

# Formulas in Excel

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# Welcome

- this session is 🎯 - aimed at Excel beginners
- we'll get going properly at 15.05
- you'll need any version of Excel to follow along
- if you can't access the chat, you might need to join our Teams channel:  
[tinyurl.com/kindnetwork](https://tinyurl.com/kindnetwork)
- you can find session materials at [tinyurl.com/kindtrp](https://tinyurl.com/kindtrp)

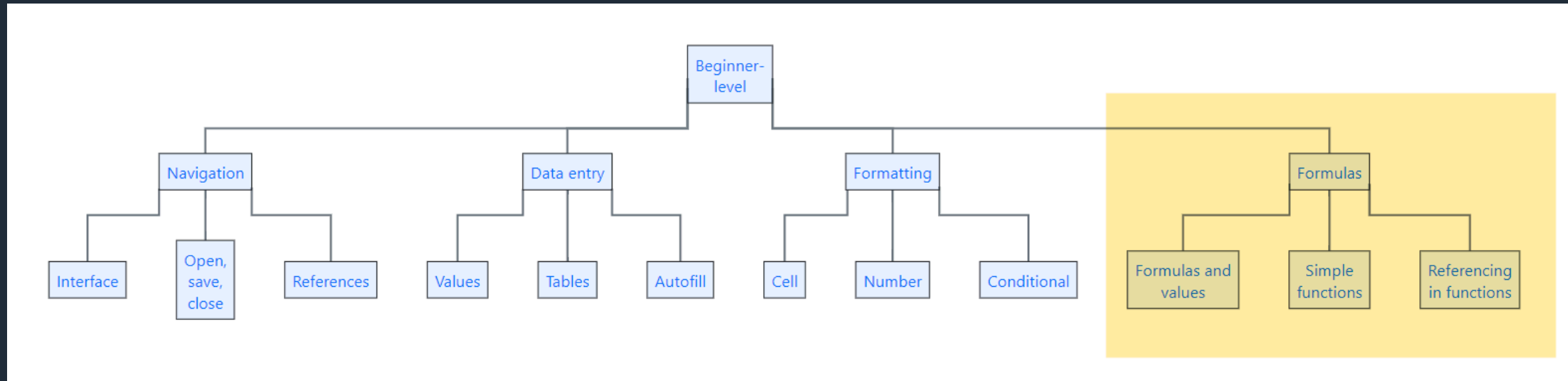
# The KIND network

- a social learning space for staff working with knowledge, information, and data across health, social care, and housing in Scotland
- we offer social support, free training, mentoring, community events, ...
- Teams channel / mailing list

# Excel training sessions

| Session   | Date                               | Area  | Level                   |
|---|------------------------------------|-------|-------------------------|
| Lambda formulas in Excel  | 13:00-13:30 Mon 15th<br>July 2024  | Excel | 🔪🔪 : intermediate-level |
| Lookups in Excel  | 13:00-14:30 Thu 1st<br>August 2024 | Excel | 🔪🔪 : intermediate-level |
| Relative, absolute, mixed, structured, and R1C1 references in Excel | 15:00-16:00 Thu 8th<br>August 2024 | Excel | 🔪🔪 : intermediate-level |

# Where does this fit in?



KIND Excel beginner skill tree

- for this session, you'll need to be familiar with the Excel basics (getting around in Excel, opening/saving/closing files)
- you'll also need to be familiar with A1 referencing, values, and tables
- we're going to avoid talking about formatting as much as possible today

# Session outline

- values and formulas
- simple functions
- references in formulas

# Values and formulas

- cells in Excel contain either values, or formulas
- we'll start with some data derived from NRS 2022 population estimates
- make sure you have the sample data available

