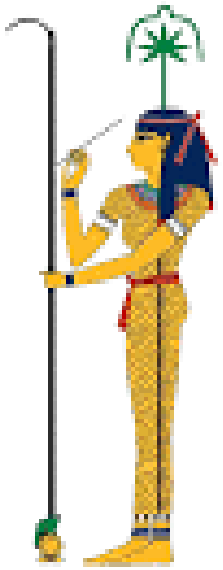


وزارة الاتصالات
وتكنولوجيا المعلومات

Lecture 2

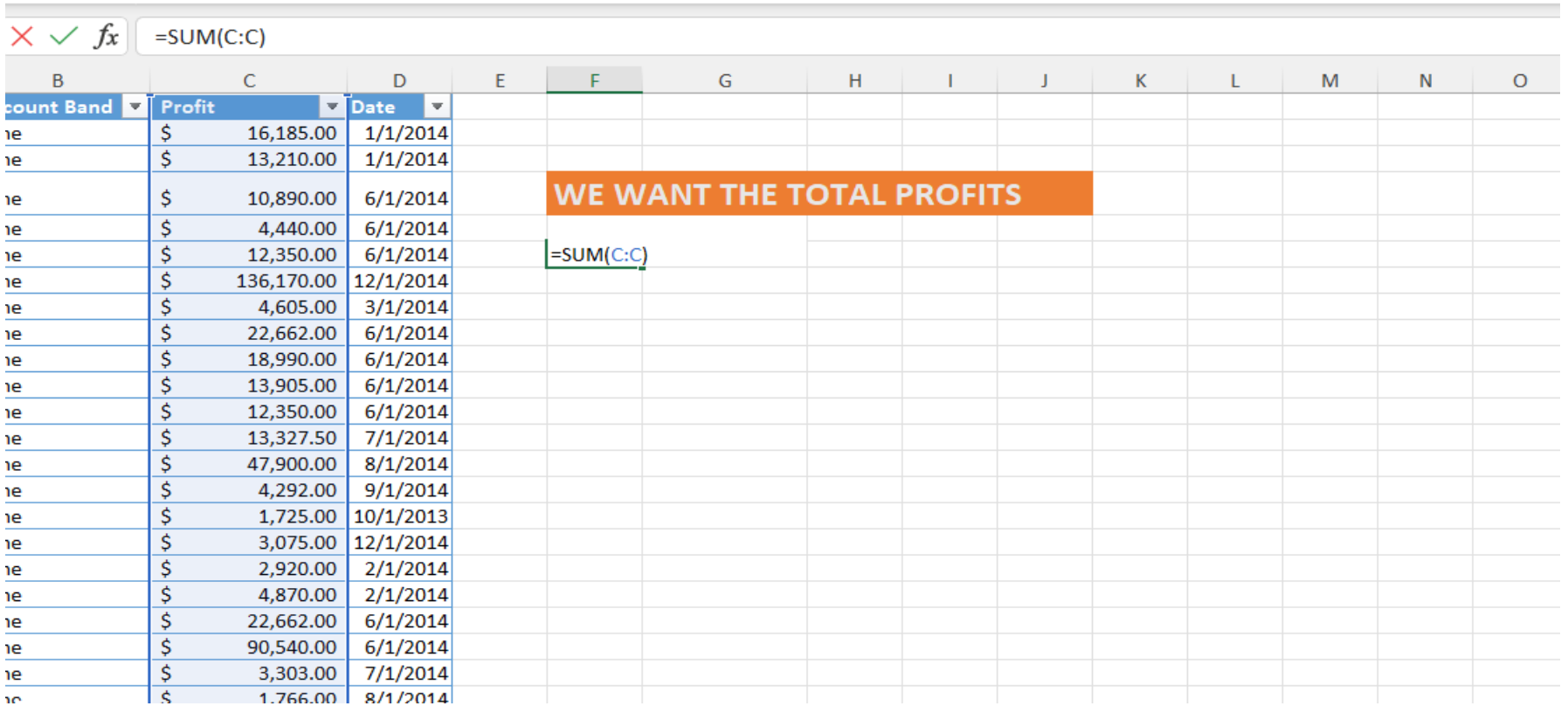
formulas

- Microsoft Excel is a popular tool for managing data and performing data analysis. It is used for generating analytical reports, business insights, and storing operational records. To perform simple calculations or analyses on data, we need Excel formulas.
- Even simple Excel formulas allow us to manipulate string, number, and date data fields. Furthermore, you can use if-else statements, find and replace, mathematics and trigonometry, finance, logical, and engineering formulas.
- Unlike programming languages, you will be writing the formula name and arguments. That’s it, nothing complex. You can also use Excel-assisted user interference to add formulas

SUM

دالة الجمع - SUM:

=SUM (number1 , [number2] , ...)

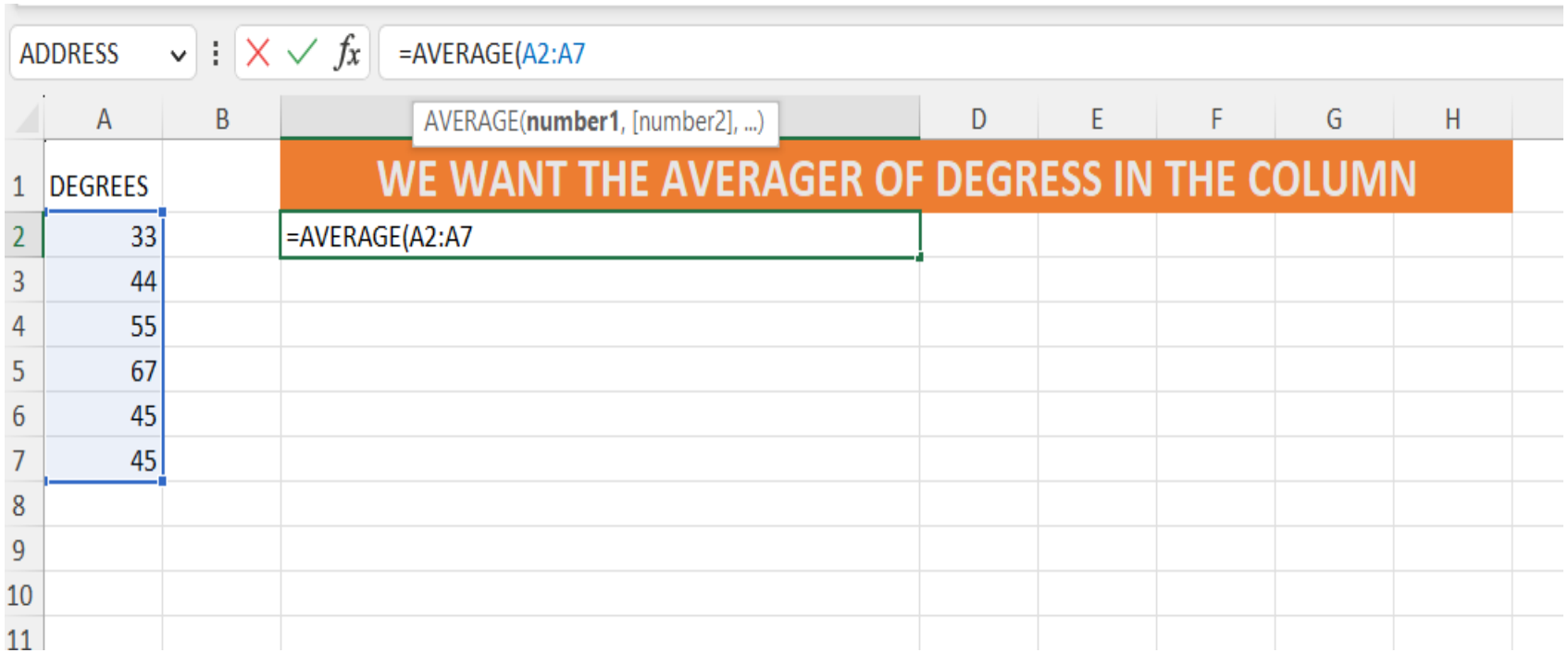


count Band	Profit	Date
ne	$ 16,185.00	1/1/2014
ne	$ 13,210.00	1/1/2014
ne	$ 10,890.00	6/1/2014
ne	$ 4,440.00	6/1/2014
ne	$ 12,350.00	6/1/2014
ne	$ 136,170.00	12/1/2014
ne	$ 4,605.00	3/1/2014
ne	$ 22,662.00	6/1/2014
ne	$ 18,990.00	6/1/2014
ne	$ 13,905.00	6/1/2014
ne	$ 12,350.00	6/1/2014
ne	$ 13,327.50	7/1/2014
ne	$ 47,900.00	8/1/2014
ne	$ 4,292.00	9/1/2014
ne	$ 1,725.00	10/1/2013
ne	$ 3,075.00	12/1/2014
ne	$ 2,920.00	2/1/2014
ne	$ 4,870.00	2/1/2014
ne	$ 22,662.00	6/1/2014
ne	$ 90,540.00	6/1/2014
ne	$ 3,303.00	7/1/2014
ne	$ 1,766.00	8/1/2014

AVERAGE

:AVERAGE

=AVERAGE (number1 , [number2] , ...)



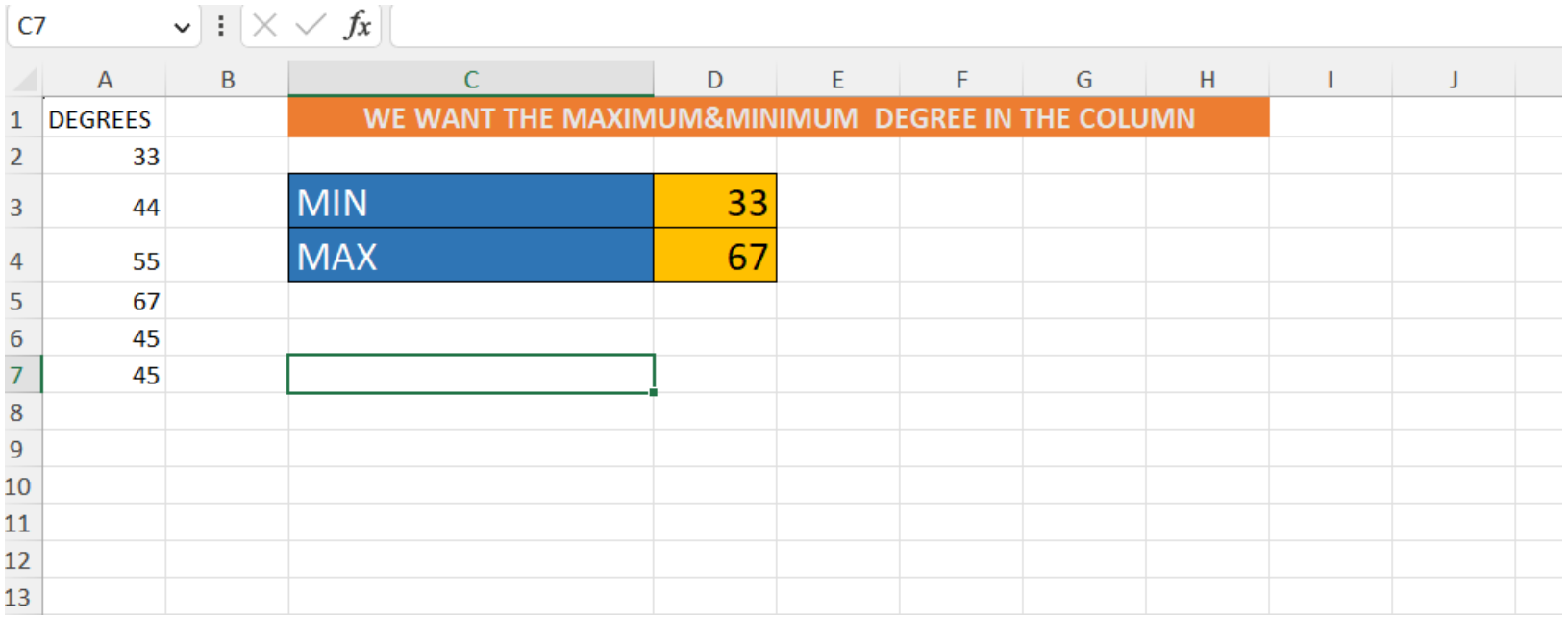
MAX &MIN

:MIN

=MIN (number1 , [number2] , ...)

:MAX

=MAX (number1 , [number2] , ...)



