

Introduction to MS Excel(Part-II)

SESSION OBJECTIVES

- ✓ Use conditional formatting effectively.
- ✓ Understand cell referencing (relative & absolute).
- ✓ Apply essential Excel functions (SUM, AVERAGE, IF, etc.).
- ✓ Explore AI-powered features and data tools in Excel.
- ✓ Use powerful Excel formulas—from statistical to logical, text, and date functions—to organize, analyze, and make sense of real-world data.

1 CONDITIONAL FORMATTING 🎨

Conditional Formatting: Make Your Data Speak Visually!

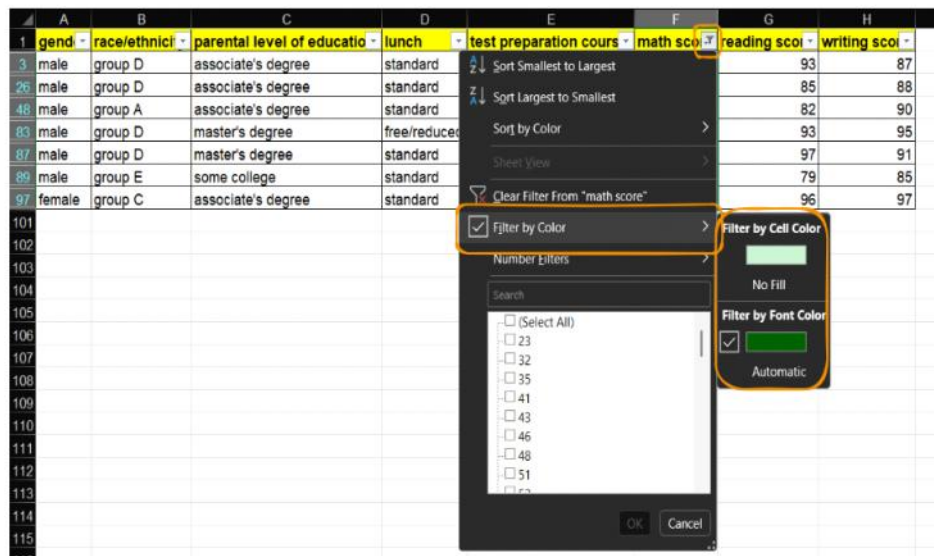
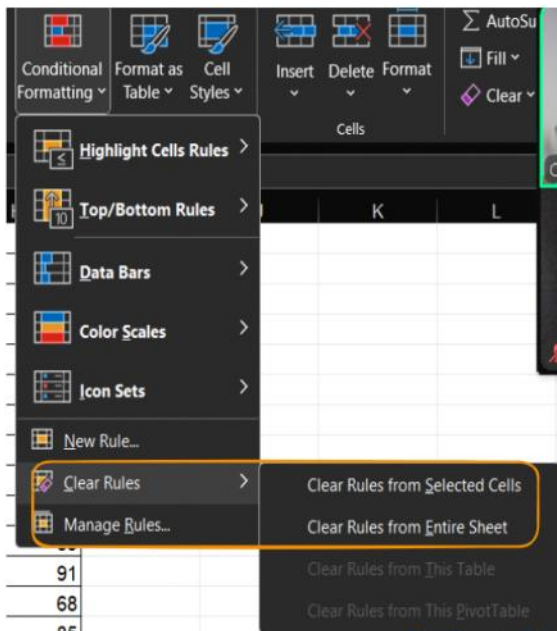
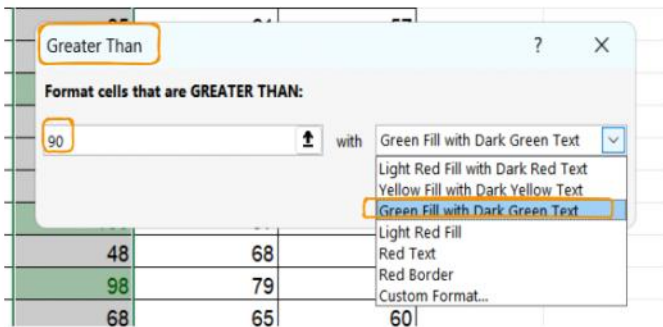
- Highlight patterns or outliers.
- Spot errors or duplicates

🔍 Use Cases:

- ✓ Highlight top 5 sales
- ✓ Color-code profit/loss
- ✓ Flag missing values
- ✓ Visualize trends with color scales