# Values

| A | B              | C       | D        | E         | F      |
|---|----------------|---------|----------|-----------|--------|
|   |                |         |          |           |        |
|   | Council area ▼ | Male ▼  | Female ▼ | Under16 ▼ | Area ▼ |
|   | Scotland       | 2801041 | 2646659  | 891892    | 77901  |
|   | Aberdeen City  | 109584  | 114606   | 35454     | 186    |

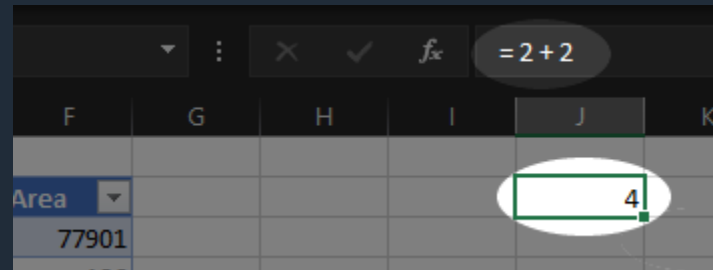
Example value, showing identical cell contents and formula bar contents

- when you enter some data in a cell, we call that a **value**
- values look the same in their cell as in the formula bar



# Formulas

- we can also make a value using a formula
- Excel evaluates/calculates the formula, then displays the result as a value
- in an empty cell, try entering = 2 + 2



Example formula, showing different cell contents and formula bar contents

# Example formulas

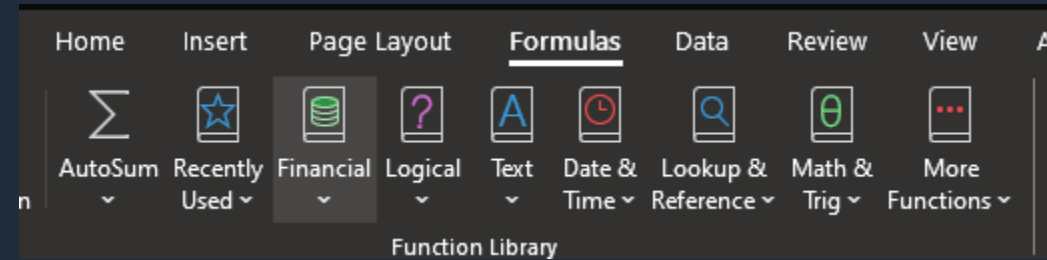
- we can do ordinary arithmetic in formulas  $/$ ,  $*$ ,  $-$ ,  $+$ ...
- you can also try  $\&$  which joins values
  - = "This number is " & 5

# Functions

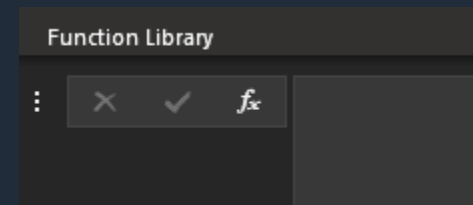
- But most formulas use functions, which are like the verbs of Excel
- Try = `SUM(2, 2)`

# Adding functions

- you can type functions in by name (as above)
- you can also add from the **Formulas** area of the ribbon