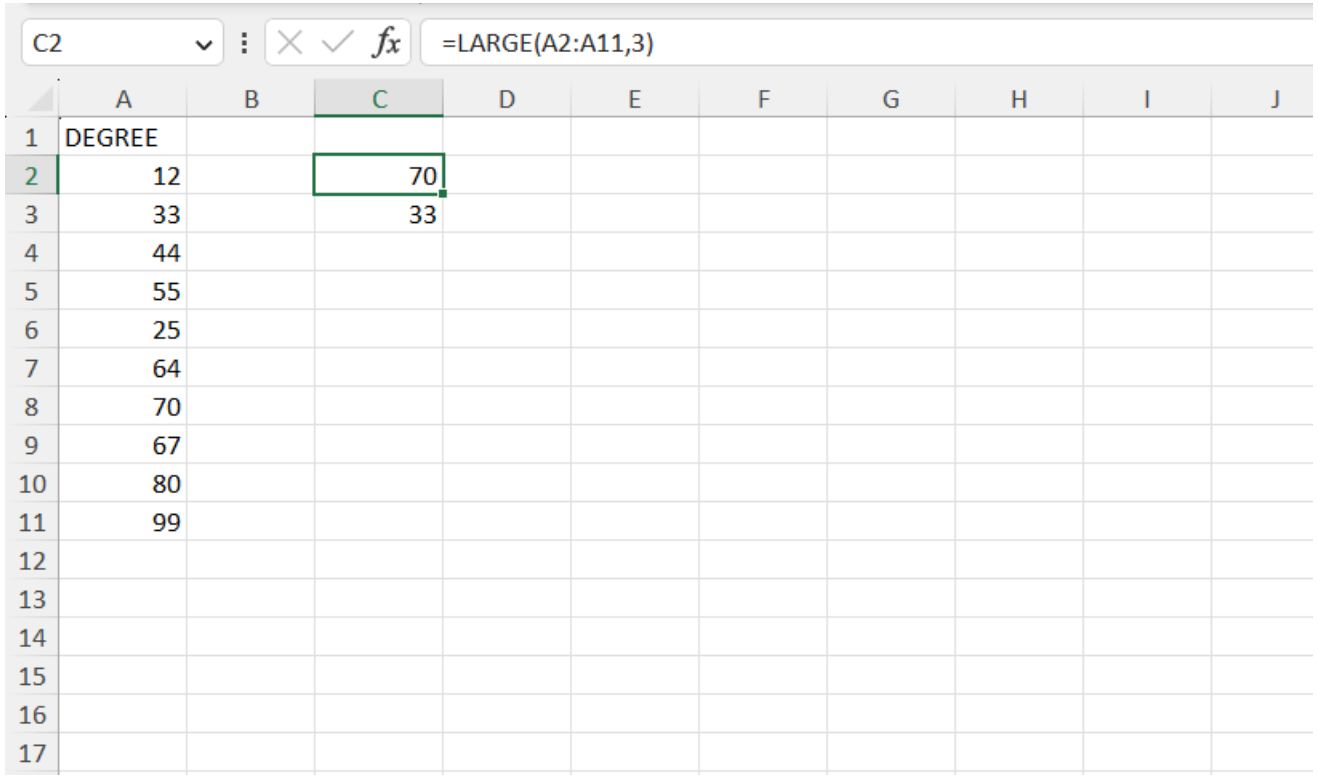
LARGE &SMALL

:LARGE

=LARGE (array , k)

:SMALL

=SMALL (array , k)



	A	B	C	D	E	F	G	H	I	J
1	DEGREE									
2	12		70							
3	33		33							
4	44									
5	55									
6	25									
7	64									
8	70									
9	67									
10	80									
11	99									
12										
13										
14										
15										
16										
17										

COUNT&COUNTA&COUNTBLACK

:COUNT - COUNTA - COUNTBLANK

=COUNT (number1 , [number2] , ...)

=COUNTA (number1 , [number2] , ...)

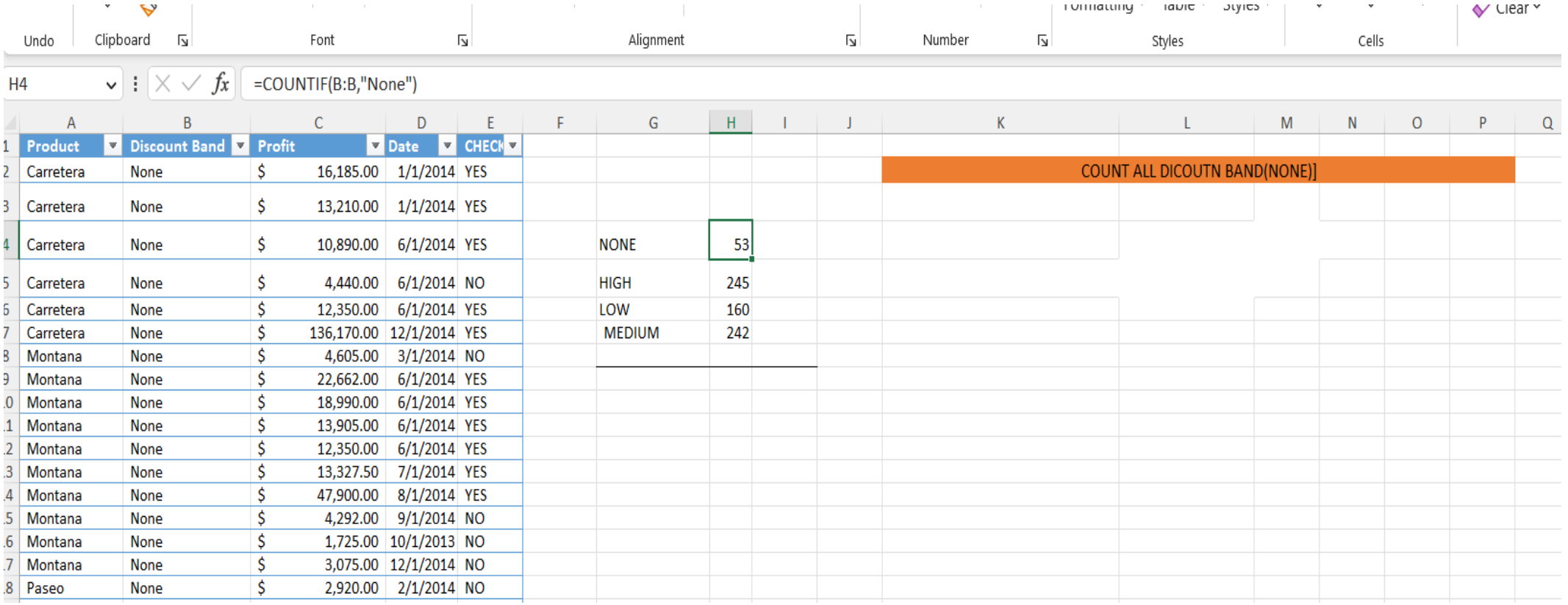
=COUNTBLANK (number1 , [number2] , ...)

	A	B	C	D	E	F	G	H	I
1	NAMES	AGE	COUNT WE USE TO COUNT THE CELL IN NUMERICAL						
2	ALI	12	9						
3	SAID	33	COUNTA WE USE IT TO COUNT NUMERICAL OR NON NUMERICAL WITHOUT BLANCK VALUES						
4		44	7						
5	MONIR	55	COUNT BLANCK TO COUNT THE NULL VALUES						
6	TAMER	63	2						
7	GAMAL	34							
8	SABER	32							
9		42							
10	SOLIMAN	22							

COUNTA

:COUNTIF

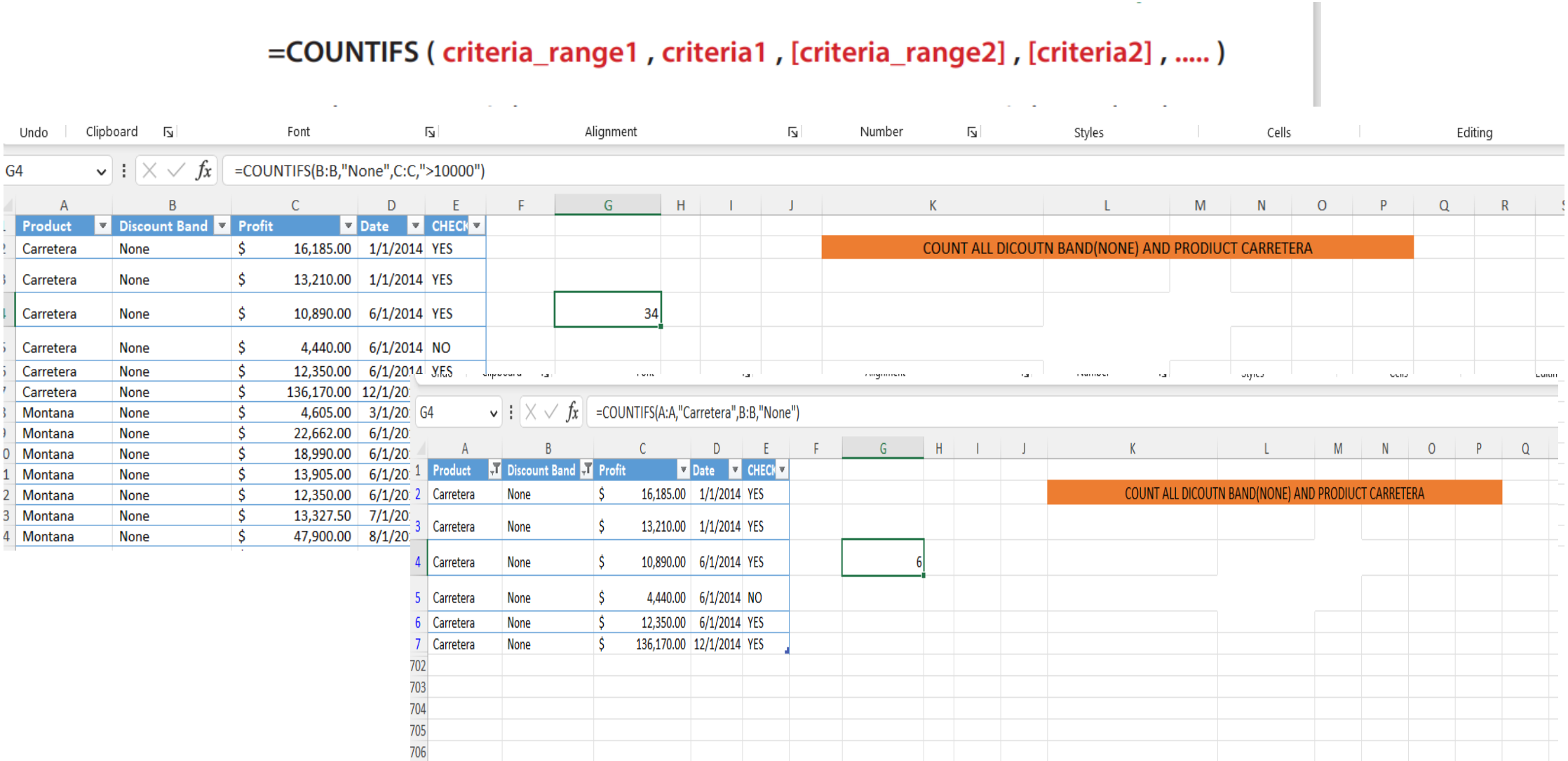
=COUNTIF (range , criteria)



Product	Discount Band	Profit	Date	CHECK
Carretera	None	$ 16,185.00	1/1/2014	YES
Carretera	None	$ 13,210.00	1/1/2014	YES
Carretera	None	$ 10,890.00	6/1/2014	YES
Carretera	None	$ 4,440.00	6/1/2014	NO
Carretera	None	$ 12,350.00	6/1/2014	YES
Carretera	None	$ 136,170.00	12/1/2014	YES
Montana	None	$ 4,605.00	3/1/2014	NO
Montana	None	$ 22,662.00	6/1/2014	YES
Montana	None	$ 18,990.00	6/1/2014	YES
Montana	None	$ 13,905.00	6/1/2014	YES
Montana	None	$ 12,350.00	6/1/2014	YES
Montana	None	$ 13,327.50	7/1/2014	YES
Montana	None	$ 47,900.00	8/1/2014	YES
Montana	None	$ 4,292.00	9/1/2014	NO
Montana	None	$ 1,725.00	10/1/2013	NO
Montana	None	$ 3,075.00	12/1/2014	NO
Paseo	None	$ 2,920.00	2/1/2014	NO

COUNTIFS

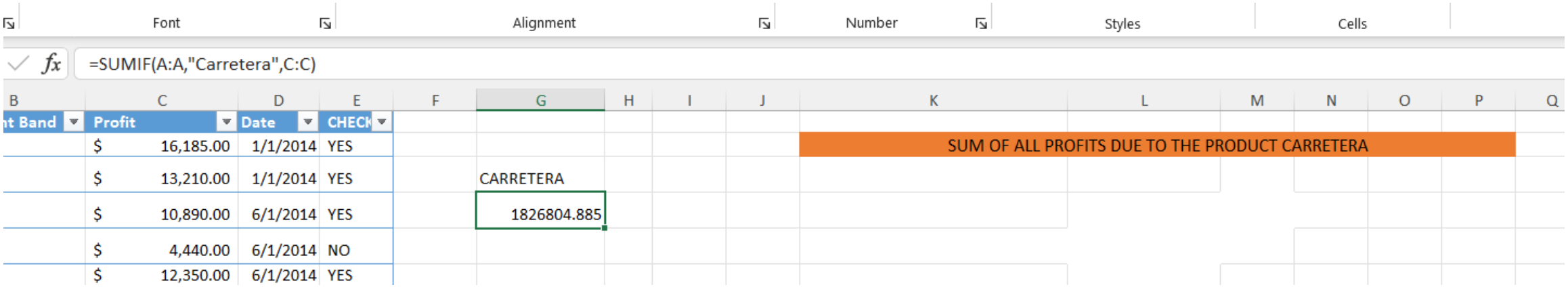
=COUNTIFS (criteria_range1 , criteria1 , [criteria_range2] , [criteria2] , ...)

