, value_if_false)

```
=IF(F14<=40,"Low",IF(F14<=75,"Mid","High"))
```

	I
n mid	if market share<=40, then low, <=75, then mid else high
	Low
	Mid
	Mid
	Mid

79 → High

52 → Mid

33 → Low

The "SUMIF" function:

- **Definition:** The SUMIF function in Google Sheets is used to add up values based on a specified condition.
- **Syntax:**

```
=SUMIF(range, criteria, [sum_range])
```

either with the value or a cell reference

```
=SUMIF(
SUMIF(range, criterion, [sum_range])
```

Sales . Cost

3rd parameter

Criteria Range - Where you are searching for a condition.

```
=SUMIF(B14:B31,"NORTH",D14:D31)
```

	J
5, then mid	total sales of north region

283582

```
=SUMIF(B14:B31,B14,D14:D31)
```

5, then mid	total sales of north region
	283582
	283582

```
=SUMIF(B14:B31,B14,D14:D31)
```

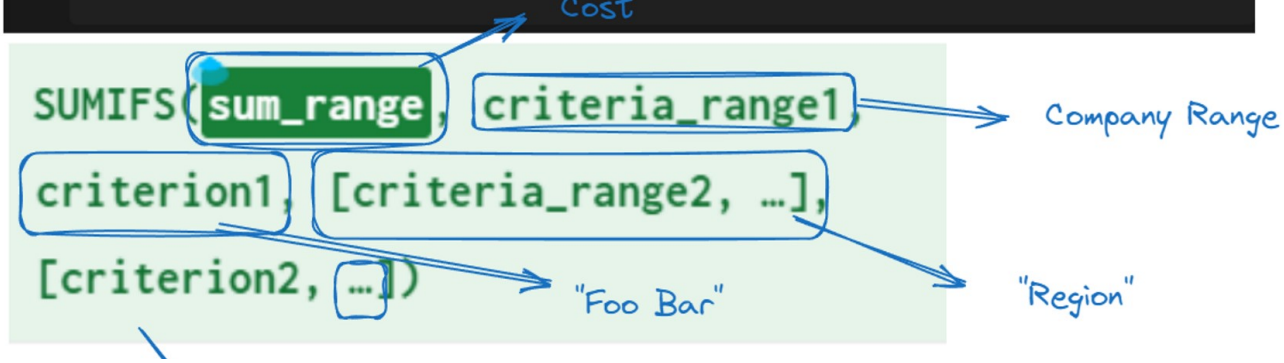
	A	B	C	D	E	F	G
13	mpany Name	Region	ORDER DATE	SALES	COSTS	MARKET SHARE (%)	If market share >60,then good else bad
14	Company	NORTH	10/1/2013	49049	7665	37	Bad
15	o Bars	SOUTH	11/1/2013	53522	7623	73	Good
16	Teleco	EAST	12/1/2013	67320	9860	71	Good
17	Brothers	WEST	10/1/2014	66663	9214	72	Good
18	Company	WEST	11/1/2014	64750	7945	48	Bad
19	o Bars	NORTH	12/1/2014	14333	8045	16	Bad
20	Telecom	EAST	10/1/2015	29570	9277	51	Bad
21	Brothers	WEST	11/1/2015	83468	9533	91	Good
22	Company	WEST	12/1/2015	13964	5124	29	Bad
23	o Bars	SOUTH	10/1/2016	16843	9386	26	Bad
24	Telecom	NORTH	11/1/2016	78715	9200	81	Good
25	Brothers	WEST	12/1/2016	80780	5447	82	Good
26	Company	NORTH	10/1/2017	53413	9841	47	Bad
27	o Bars	SOUTH	11/1/2017	85607	5266	84	Good

SUMIFS()

The "SUMIFS" function:

- **Definition:** The SUMIFS function is an extension of SUMIF and allows you to sum values based on multiple criteria.
- **Syntax:**

```
=SUMIFS(sum_range, criteria_range1, criteria1, [criteria_range2, criteria2, ...])
```



[criterion2, …])

"Foo Bar"

"Region"

"South"

"Foo Bars"

=SUMIFS(E14:E31,A14:A31,A23,B14:B31,B27)

"South"

2 or more

	K	L
	total cost of south region for Foo Bars	number of records for east region
32	22275	
32		

	A	B
13	Company Name	Region
14	Demo Company	NORTH
15	Foo Bars	SOUTH
16	ABC Teleco	EAST
17	Fake Brothers	WEST
18	Demo Company	WEST
19	Foo Bars	NORTH
20	ABC Telecom	EAST
21	Fake Brothers	WEST
22	Demo Company	WEST
23	Foo Bars	SOUTH
24	ABC Telecom	NORTH
25	Fake Brothers	WEST
26	Demo Company	NORTH
27	Foo Bars	SOUTH
28	ABC Telecom	NORTH