Managing and formatting data

INTRODUCTION TO EXCEL

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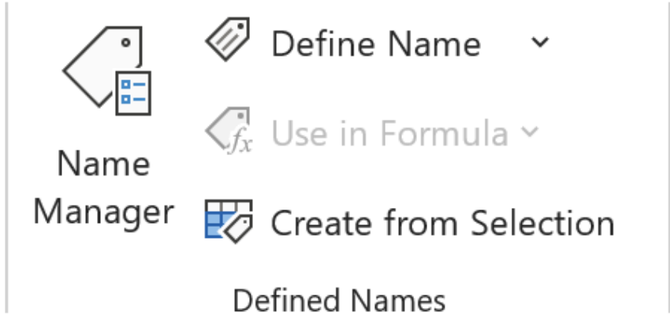
Ways to manage data

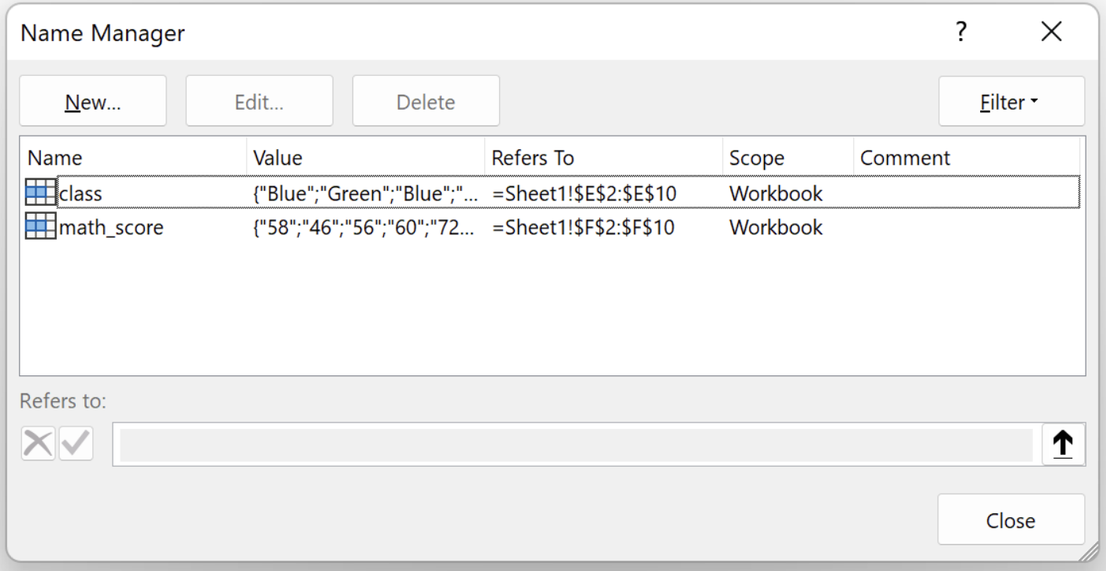
- Data stored and managed in tabular layout
  - Columns and rows in all sheets
- Create named ranges
- Create Subtotals
- Data validation

student_id	full_name	test_date	gender	class	math_score
1002	Erik James	1/25/2023	Male	Blue	58
1003	Helen Zimme	2/25/2023	Female	Green	46
1004	Alexis Jenner	5/3/2023	Female	Blue	56
1005	Jet James	4/5/2023	Male	Red	60
1006	Jason Geller	5/29/2023	Male	Blue	72
1007	Jim Carson	1/16/2023	Male	Green	100
1008	Carl Green	3/1/2023	Female	Green	52
1009	Martin Joshua	2/15/2023	Female	Blue	87
1010	Amy Dill	2/12/2023	Female	Blue	36

Named ranges

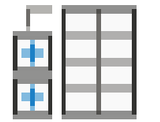
- Name a range of columns or rows
- Benefits include:
  - Easier to reference range in formulas
  - Less time searching sheets for important ranges of data
- The Name Manager feature allows you to:
  - Edit named ranges
  - Create news named ranges
  - Deleted named ranges





Subtotals

- Sense check numerical data through calculations
- Can help spot large anomalies early on
- Subtotal creates aggregation within the dataset
  - Sum
  - Count
  - Average
- Can also add a grand total of the column