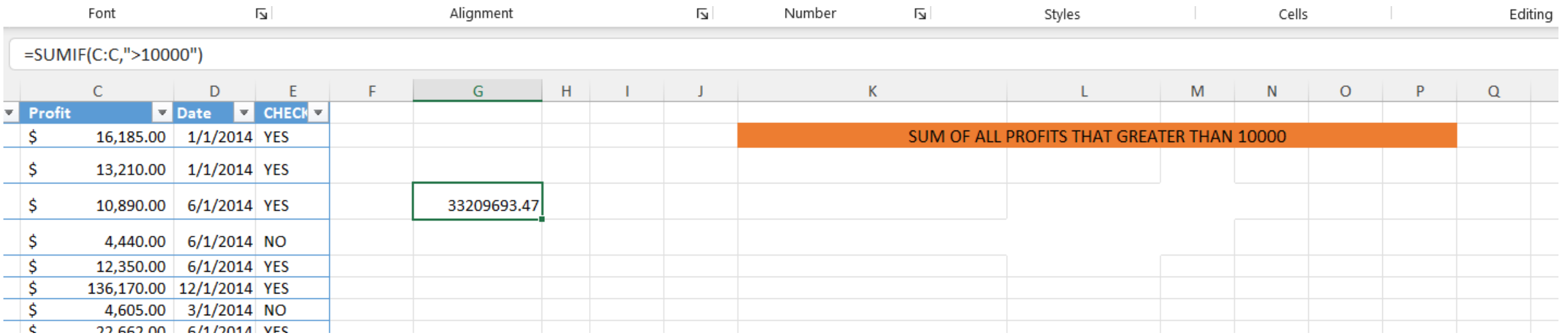


SUMIF

:SUMIF -

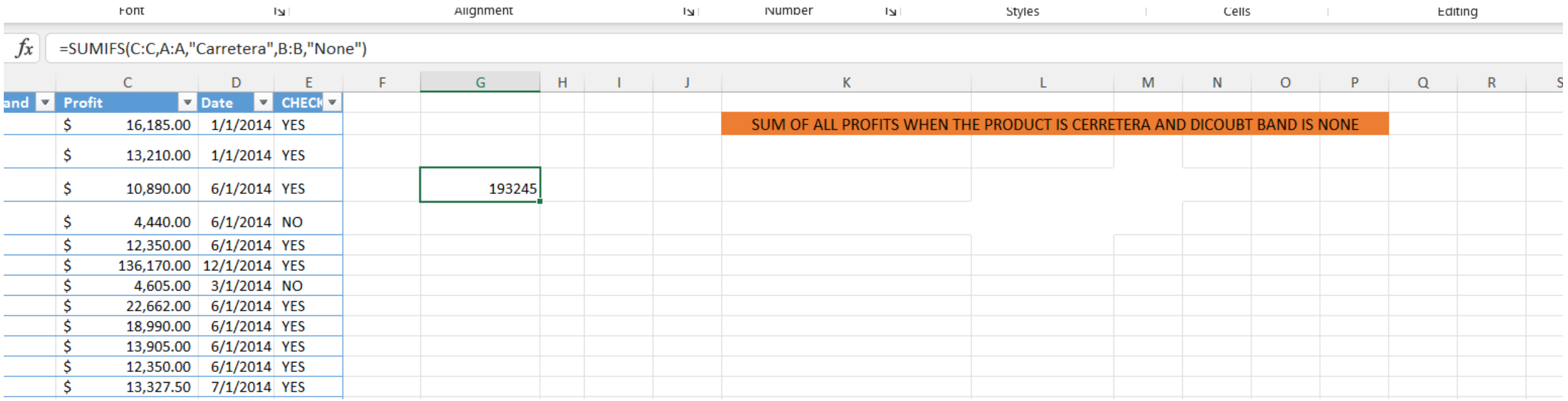
=SUMIF (range , criteria , [sum_range])





SUMIFS

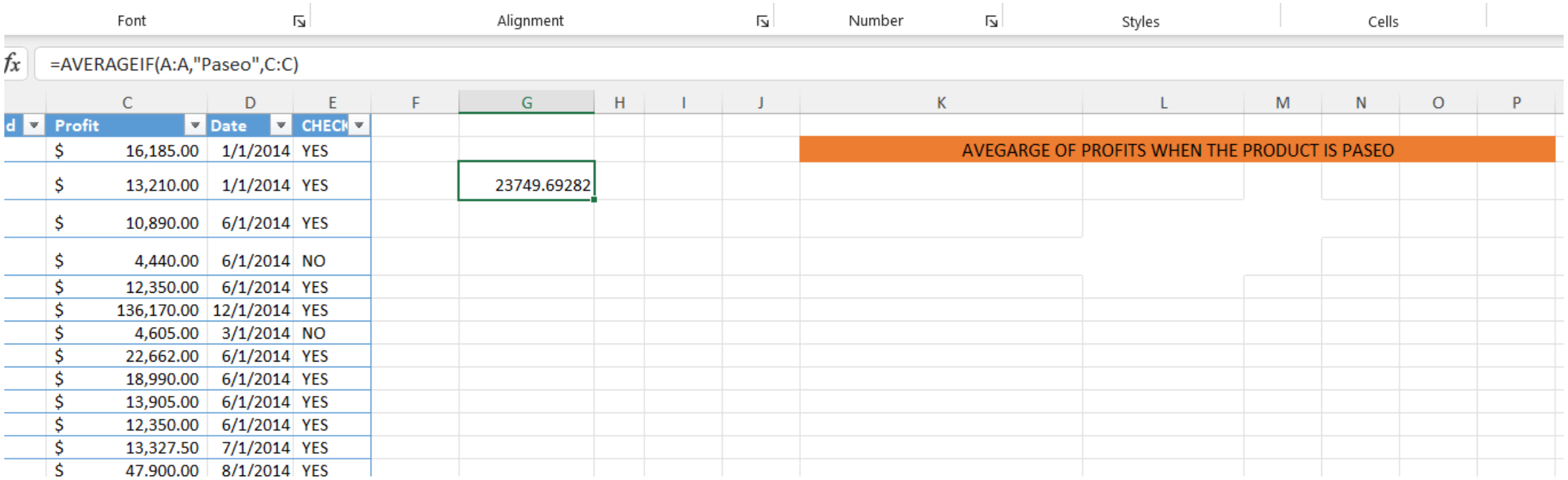
=SUMIFS (sum_range , criteria_range1 , criteria1 , [criteria_range2] , [criteria2] , ...)



and	Profit	Date	CHECK
	$ 16,185.00	1/1/2014	YES
	$ 13,210.00	1/1/2014	YES
	$ 10,890.00	6/1/2014	YES
	$ 4,440.00	6/1/2014	NO
	$ 12,350.00	6/1/2014	YES
	$ 136,170.00	12/1/2014	YES
	$ 4,605.00	3/1/2014	NO
	$ 22,662.00	6/1/2014	YES
	$ 18,990.00	6/1/2014	YES
	$ 13,905.00	6/1/2014	YES
	$ 12,350.00	6/1/2014	YES
	$ 13,327.50	7/1/2014	YES

=AVERAGEIF (range , criteria , [average_range])

AVERAGEIF



d	Profit	Date	CHECK
	$ 16,185.00	1/1/2014	YES
	$ 13,210.00	1/1/2014	YES
	$ 10,890.00	6/1/2014	YES
	$ 4,440.00	6/1/2014	NO
	$ 12,350.00	6/1/2014	YES
	$ 136,170.00	12/1/2014	YES
	$ 4,605.00	3/1/2014	NO
	$ 22,662.00	6/1/2014	YES
	$ 18,990.00	6/1/2014	YES
	$ 13,905.00	6/1/2014	YES
	$ 12,350.00	6/1/2014	YES
	$ 13,327.50	7/1/2014	YES
	$ 47,900.00	8/1/2014	YES

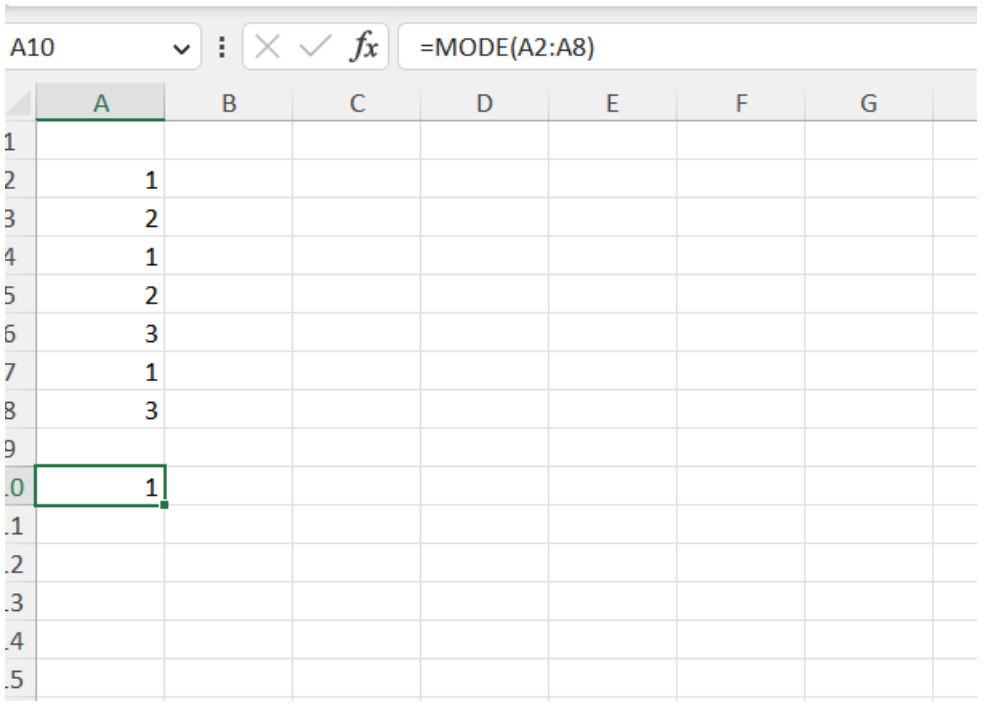
AVERAGEIFS

```
=AVERAGEIFS(average_range, criteria_range1, criteria1, ...)
```

=AVERAGEIFS(C:C,A:A,"Paseo",B:B,"None")

	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	Profit	Date	CHECK												
	$ 16,185.00	1/1/2014	YES						AVEGARGE OF PROFITS WHEN THE PRODUCT IS PASEO AND DISCOUJNTBAND IS HIGH						
	$ 13,210.00	1/1/2014	YES												
	$ 10,890.00	6/1/2014	YES		34094										
	$ 4,440.00	6/1/2014	NO												
	$ 12,350.00	6/1/2014	YES												
	$ 136,170.00	12/1/2014	YES												