	A	B	C	D	E	F	G	H
1	gender	race/ethnicity	parental level of education	lunch	test preparation course	math score	reading score	writing score
2	female	group D	some college	standard	completed	59	70	78
3	male	group D	associate's degree	standard	none	96	93	87
4	female	group D	some college	free/reduced	none	57	76	77
5	male	group B	some college	free/reduced	none	70	70	63
6	female	group D	associate's degree	standard	none	83	85	86
7	male	group C	some high school	standard	none	68	57	54
8	female	group E	associate's degree	standard	none	82	83	80
9	female	group B	some high school	standard	none	46	61	58
10	male	group C	some high school	standard	none	80	75	73
11	female	group C	bachelor's degree	standard	completed	57	69	77
12	male	group B	some high school	standard	none	74	69	69
13	male	group B	master's degree	standard	none	53	50	49
14	male	group B	bachelor's degree	free/reduced	none	76	74	76
15	male	group A	some college	standard	none	70	73	70
16	male	group C	master's degree	free/reduced	none	55	54	52
17	male	group E	master's degree	free/reduced	none	56	46	43
18	female	group C	some college	free/reduced	none	35	47	41
19	female	group C	high school	standard	none	87	92	81
20	female	group E	associate's degree	free/reduced	none	80	82	85
21	female	group D	associate's degree	standard	completed	65	71	74
22	male	group C	high school	free/reduced	none	66	66	62
23	female	group D	associate's degree	standard	completed	67	71	76
24	female	group B	some college	standard	none	70	71	71
25	male	group E	associate's degree	standard	none	89	88	86

Average: 72.05050505	Count: 99	Sum: 7133
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gend	race/ethnicity	parental level of education	lunch	test preparation course	math score	reading score	writing score
male	group D	associate's degree	standard	none	96	93	87
male	group D	associate's degree	standard	completed	99	85	88
male	group A	associate's degree	standard	completed	96	82	90
male	group D	master's degree	free/reduced	completed	91	93	95
male	group D	master's degree	standard	none	100	97	91
male	group E	some college	standard	none	98	79	85
female	group C	associate's degree	standard	completed	91	96	97
female	group D	some college	standard	completed	59	70	78
female	group D	some college	free/reduced	none	57	76	77
male	group B	some college	free/reduced	none	70	70	63
female	group D	associate's degree	standard	none	83	85	86
male	group C	some high school	standard	none	68	57	54
female	group E	associate's degree	standard	none	82	83	80
female	group B	some high school	standard	none	46	61	58

Sort Smallest to Largest
Sort Largest to Smallest

☒ Sort by Color

Sheet View

Clear Filter From "math score"

Filter by Color

Number Filters

Search

- ☒ (Select All)
- ☒ 23
- ☒ 32
- ☒ 35
- ☒ 41
- ☒ 43
- ☒ 46
- ☒ 48
- ☒ 51

OK Cancel

Sort by Cell Color

No Fill

Sort by Font Color

☒ Automatic

Custom Sort...

Between

Format cells that are BETWEEN:

51 and 90 with Yellow Fill with Dark Yellow Text

OK Cancel

Less Than

Format cells that are LESS THAN:

50 with Light Red Fill with Dark Red Text

OK Cancel

53
52
51
48
46
46
43
41
35
35
32
23

Filter by Color

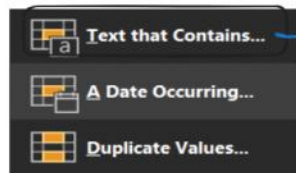
Number Filters

Search

- ☒ (Select All)
- ☒ 23
- ☒ 32
- ☒ 35
- ☒ 41
- ☒ 43
- ☒ 46

Filter by Cell Color

Filter by Font Color



master's degree	standard	none	68	65
some college	standard	none	62	64
bachelor's degree	standard	none	64	62
high school	fre			
high school	ste			
some college	ste			
some high school	ste			
some high school	fre			
some high school	ste			
high school	standard	none	52	50
master's degree	free/reduced	none	55	54
some high school	standard	none	57	53
high school	standard	none	59	52
high school	free/reduced	none	58	52
some college	standard	none	43	51
master's degree	standard	none	53	50
some college	standard	completed	61	49
some college	free/reduced	none	35	47
bachelor's degree	standard	none	63	46
master's degree	free/reduced	none	56	46
some college	standard	none	51	46
associate's degree	free/reduced	completed	46	46
master's degree	free/reduced	none	32	35
associate's degree	free/reduced	none	35	34
some high school	standard	none	23	33

Text That Contains

Format cells that contain the text:

degree with Light Red Fill with Dark Red Text

OK Cancel

"%Stone%"

