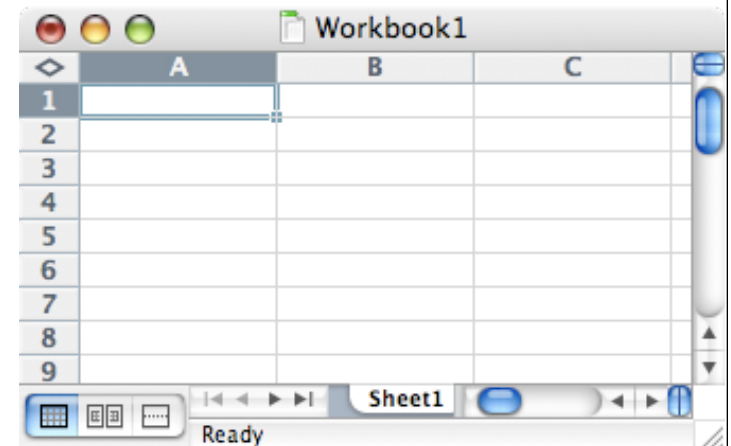# Introduction to Excel

ChEn 1703
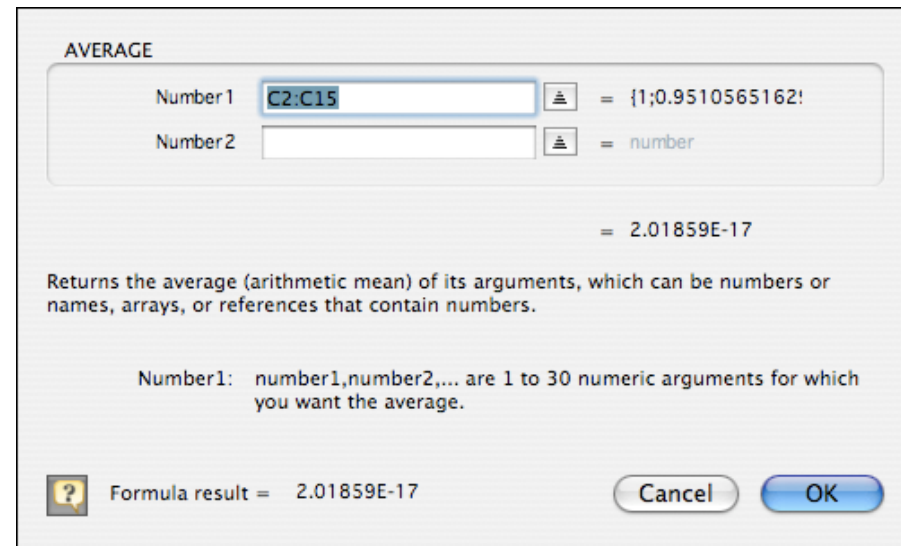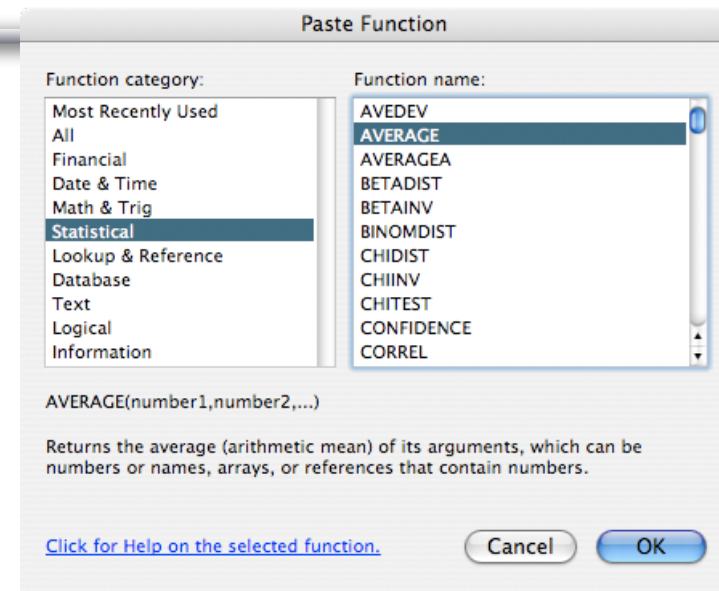
The Basics - Cell Editing