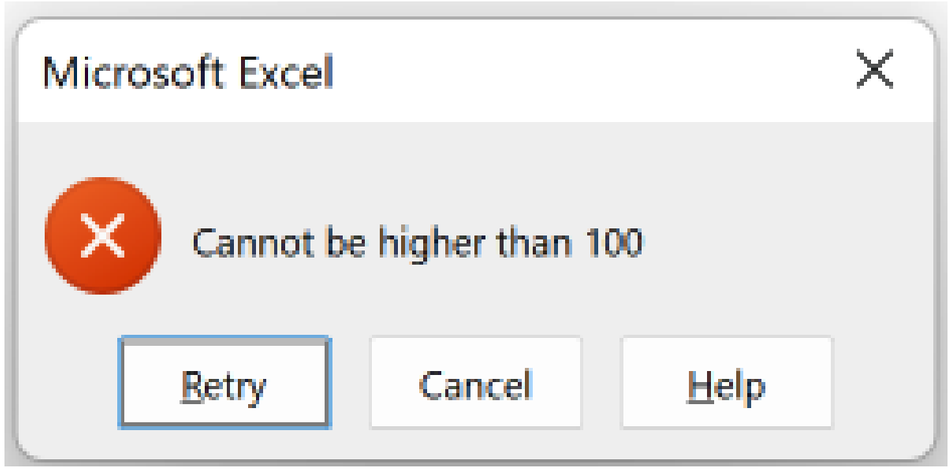


Subtotal

student_id	full_name	test_date		gender	class	math_score
1003	Helen Zimme	2/25/2023		Female	Green	46
1004	Alexis Jenner	5/3/2023		Female	Blue	56
1008	Carl Green	3/1/2023		Female	Green	52
1009	Martin Joshua	2/15/2023		Female	Blue	87
1010	Amy Dill	2/12/2023		Female	Blue	36
			Female Count	5		
1002	Erik James	1/25/2023		Male	Blue	58
1005	Jet James	4/5/2023		Male	Red	60
1006	Jason Geller	5/29/2023		Male	Blue	72
1007	Jim Carson	1/16/2023		Male	Green	100
			Male Count	4		
			Grand Count	9		

Validating data

- Useful when sharing workbooks
- Data Validation allows user to control the values entered into a cell
  - Including the data type
- Can add input messages to inform user of data validation settings
- Customize error message if user enters invalid data

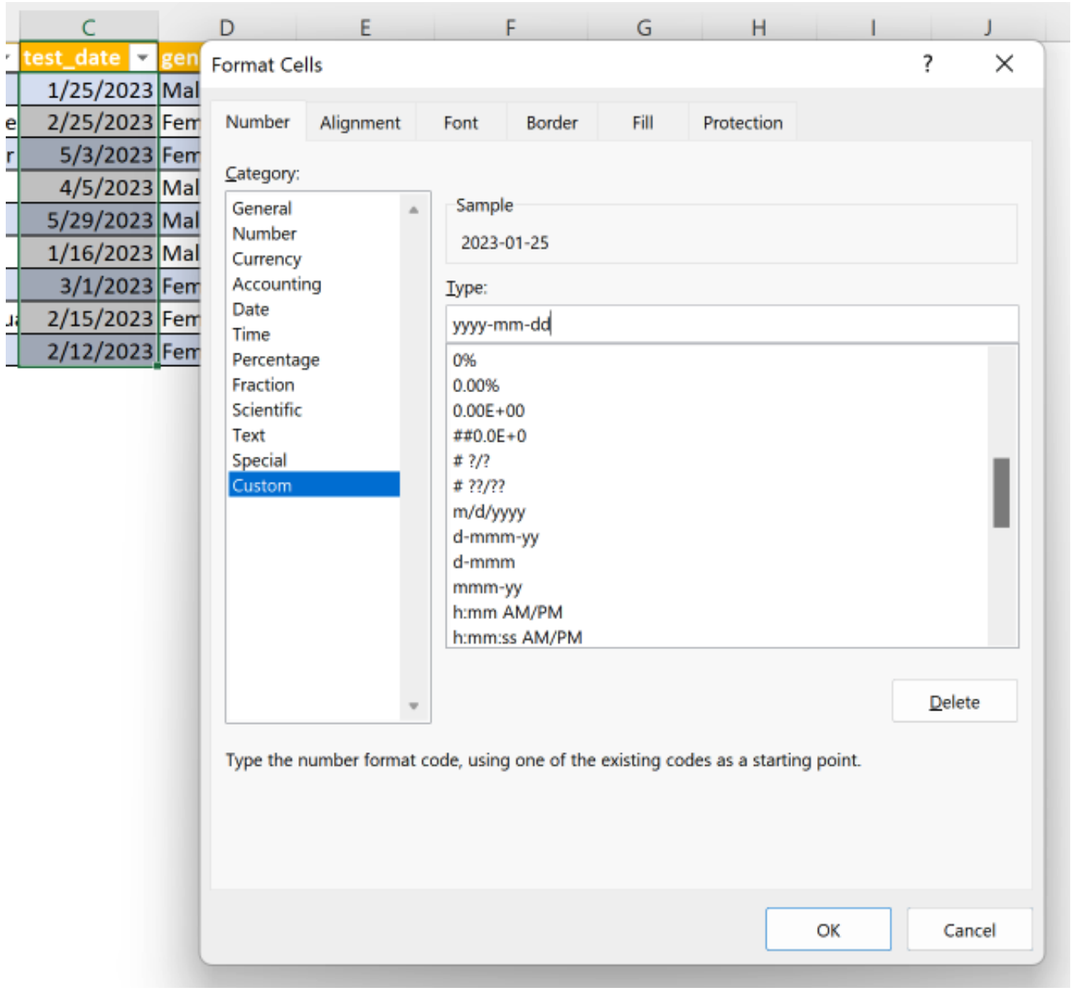


Formatting data

- In Excel, you can format whole sheets, individual cells, or specific values
- Examples:
  - Font size
  - Sheets with borders around all cells
  - Values matching their data type (i.e., currencies)
- Conditional formatting