MODE



Data visualization

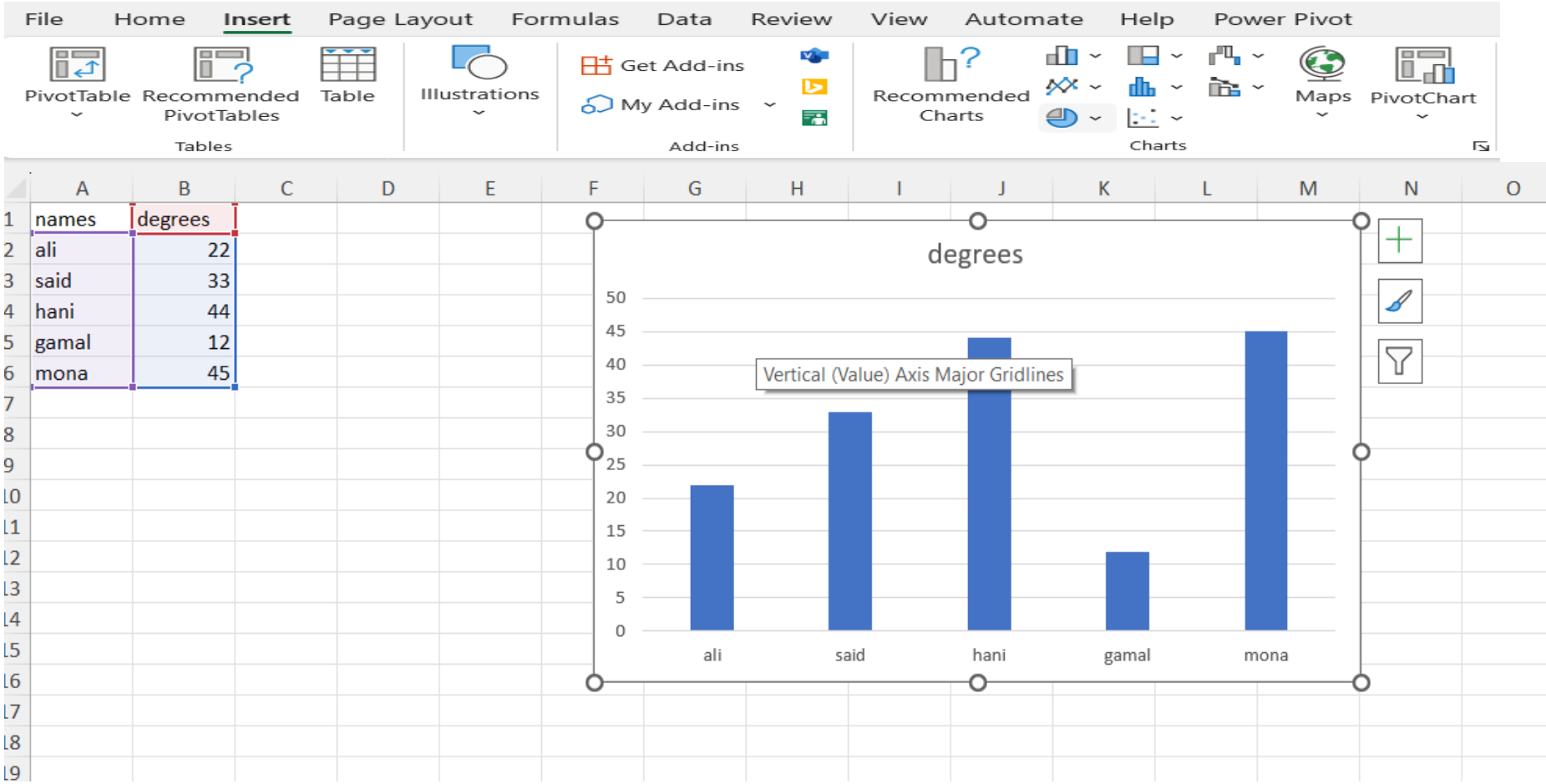
- **Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. Additionally, it provides an excellent way for employees or business owners to present data to non-technical audiences without confusion.**
- **In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decision**

Lets start with data visualization

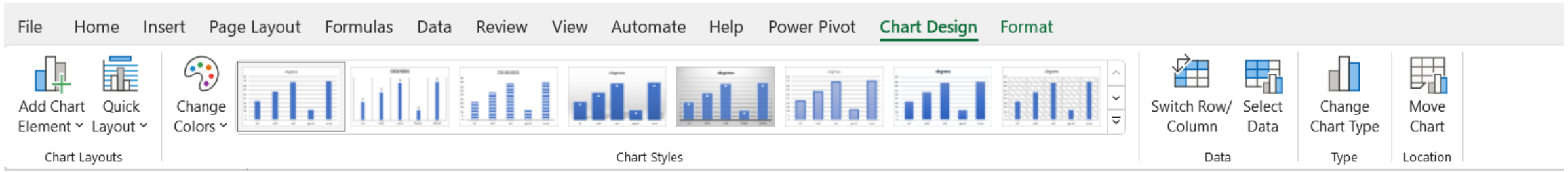
- How can we make an chart that defining the data
- We will go to
- Select the data ➔ insert ➔we choose the best chart for the data

If you have this simple data

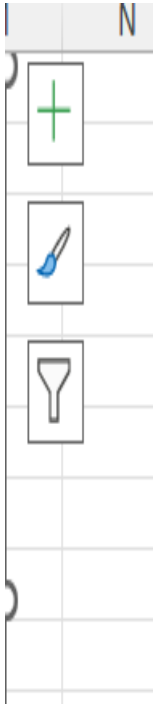
	A	B	C
1	names	degrees	
2	ali	22	
3	said	33	
4	hani	44	
5	gamal	12	
6	mona	45	
7			
8			
9			
10			
11			