- Values - enter them directly
- Expressions (e.g. 6-2*3) - begin with +, - or =
  - Excel calculates resulting value...
- Cell references
  - reference by the cell's address, e.g. "A2"
  - Addresses can be **relative** or **absolute**.
    - ▸ Relative references "float"
    - ▸ $ makes an address absolute
      - ▸ $A2 - always refer to column "A," float rows.
      - ▸ A$2 - always refer to row "2," float columns.
      - ▸ A2 - always refer to cell A2.
  - Copying addresses
    - ▸ click & drag - behavior depends on type of cell address (relative vs. absolute).
- Example - calculate $\sin(x)$ for $x=[0,\pi]$.
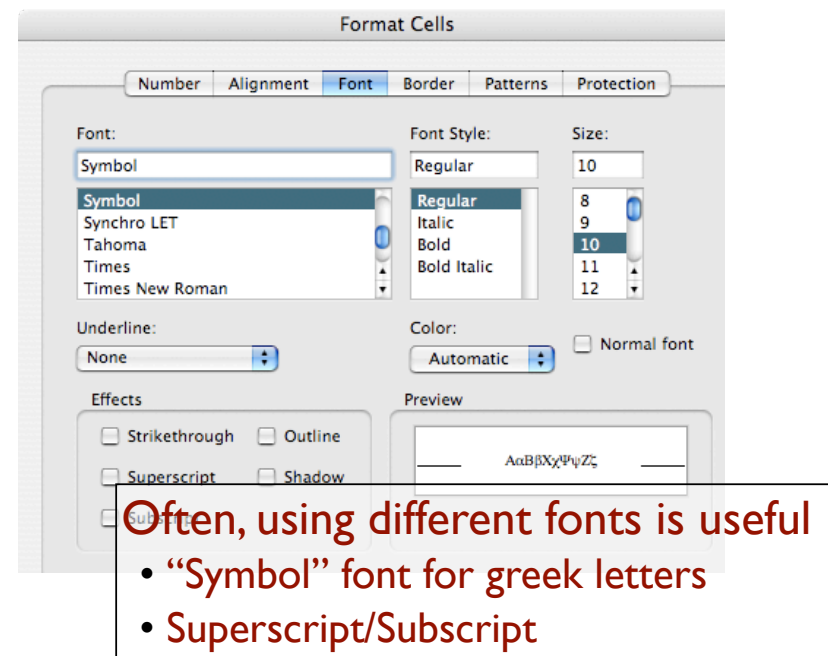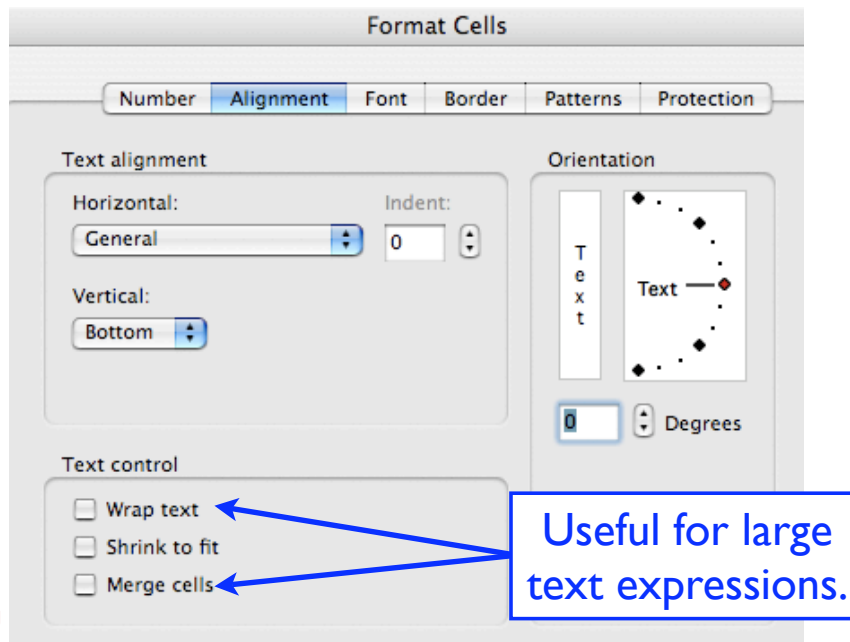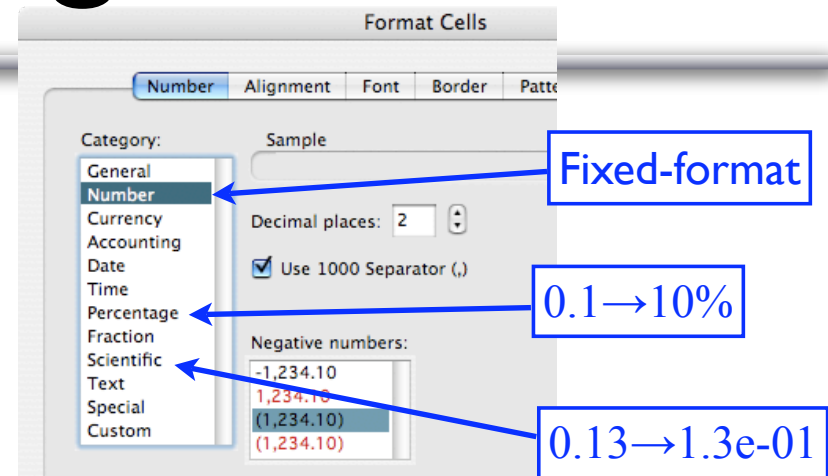
Using Built-in Functions