Harry Potter and the Philosopher's Stone

A Date Occurring

Date	
21-05-2025	
22-05-2025	
23-05-2025	
24-05-2025	
25-05-2025	
26-05-2025	
27-05-2025	
28-05-2025	
29-05-2025	
30-05-2025	
31-05-2025	
01-06-2025	
02-06-2025	
03-06-2025	
04-06-2025	
05-06-2025	
06-06-2025	
07-06-2025	
08-06-2025	
09-06-2025	
10-06-2025	

A Date Occurring

Format cells that contain a date occurring:

Next month with Light Red Fill with Dark Red Text

OK Cancel

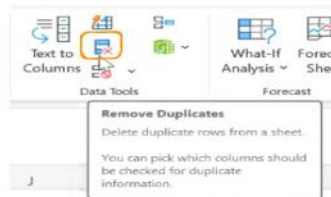
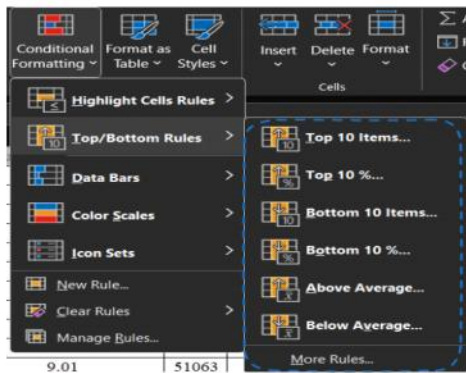
India/UK

"dd/mm/yyyy"

USA

"mm/dd/yyyy"

Emp ID	Name Prefix	Name	First Name	Last Name	Gender	Date of Birth	Age in Yrs.	Weight in Kgs.	Date of Joining	Age in Company (Years)	Salary	Last % Hike	Place Name	Department
408351	Dr.	DianeEvans	Diane	Evans	F	12-4-1977	39.67	51	16-04-2999	18.3	180294	1%	Hydectown	Marketing
677509	Dr.	LoisWalker	Lois	Walker	F	3/29/1981	36.36	60	24/11/2003	13.68	168251	21%	Denver	Marketing
386158	Mrs.	MelissaKing	Melissa	King	F	2/24/1972	45.45	55	24-11-2015	1.68	166892	1%	New Matamoros	Asst. Manager
477616	Hon.	FrancesYoung	Frances	Young	F	6-9-1959	58.18	42	27-04-1994	23.27	121587	28%	Deluita	Developer
231469	Mr.	RalphFlores	Ralph	Flores	M	2-5-1975	42.5	80	14-04-2009	8.29	118457	8%	Sabetha	Manager
193819	Mr.	BenjaminRussell	Benjamin	Russell	M	4/17/1977	40.31	58	25-07-2013	4.01	117642	13%	Fremont	HR
539712	Ms.	NancyBaker	Nancy	Baker	F	6/13/1995	22.14	50	14-09-2016	0.87	98189	0%	Atlanta	Marketing
153989	Prof.	JackAlexander	Jack	Alexander	M	5/19/1995	22.21	61	02-05-2005	0.56	82965	23%	Las Vegas	Marketing
499687	Mr.	PatrickBailey	Patrick	Bailey	M	9/27/1982	34.86	58	22-01-2005	12.02	72305	5%	Macksburg	Marketing
380086	Mrs.	CarolMurphy	Carol	Murphy	F	6/30/1958	59.12	40	28-01-1983	34.52	60918	20%	Blanchester	HR
940761	Ms.	BrendaRobinson	Brenda	Robinson	F	7/31/1970	47.02	60	27-07-2008	9.01	51063	27%	Stonewall	HR
428945	Dr.	JoeRobinson	Joe	Robinson	M	6/16/1963	54.15	68	09-03-2016	0.98	50155	16%	Michigantown	Developer
162402	Hon.	DianaPeterson	Diana	Peterson	F	11/13/1987	29.73	60	17-02-2014	3.44	43010	4%	Eureka Springs	HR
380086	Mrs.	CarolMurphy	Carol	Murphy	F	6/30/1958	59.12	40	28-01-1983	34.52	60918	20%	Blanchester	HR
940761	Ms.	BrendaRobinson	Brenda	Robinson	F	7/31/1970	47.02	60	27-07-2008	9.01	51063	27%	Stonewall	HR
428945	Dr.	JoeRobinson	Joe	Robinson	M	6/16/1963	54.15	68	09-03-2016	0.98	50155	16%	Michigantown	Developer
162402	Hon.	DianaPeterson	Diana	Peterson	F	11/13/1987	29.73	60	17-02-2014	3.44	43010	4%	Eureka Springs	HR



