

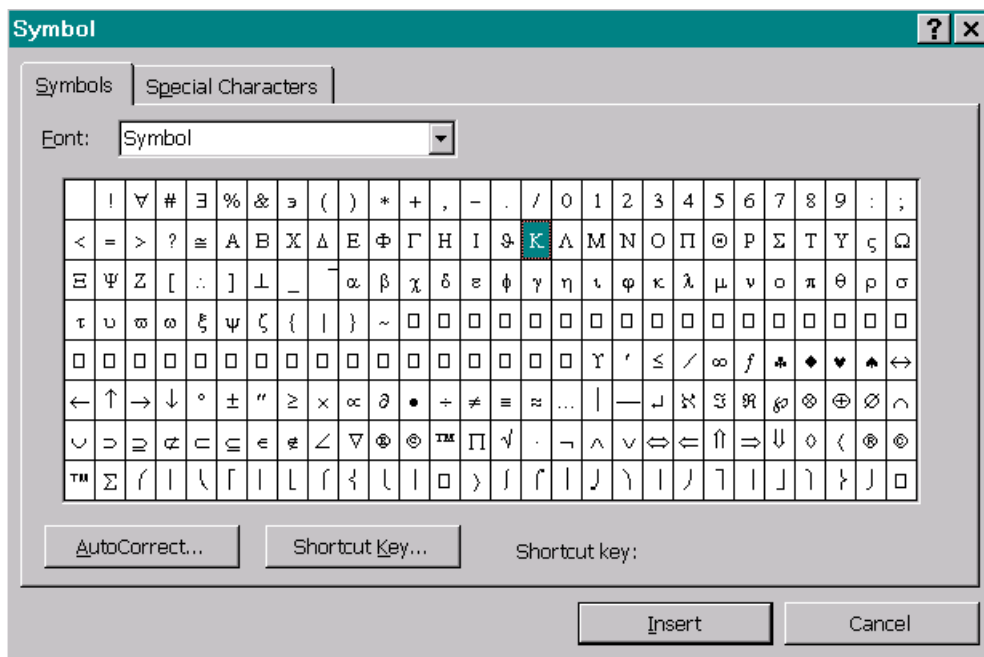
Using MS Word for Scientific Word Processing

Adding unusual characters

The ordinary English alphabet of 26 characters doesn't give enough scope to us scientist types. So we're forced to use extra ones from wherever we can get them. In Word there are several ways of getting these characters into your document.

Insert Symbol

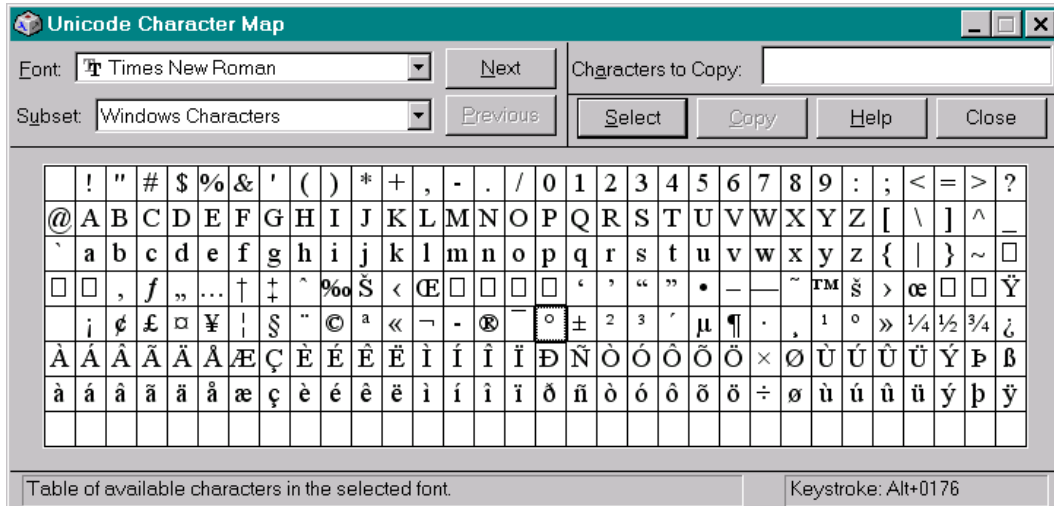
For Greek letters and many maths symbols the best way is to go to the **Insert** menu and select **Symbol**. If it's not already selected get the Symbol font displayed. Now you can insert any character displayed just by double-clicking on it – single-clicking will enlarge a character so you can be sure it's the one you want. You can carry on using Word while the Symbol dialog is still open – I tend to drag it down to the bottom of the screen and then drag it up when I need it.