- While editing a cell, choose Insert→Function, or click the function button [fx]
- Select the function you want, and supply arguments as required.
  - Some functions have no arguments, some have multiple arguments...
  - Excel guides you through this process

Formatting Cells

Format→Cell

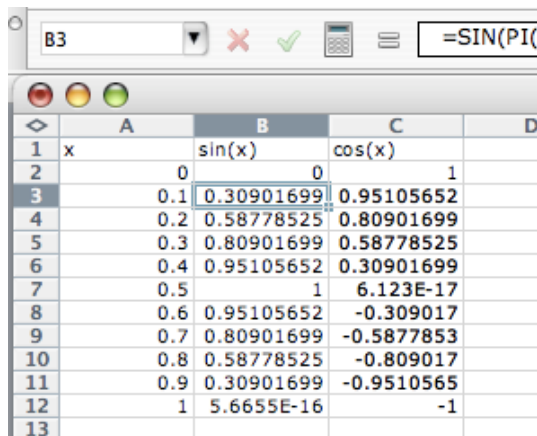Can also be done from the formatting palette...

Fixed-format

$0.1 \rightarrow 10\%$

$0.13 \rightarrow 1.3\text{e-}01$

Useful for large text expressions.

Often, using different fonts is useful
- "Symbol" font for greek letters
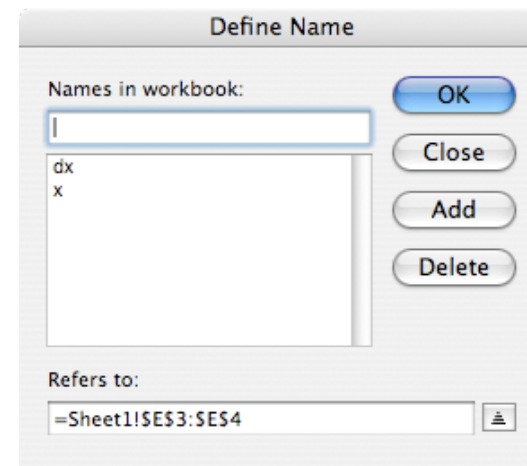- Superscript/Subscript

Naming Cells

- Recall: each cell has a unique name (address) identified by a row/column pair (e.g. C5).
- We can name a cell something else (more meaningful)
  - Select the cell (or group of cells)
    - ‣ Type a name in the box left of the formula bar
    - ‣ OR choose Insert→Name→Define
      - ‣ "Refers to" box gives more control over exactly how the name will be used.

Auditing Cell Formulas

"Debugging" in Excel

View→Toolbars→Auifing
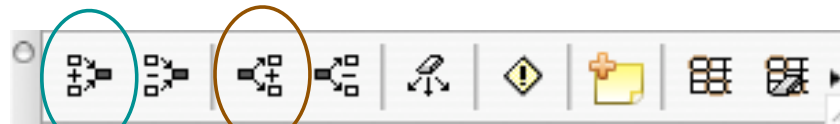
Trace precedents

graphical display of cells directly **contributing** to the current cell

Trace dependents

graphical display of cells directly **using** the current cell.

Pushing these buttons repeatedly gives you increasing history of dependents.

Basics of Plotting

- Most often, we use x-y plots, although Excel can do several different plot types
- Procedure:
  - Select x and y data (might have multiple y data)
  - Choose Insert→Chart, or select the chart icon,
  - Select XY (Scatter), choose specific chart type
  - Verify data source, add additional series (x & y values) if desired (you can add more later, too)
  - Create chart in your current worksheet, or as a new sheet...
- After creating the chart, you can modify any aspect of it.
  - Commonly modify axis labels, range, line color/format, etc.
- You can also easily copy/paste figures into MS Word...

Plotting on Secondary Axes

- Create a plot as usual, with all lines on the plot.

- Select the line to place on second axis, right click & choose "Format Data Series"

- Choose "Axis" and then "Secondary Axis"

- Add a label by right-clicking plot and choosing "Chart Options" and then "Titles"

- Tips:
  - Use arrows to indicate which lines correspond to which axes.
  - Clearly label axes

Example:
$$y_1 = \sin(x)$$
$$y_2 = 10\cos(2x)$$