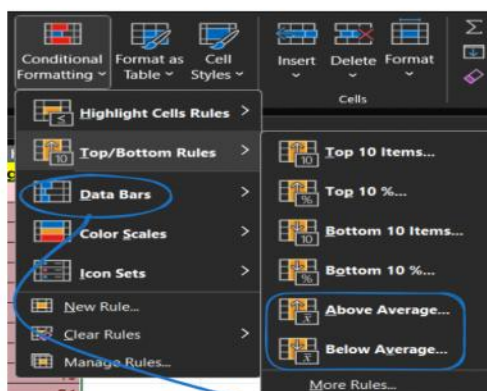
writing score
91
97
95
93
89
88
95
89
88
90
87
86
86
86



10 items VS 10% of total Value?

50 records -> Top 10 records [10 records]
50 records -> Top 10% records [5 records]

Bottom Value -> Sort it first with low to high -> LIMIT 10



Average: 70.63636364

68
69
70
71
71
71
72
72

Calculation is being done on a percentage basis.

88
89
89
90
91
93
95
95
97
100

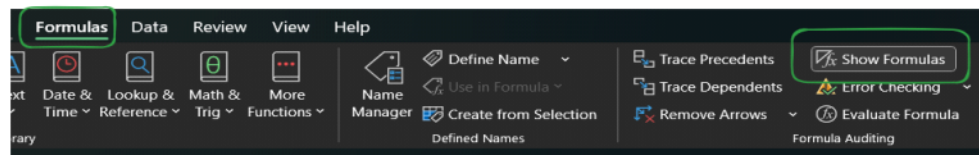
CELL References

Relative, Absolute, Mixed

	A	B	C	D
1	Year of Birth	Present year	Age (Relative)	Age (Absolute)
2	1957	2024		
3	1978	2024		
4	1988	2024		
5	1976	2024		
6	1980	2024		
7	1999	2024		
8	1996	2024		
9	1964	2024		
10	1999	2024		
11	1996	2024		

"Ctrl + =" [Show formula]

	A	B	C
1	Year of Birth	Present year	Age (Relative)
2	1957	2024	=B2-A2
3	1978	2024	=B3-A3
4	1988	2024	=B4-A4
5	1976	2024	=B5-A5
6	1980	2024	=B6-A6
7	1999	2024	=B7-A7
8	1996	2024	=B8-A8
9	1964	2024	=B9-A9
10	1999	2024	=B10-A10
11	1996	2024	=B11-A11



Products	Units	Quantity sold	Total sales
1	40	3	=B2*C2
2	40	4	=B3*C3
3	40	6	=B4*C4
4	40	2	=B5*C5

Absolute Reference

In most of the calculation, you want some specific cell, or a range of cell to be freeze to get the accurate result.

\$B\$1 : \$B\$10

Press F4 to apply \$ in various permutation.

	A	B	C	D	E
1	Year of Birth	Present year	Age (Relative)	Age (Absolute)	2025
2	1957	2024	=B2-A2	=B2-\$E\$1-A2	
3	1978	2024	=B3-A3	=B3-\$E\$1-A3	
4	1988	2024	=B4-A4	=B4-\$E\$1-A4	
5	1976	2024	=B5-A5	=B5-\$E\$1-A5	
6	1980	2024	=B6-A6	=B6-\$E\$1-A6	
7	1999	2024	=B7-A7	=B7-\$E\$1-A7	
8	1996	2024	=B8-A8	=B8-\$E\$1-A8	
9	1964	2024	=B9-A9	=B9-\$E\$1-A9	
10	1999	2024	=B10-A10	=B10-\$E\$1-A10	
11	1996	2024	=B11-A11	=B11-\$E\$1-A11	

	A	B	C	D	E
1	Year of Birth	Present year	Age (Relative)	Age (Absolute)	2025
2	1957	2024	67	68	
3	1978	2024	46	47	
4	1988	2024	36	37	
5	1976	2024	48	49	
6	1980	2024	44	45	
7	1999	2024	25	26	
8	1996	2024	28	29	
9	1964	2024	60	61	
10	1999	2024	25	26	
11	1996	2024	28	29	

Products	Units	Quantity sold	Total sales
1	40	3	120
2		4	160
3		6	240
4		2	80

Products	Units	Quantity sold	Total sales
1	40	3	=B\$2 * C2
2		4	=B\$2 * C3
3		6	=B\$2 * C4
4		2	=B\$2 * C5