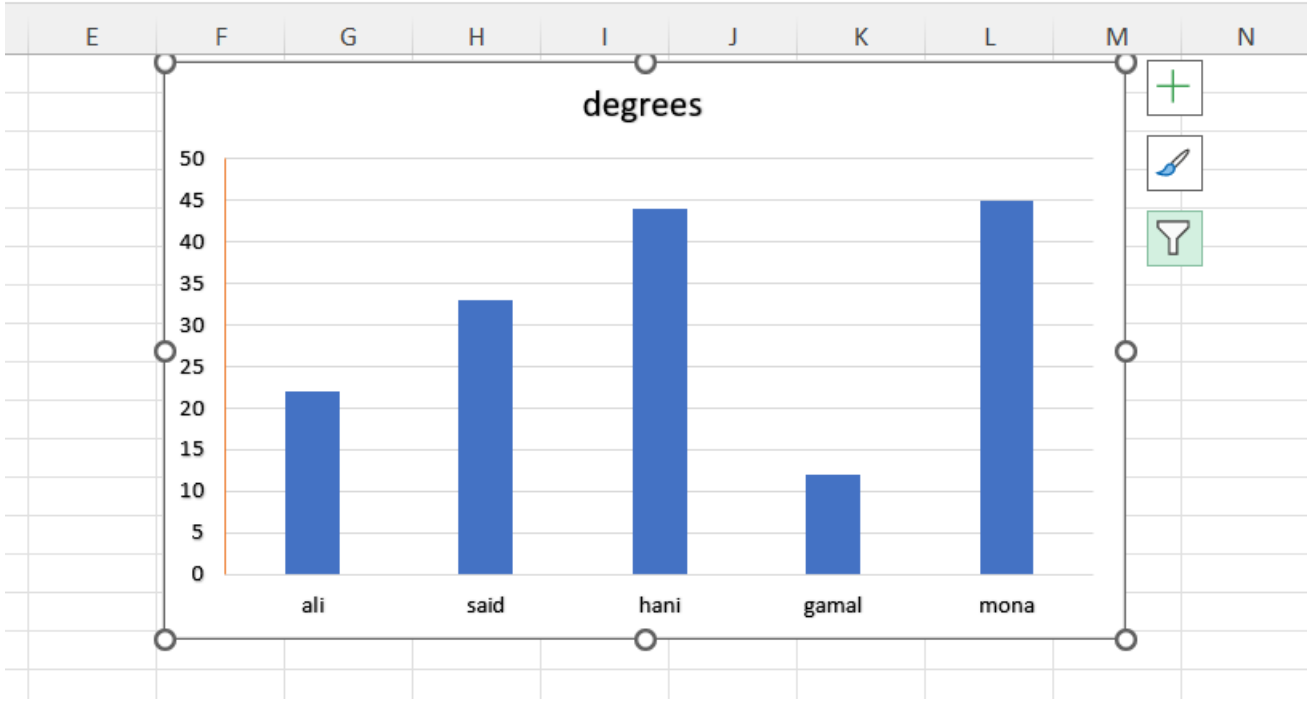


Look what’s happen
there are two options opened
1-format
2-design

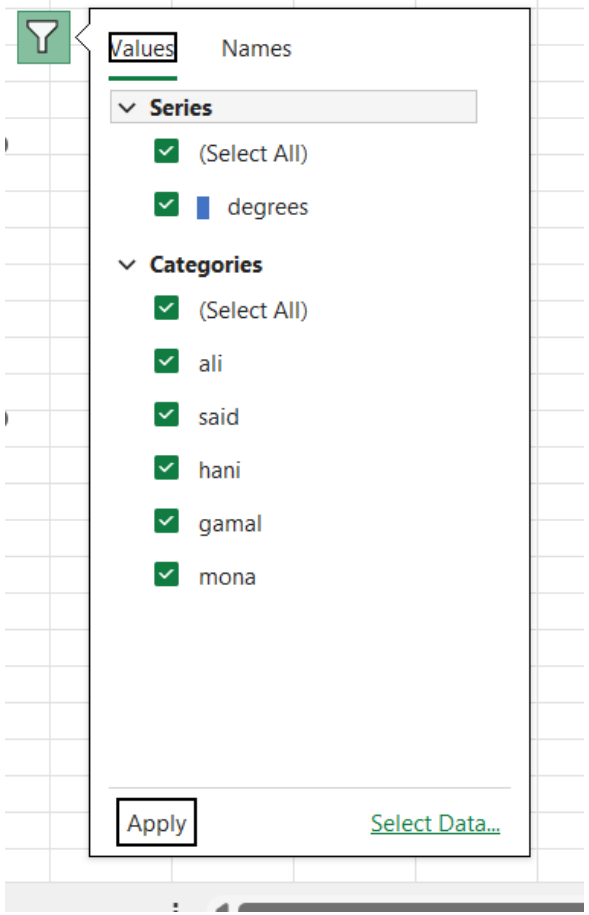


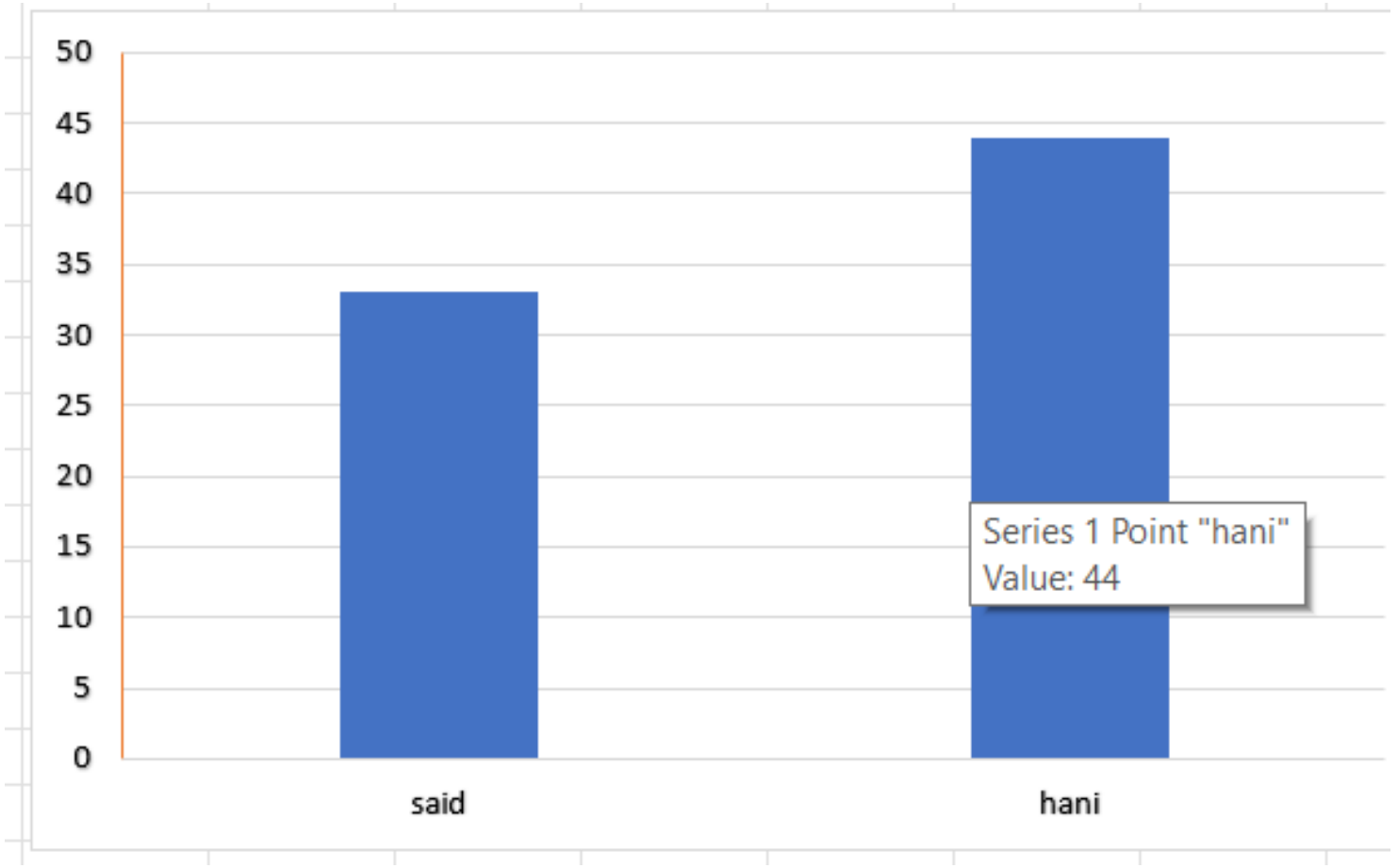
look


N

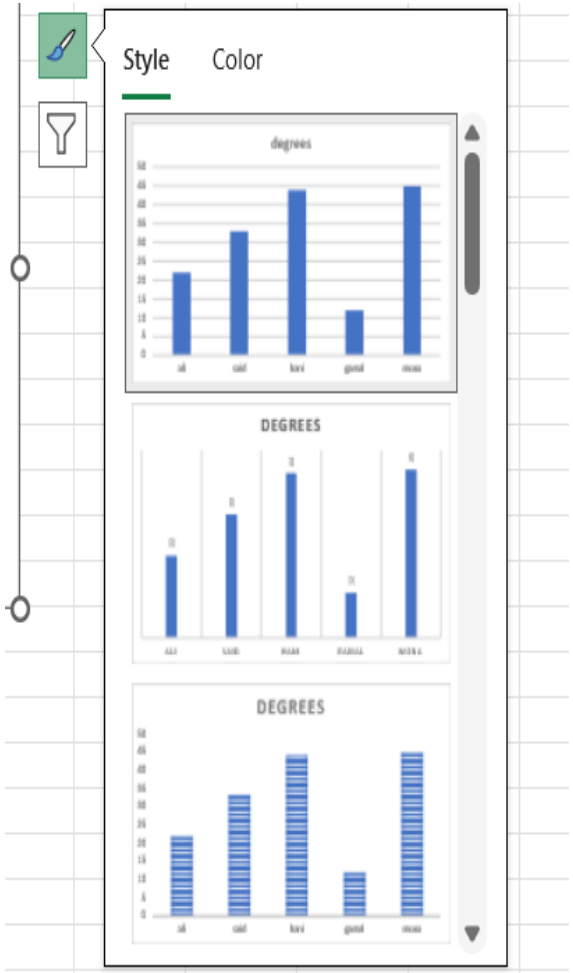

E
F
G
H
I
J
K
L
M
N
degrees
50
45
40
35
30
25
20
15
10
5
0
ali
said
hani
gamal
mona

Filter


Values
Names
Series
(Select All)
degrees
Categories
(Select All)
ali
said
hani
gamal
mona
Apply
Select Data...


50
45
40
35
30
25
20
15
10
5
0
said
hani
Series 1 Point "hani"
Value: 44

style


Style
Color
degrees
DEGREES
DEGREES

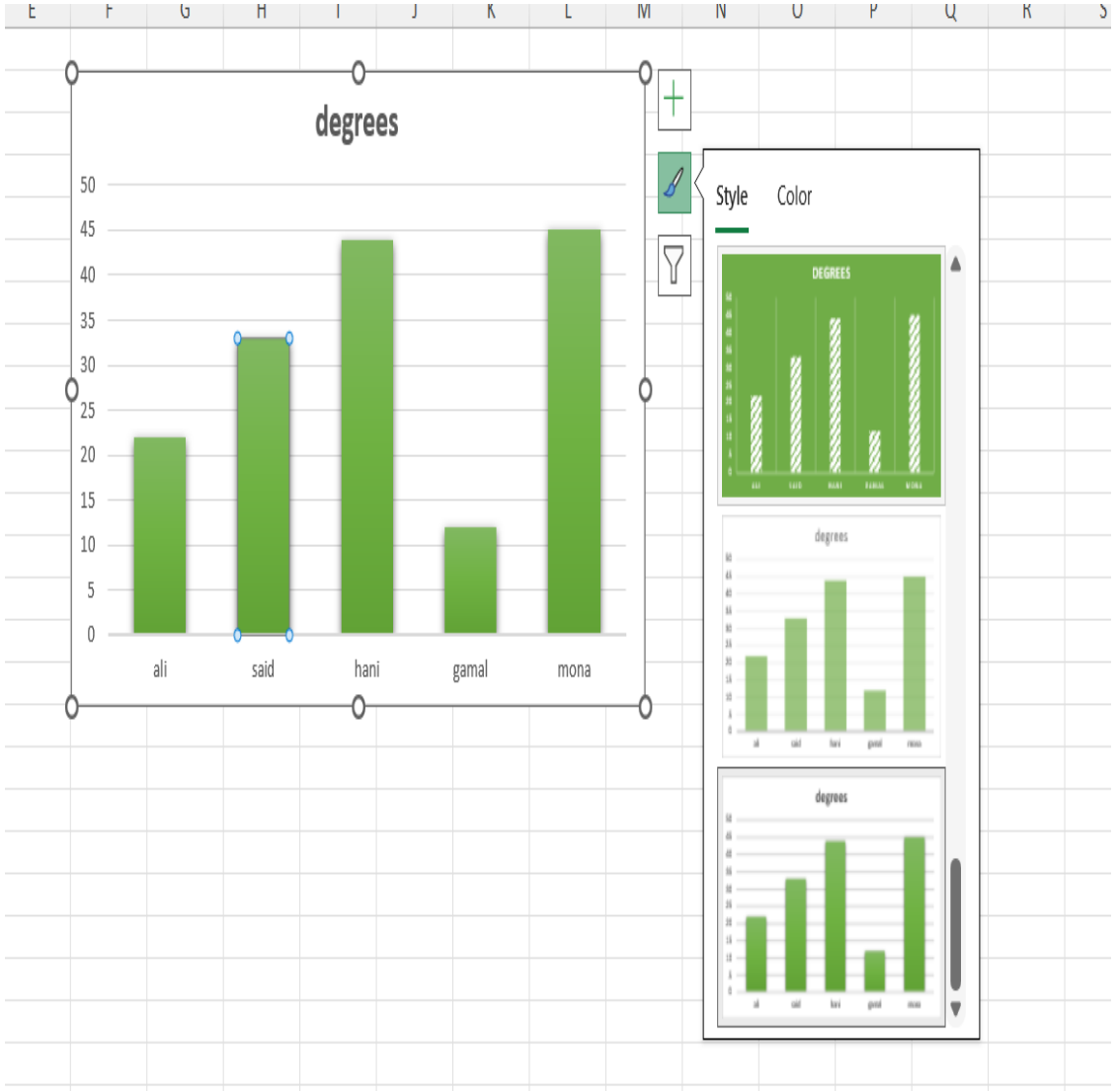
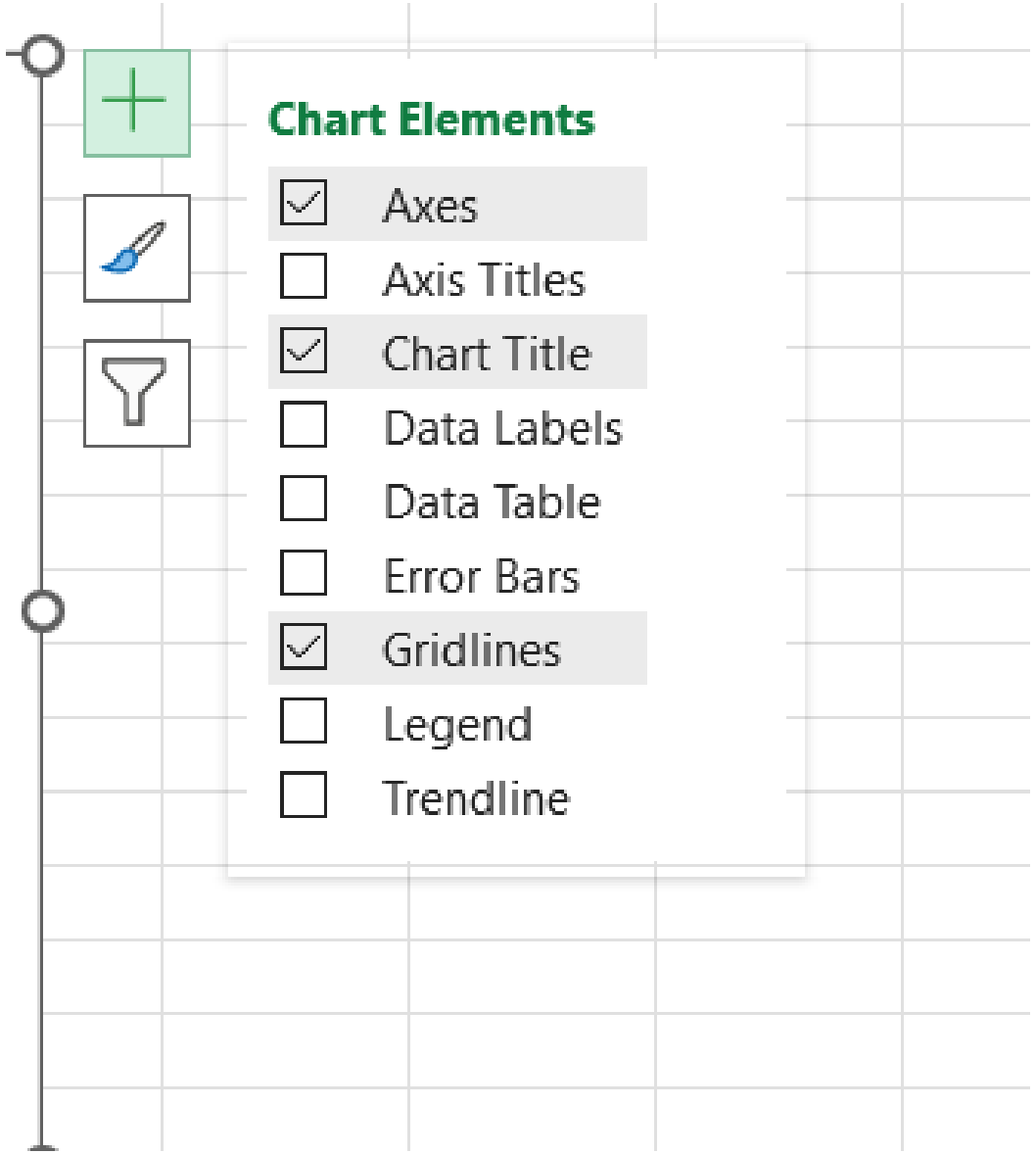
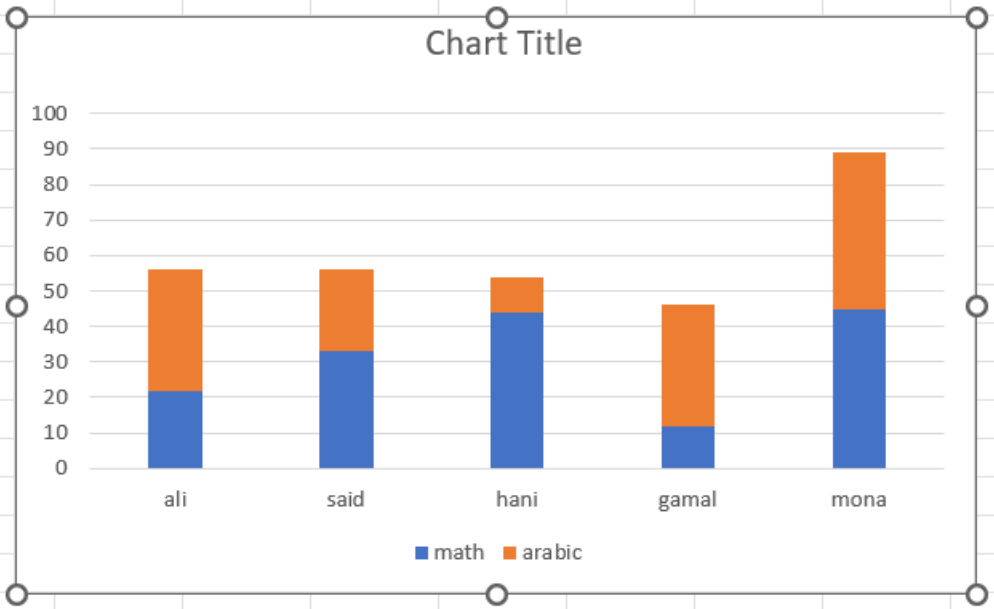

degrees
50
45
40
35
30
25
20
15
10
5
0
ali
said
hani
gamal
mona
Style
Color
DEGREES
degrees
degrees