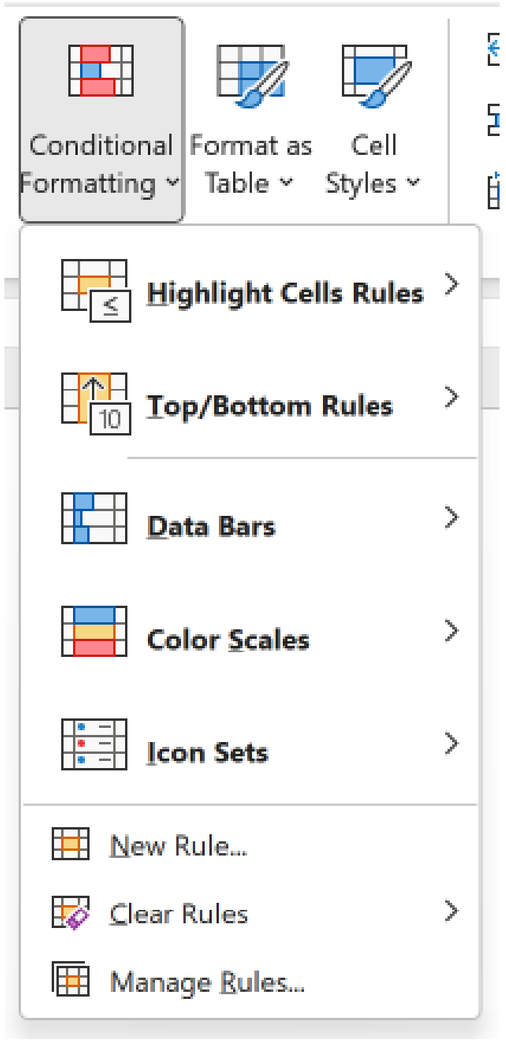
Custom formats

- Many available formats for different data types
- Custom section also available



Conditional formatting

- Conditional Formatting allows users to set conditions for highlighting cells within the data.
- Helps identify patterns or trends
- Formatting options include:
  - Icons
  - Data bars
  - Highlighting cells using color scales
- Can create, edit, and delete rules through the Manage Rules window.



Let's practice!

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Aggregate and Arithmetic operations

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Order of operations: problem

Math Problem:

$$20 \times \ 2 - (1/2) \times \ 10 \times \ 2^2$$

Order of Operations

- Parenthesis
- Exponents
- Division/Multiplication (left-to-right)
- Addition/Subtraction (left-to-right)

Order of operations: solution

Math Problem:

$$20 \times \ 2 - (1/2) \times \ 10 \times \ 2^2$$

Solution

1. *Parenthesis:* $20 \times \ 2 - \underline{0.5} \times \ 10 \times \ 2^2$
2. *Exponents:* $20 \times \ 2 - 0.5 \times \ 10 \times \ \underline{4}$
3. *Multiplication:* $\underline{40} - \underline{20}$
4. *Subtraction:* $\underline{20}$

Order of operations in Excel

Order of operations: **P**arentheses, **E**xponents, **D**ivision, **M**ultiplication, **A**ddition & **S**ubtraction

Full Excel order of operations

Order	Symbols	Operation	Example	Output
1	( )	Parenthesis	10 + (6 - 2)	18
2	: ,	Reference operators	SUM(A1:A3)	-
3	-	Negation	-3 ^ 2	9
4	%	Percent	5% * 100	5
5	^	Expontentiation	10 + 4 / 2^2	11
6	* /	Multiplication / Division	10 + 4/4	11
7	+ -	Addition / Subtraction	10 - 1	9
8	&	Concatenation	"Score: " & 5 + 1	Score: 6
9	> < = !=	Logical Comparisons	3 ^ 2 > 5 + 3	TRUE

Functions in Excel

Overview of aggregate functions

> Aggregate functions: Summarize a group of values into a single result

- Commonly used aggregate functions include:
  - SUM
  - AVERAGE
  - COUNT
  - MIN
  - MAX

Aggregate functions

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	A	B
1	StudentID	Test Score
2	1	57
3	2	62
4	3	77
5	4	83
6	5	85
7	6	64
8	7	88
9	8	75
10	9	92
11	10	59

Aggregate functions: Average

University of DataCamp

	A	B
1	StudentID	Test Score
2	1	57
3	2	62
4	3	77
5	4	83
6	5	85
7	6	64
8	7	88
9	8	75
10	9	92
11	10	59

Average: central or typical value in a set of numbers

- Sum of all values divided by number of records
- Formula:
  - `AVERAGE(B2:B11)`
  - `AVERAGE(B:B)`
  - `AVERAGE(Students[Test Score])`
- **Output: 74.2**

Aggregate functions: continued

Min: Minimum value in the column

- `MIN()`

Max: Maximum value in the column

- `MAX()`

Count: Number of records

- `COUNT()`

Sum: Total of all values in a column

- `SUM()`

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Understanding house prices

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