Mixed Reference

	A	B	C	D	E
1	10	20	30	40	50
2	20				
3	30				
4	40				
5	50				
6	60				
7	70				
8	80				
9	90				

Diagram illustrating Mixed Reference:

- Orange arrow pointing to cell B2: B\$2
- Green arrow pointing to cell B2: \$B2

	A	B	C	D	E
1	10	20	30	40	50
2	20	=B\$1 * \$A2			
3	30				
4	40				
5	50				
6	60				
7	70				
8	80				
9	90				

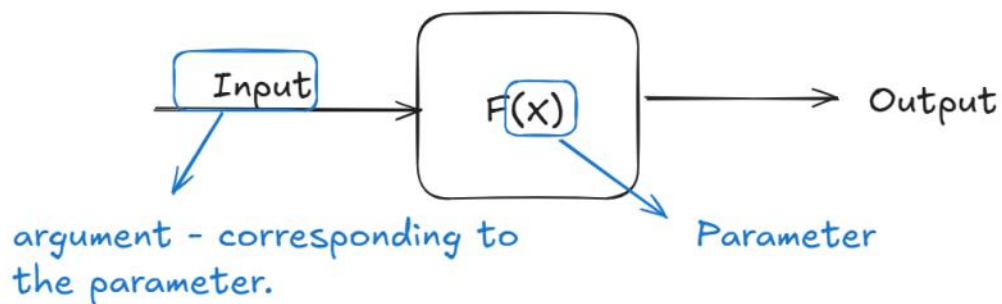
	A	B	C	D	E
1	10	20	30	40	50
2	20	400	600	800	1000
3	30	600	900	1200	1500
4	40	800	1200	1600	2000
5	50	1000	1500	2000	2500
6	60	1200	1800	2400	3000
7	70	1400	2100	2800	3500
8	80	1600	2400	3200	4000
9	90	1800	2700	3600	4500

	A	B	C	D	E
1	10	20	30	40	50
2	20	=B\$1*\$A2	=C\$1*\$A2	=D\$1*\$A2	=E\$1*\$A2
3	30	=B\$1*\$A3	=C\$1*\$A3	=D\$1*\$A3	=E\$1*\$A3
4	40	=B\$1*\$A4	=C\$1*\$A4	=D\$1*\$A4	=E\$1*\$A4
5	50	=B\$1*\$A5	=C\$1*\$A5	=D\$1*\$A5	=E\$1*\$A5
6	60	=B\$1*\$A6	=C\$1*\$A6	=D\$1*\$A6	=E\$1*\$A6
7	70	=B\$1*\$A7	=C\$1*\$A7	=D\$1*\$A7	=E\$1*\$A7
8	80	=B\$1*\$A8	=C\$1*\$A8	=D\$1*\$A8	=E\$1*\$A8
9	90	=B\$1*\$A9	=C\$1*\$A9	=D\$1*\$A9	=E\$1*\$A9

Formulas Vs Functions

Find the area of rectangle = Length * Breadth

User defined - We change the formulas according to the calculation.



$$\begin{aligned}
 x = 5 &\rightarrow 2x^2 + 2x + 5 = (2 \cdot 25 + 2 \cdot 5 + 5) \\
 &= 50 + 10 + 5 \\
 &= 65
 \end{aligned}$$

Essential Function in Excel

1. Math & Statistical F(x)

- MAX, MIN, SUM, AVG,
- COUNT, COUNTA,
- COUNTBLANK

2. Logical Functions

- IF, IFS, AND, OR, NOT

3. Text Functions:

- LEFT, RIGHT, MID,
- CONCATENATE
- TEXT JOIN
- TRIM

4. DATE Functions:

- DATE, DATETIME,
- TODAY, NOW(),
- YEAR, MONTH, DAY
- DATEADD, DATEDIFF

Doing a calculation based on a condition.

COUNTIF, COUNTIFS,
SUMIF, SUMIFS,
AVGIF, AVGIFS, etc...

IF(compare 2 condition)

IFS(compare 2 or more condition)

Total Score	6903	7133	6993
Max Score	100	97	97
Min Score	23	33	33
Avg Score	70	72	71

Total Score	=SUM(F2:F100)	=SUM(G2:G100)	=SUM(H2:H100)
Max Score	=MAX(F2:F100)	=MAX(G2:G100)	=MAX(H2:H100)
Min Score	=MIN(F2:F100)	=MIN(G2:G100)	=MIN(H2:H100)
Avg Score	=AVERAGE(F2:F100)	=AVERAGE(G2:G100)	=AVERAGE(H2:H100)