Chart elements

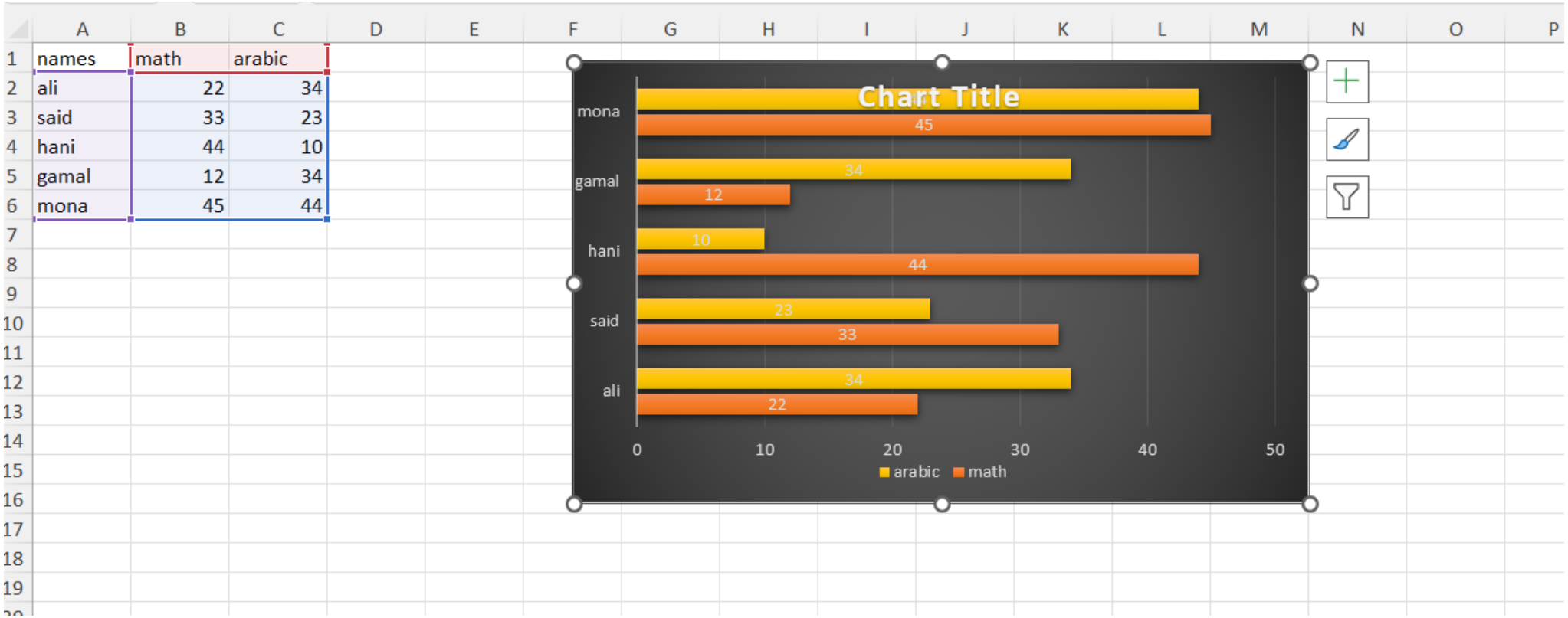


Stacked bar chart

names	math	arabic
ali	22	34
said	33	23
hani	44	10
gamal	12	34
mona	45	44

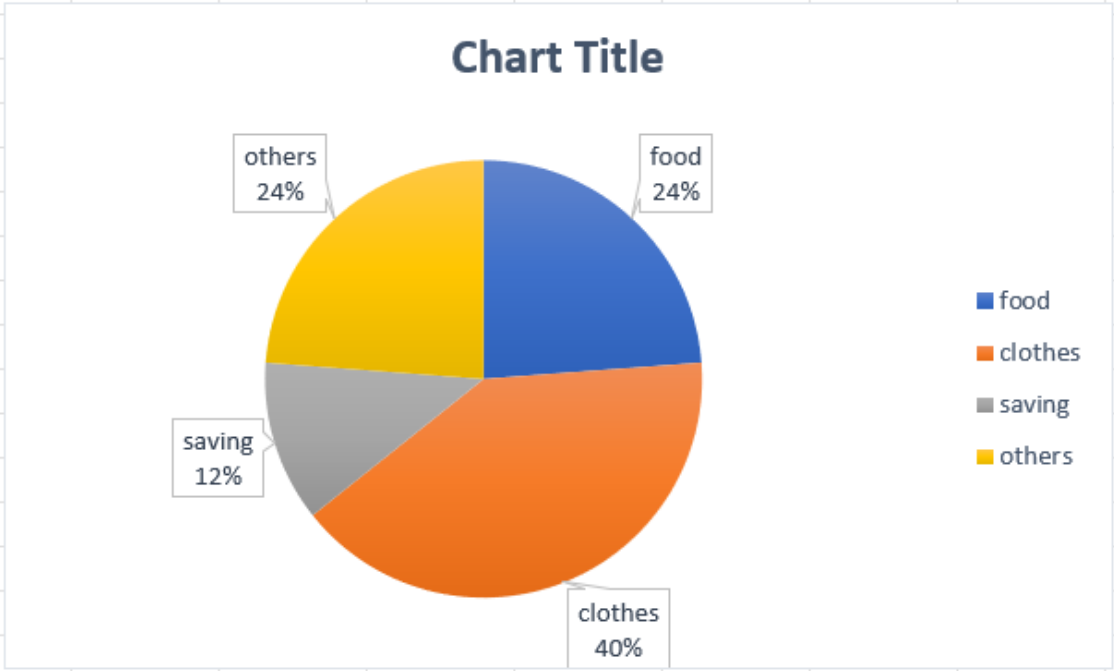


Cluster bar chart



Pie chart

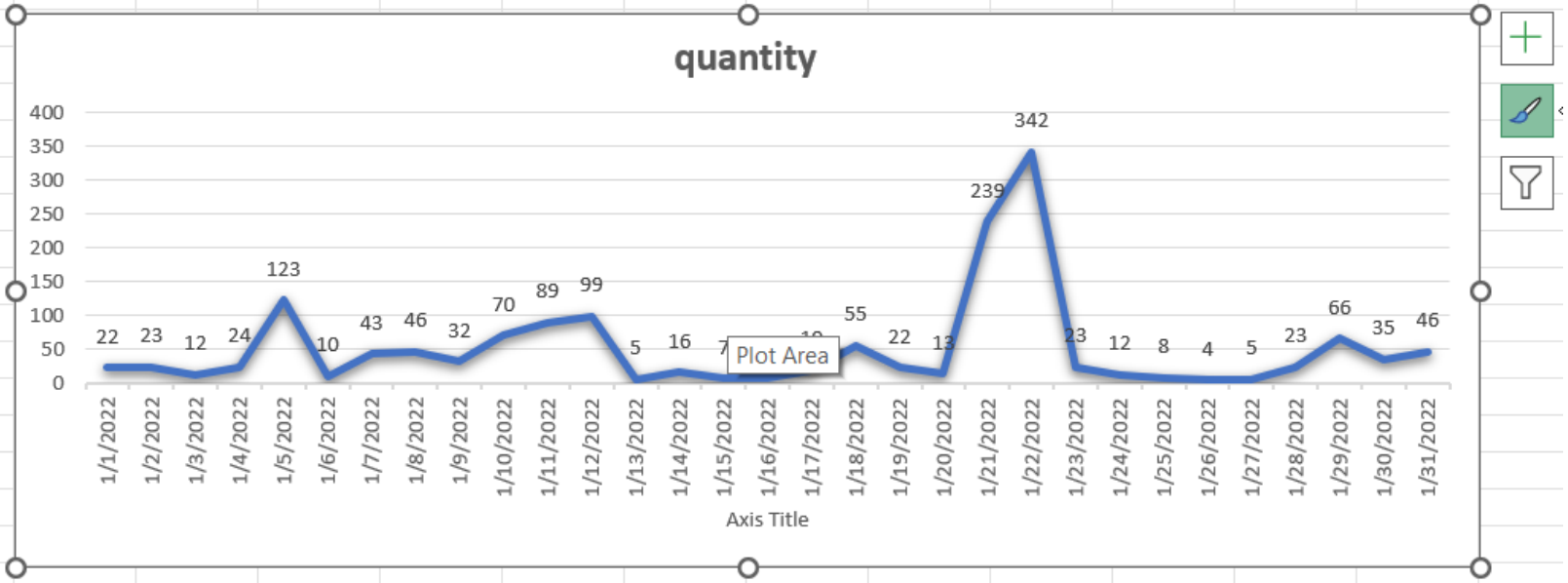
	A	B	C
1	salary	charge	
2	food	2000	
3	clothes	3400	
4	saving	1000	
5	others	2000	
6			
7		8400	
8			



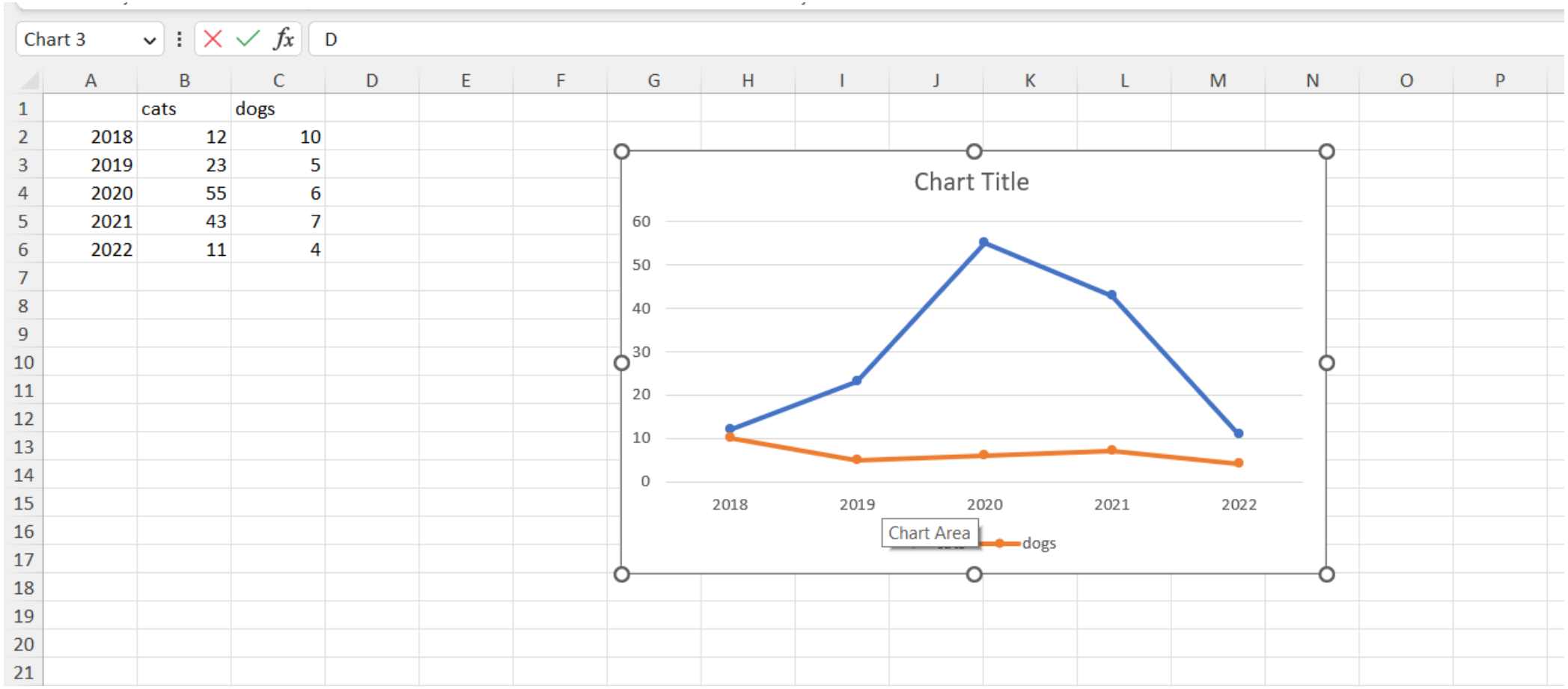
Line chart

- Line charts are typically used for showing **trends** over time.
-

	date	quantity	total
2	1/1/2022	22	220000
3	1/2/2022	23	230000
4	1/3/2022	12	120000
5	1/4/2022	24	240000
6	1/5/2022	123	1230000
7	1/6/2022	10	100000
8	1/7/2022	43	430000
9	1/8/2022	46	460000
10	1/9/2022	32	320000
11	1/10/2022	70	700000
12	1/11/2022	89	890000
13	1/12/2022	99	990000
14	1/13/2022	5	50000
15	1/14/2022	16	160000
16	1/15/2022	7	70000
17	1/16/2022	8	80000
18	1/17/2022	19	190000
19	1/18/2022	55	550000