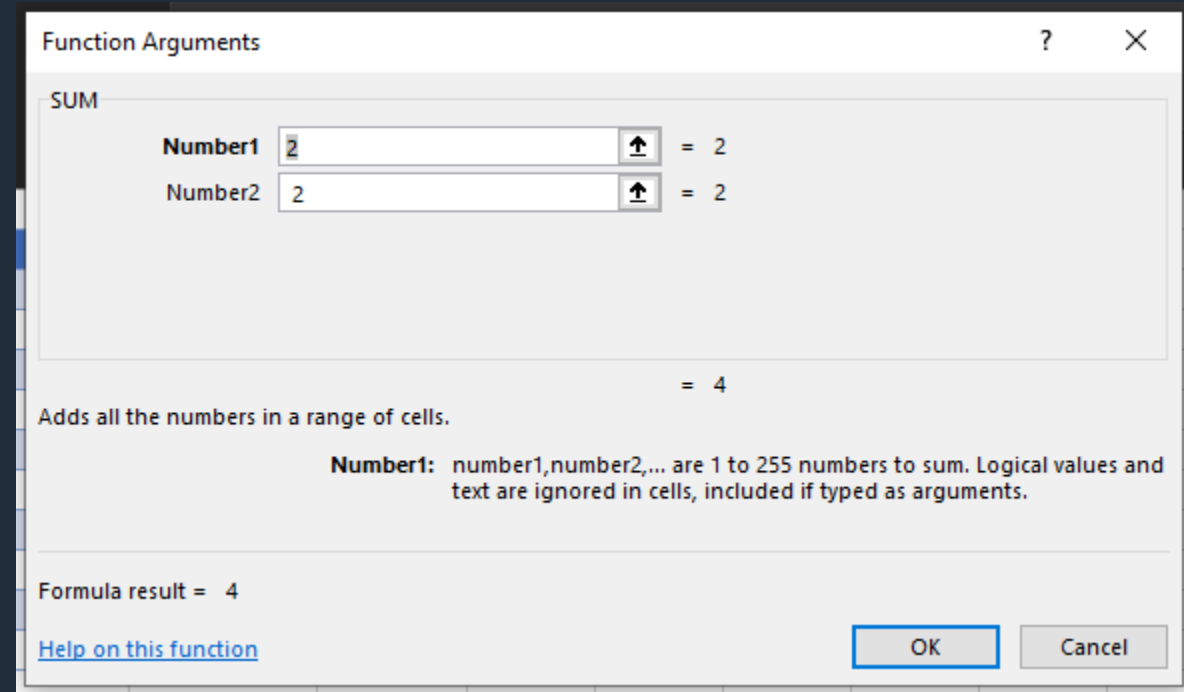


- or you can use the  $fx$  button by the formula bar



# Function arguments

- adding a function by  $fx$  or the menu brings up the **Function Arguments** interface



- This is a helpful builder for more complicated functions

# What are arguments?

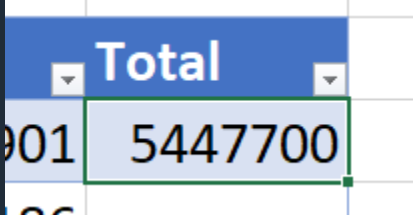
- arguments are the values we supply to a function
  - in `=SUM(2,3)`, the arguments are 2 and 3
- we separate arguments with a comma ,
- we need to be sure we're supplying the right arguments in the right order (this gets described as the **syntax** of a function)
- we also, while we're on the jargon, say that functions **return** a value so `= SUM(4,3)` will return 7

# Useful simple functions

- in the same way as =SUM( ), you can try:
  - AVERAGE
  - MIN and MAX
  - SUBSTITUTE
  - CEILING
  - TODAY
  - ROUND

# References in formulas

- mostly, you won't add values directly into your formulas
- instead, you'll bring them in from another part of your spreadsheet
- can you use **SUM()** to make a total **Male** + **Female** column in the supplied data?
  - add a header in cell **G2**
  - if needed, extend the table to include your new column
  - in **G3**, enter the formula = **SUM(C3, D3)**



|     | Total   |
|-----|---------|
| 001 | 5447700 |

- then copy down the rows by double-clicking the green fill handle



# Practice

- calculate what percentage of your total population is under 16
- estimate the population density
- find an average area for each council area

# Troubleshooting functions

- **#NAME?** = “I don’t recognise that function name”
- **#VALUE!** = “Your syntax has gone wrong - usually in the wrong order”
- **#REF!** = “I don’t recognise that reference”
- **#DIV/0!** = “You’ve divided by zero”

# Feedback and resources

- please can I ask for some feedback - less than 1 minute, completely anonymous, helps people like you find the right training for them

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Session

Date

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and R1C1 references  
in Excel