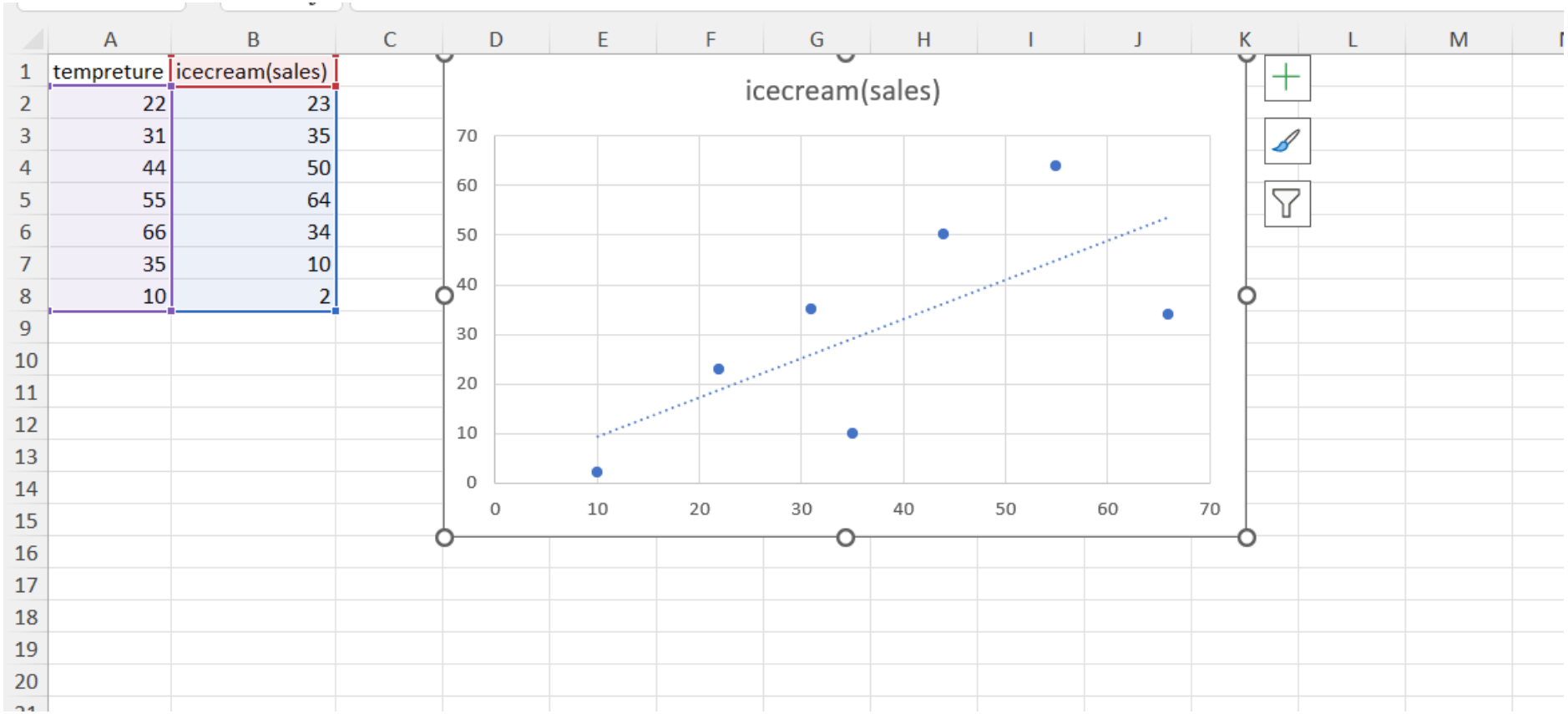


Multiple line chart



	A	B	C
1		cats	dogs
2	2018	12	10
3	2019	23	5
4	2020	55	6
5	2021	43	7
6	2022	11	4

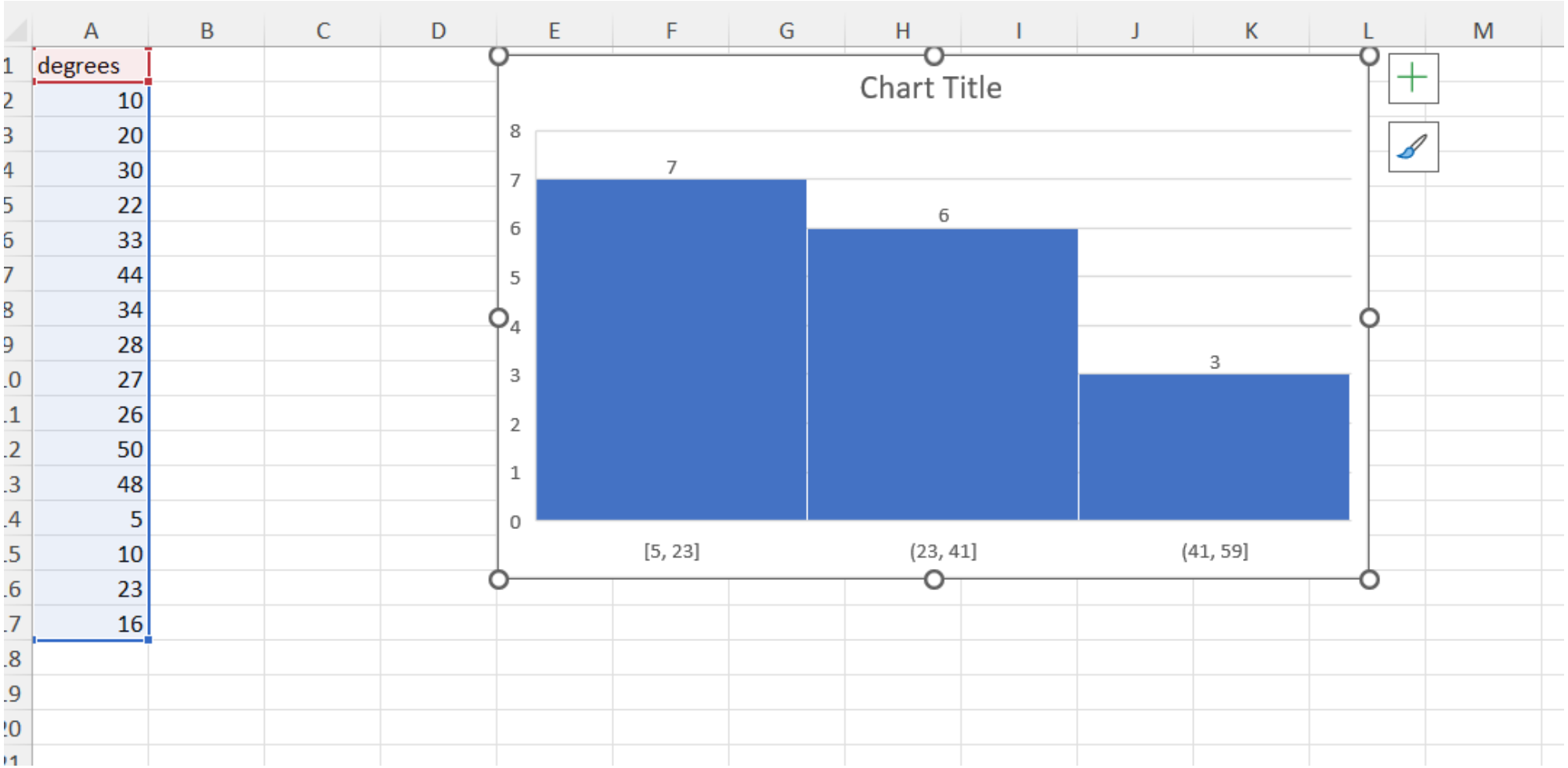
Scatter plot



histogram

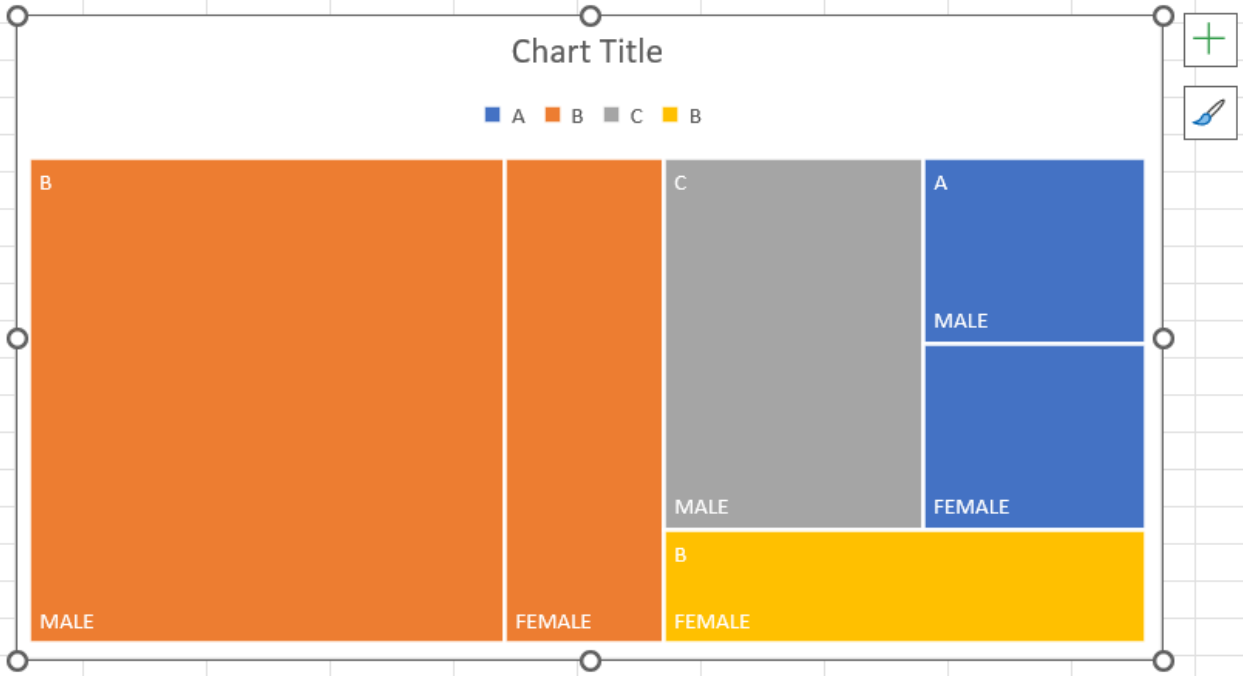
- **What Is a Histogram?**
- A histogram is a graphical representation of data points organized into user-specified ranges. Similar in appearance to a bar graph, the histogram condenses a data series into an easily interpreted visual by taking many data points and grouping them into logical ranges or bins

look


degrees
10
20
30
22
33
44
34
28
27
26
50
48
5
10
23
16
Chart Title
8
7
6
5
4
3
2
1
0
7
6
3
[5, 23]
(23, 41]
(41, 59]

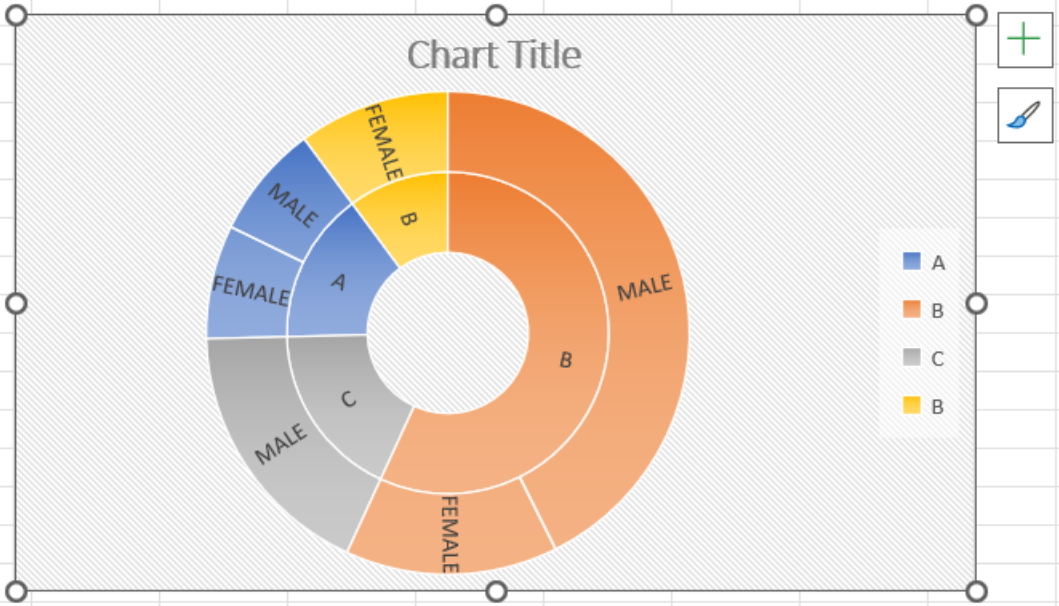
Tree map

BRANCH	GENDER	QUANTITY
A	MALE	15
A	FEMALE	15
B	MALE	84
B	FEMALE	28
C	MALE	35
B	FEMALE	20

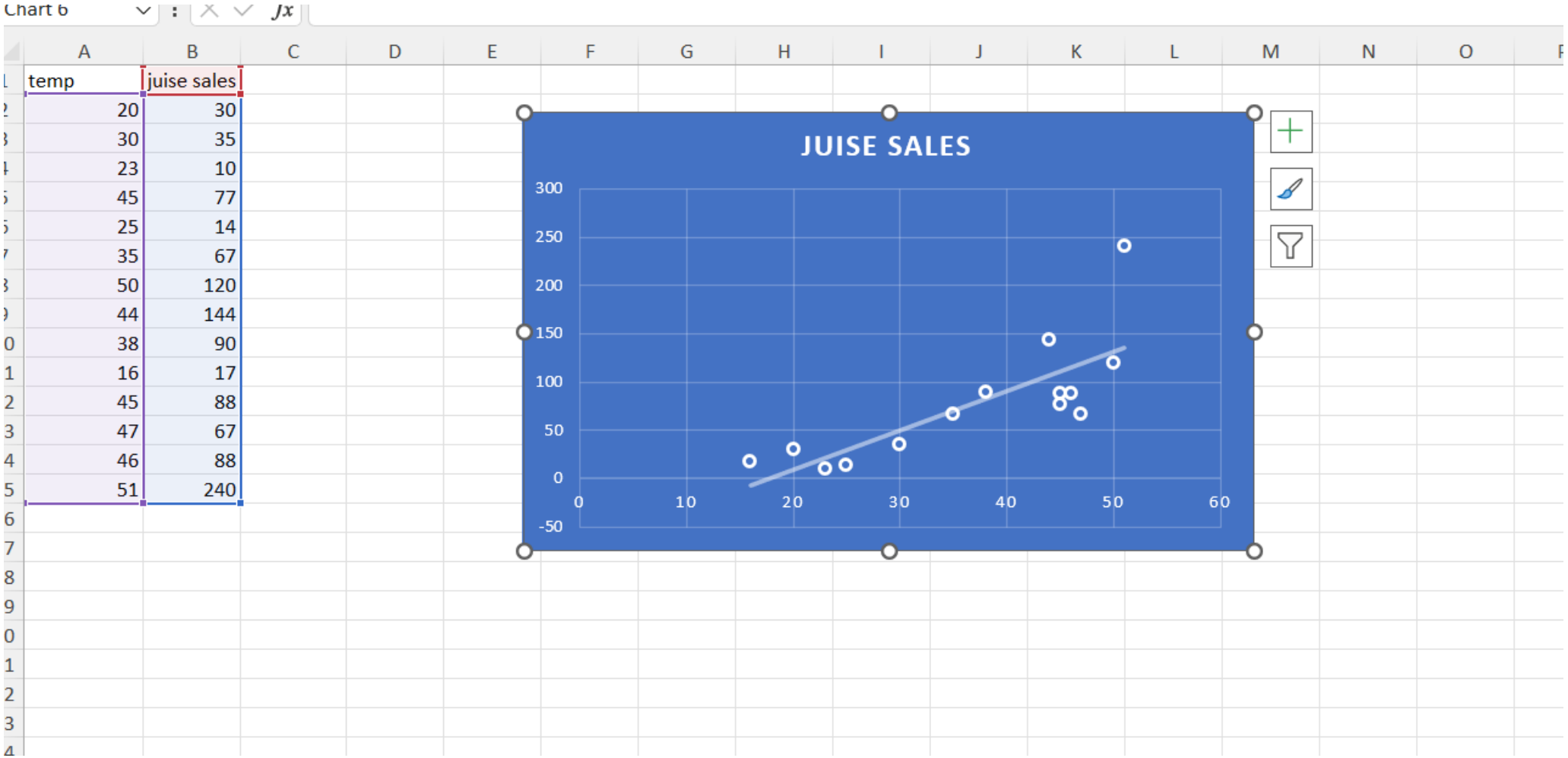


Sun burst

BRANCH	GENDER	QUANTITY
A	MALE	15
A	FEMALE	15
B	MALE	84
B	FEMALE	28
C	MALE	35
B	FEMALE	20

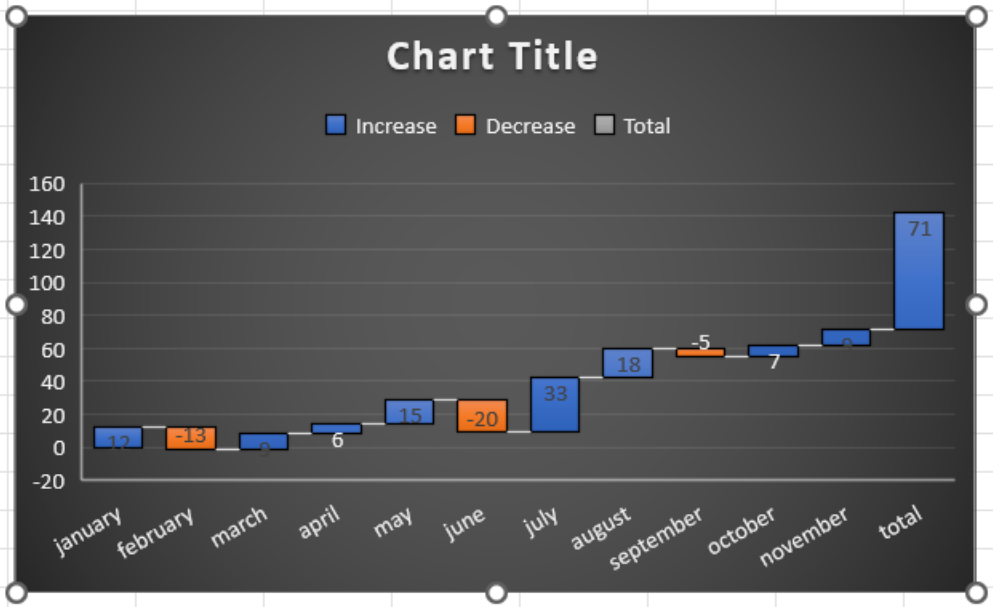


Scatter plot



Waterfall chart

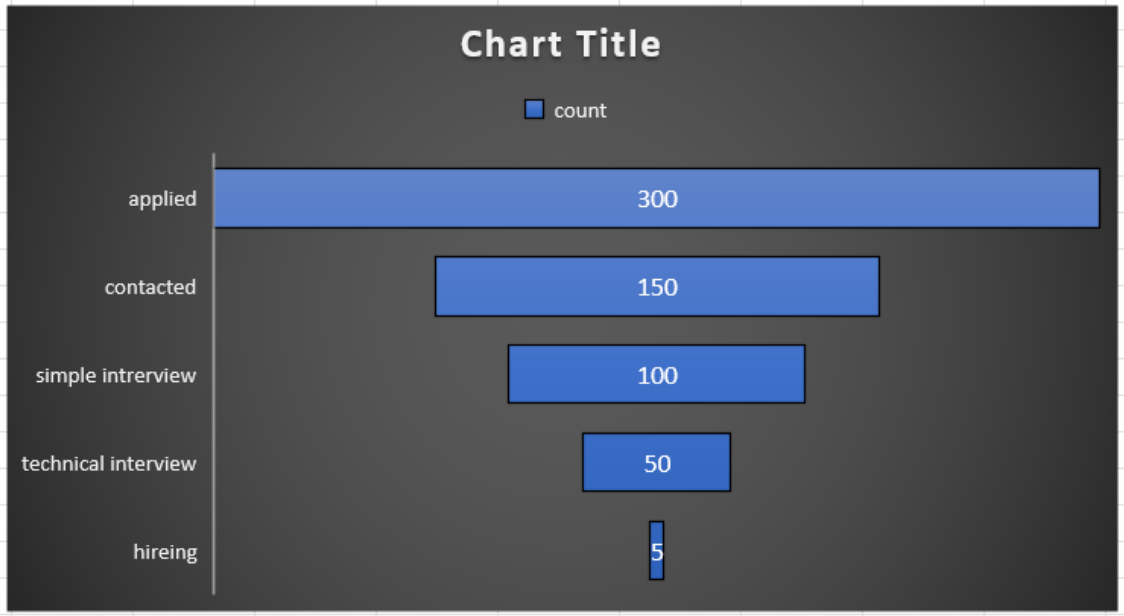
month	sales
january	12
february	-13
march	9
april	6
may	15
june	-20
july	33
august	18
september	-5
october	7
november	9
total	71



Funnel chart

O18

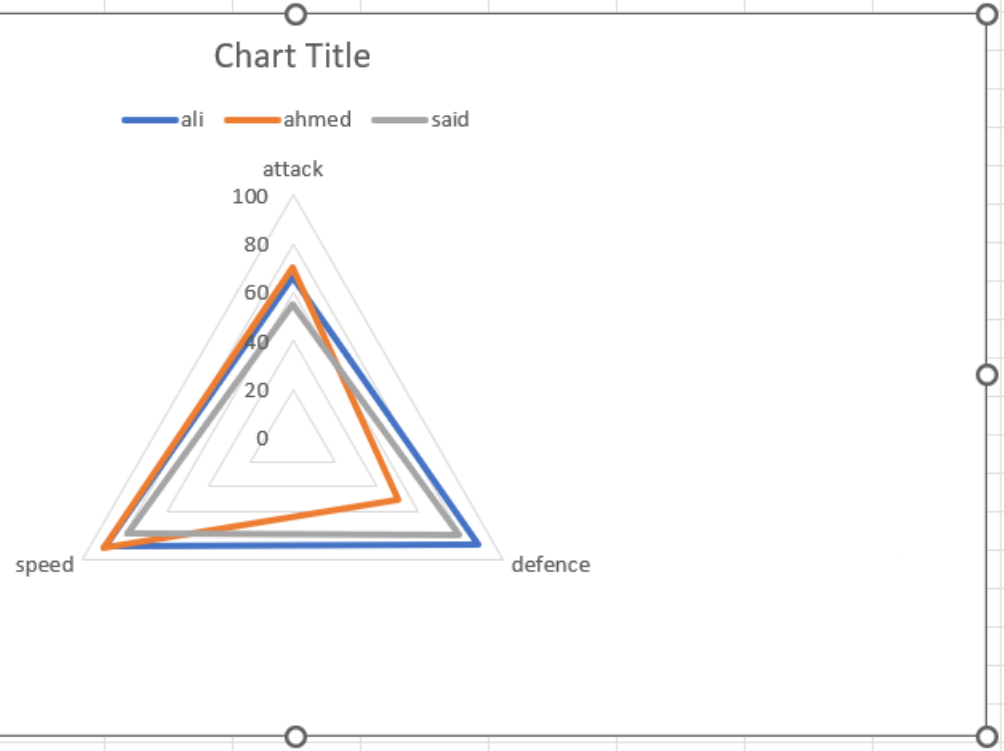
	A	B
1	stage	count
2	applied	300
3	contacted	150
4	simple intrerview	100
5	technical interview	50
6	hireing	5



Radar chart

Chart 13

name	attack	defence	speed
ali	66	88	89
ahmed	70	50	90
said	55	79	78



Combo chart

Chart 15

Name Box

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	month	sales	quantity												
2	january	3334	67												
3	february	2312	38												
4	march	3500	85												
5	april	3492	100												
6	may	3268	60												
7	june	1471	88												
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
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20															
21