The other fonts listed in the Symbol dialog offer quite a range of fun characters, but sometimes you'll need something that's not available from here. That's when you'll need to load up the Character Map...

Character Map

This is accessed from the **Start** button (**Start** | **Programs** | **Accessories** | **Character Map**). It's very similar to the Symbol dialog but there are some important differences.



- Character Map is available in all Windows programs, not just Word.
- All your Fonts can be accessed, not just those that Windows defines as symbol-style fonts.
- Double-clicking a character copies it to the transfer box (top right). You must then click on the **Copy** button to put the characters in the transfer box onto the clipboard, then paste them (**Edit** | **Paste** or **Ctrl-V**).
- When you paste the character(s) the font that you've pasted stays in effect. So you may need to change back to the font that your text uses.

Alternatives

Most Windows fonts have far more characters than are displayed on the keyboard. It's a little known fact that you can enter most of these characters by typing in what's known as their ASCII code. In the lower right corner of the Character Map dialog the required keystrokes for the selected character are displayed. If the code Alt+(number) is shown then you need to hold down the **Alt** key whilst typing the number in on the numeric keypad. After a while you can learn some of the more common codes.

Super^{er} and Sub_{sub} Scripts

These are probably the most common text effects in scientific writing. It is possible to use the menu sequence Format | Font | Font | Effects but that soon becomes a pain in the fundament. The way to make things easier is to add special buttons to the Word Toolbars.

Customising Toolbars

It is possible to add (or remove) items to the Word Toolbars. Right-click on a Toolbar and select **Customize** from the pop-up. Select the **Commands** tab, then select **Format** from the Categories list. Now scroll down the right hand window (Commands) until you find Superscript, then drag the button and drop it onto a Word Toolbar. Now repeat the drag'n'drop with the Subscript button and close the Customize dialog.

You should now have the two new buttons on your Toolbar – type something, click on superscript, type some more, click on superscript again, type again. See how the button acts as a toggle. Subscripts work in just the same way. When you next close Word it will ask if you want to save changes made to Normal.dot – say Yes.

Equation Editing

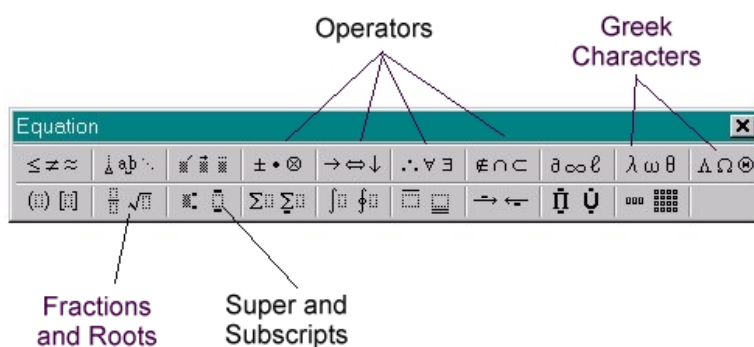
Sometimes you need to bring out the big guns – for maths in Word this means the Equation Editor. First check that it's been installed - from the **Insert** menu select **Object** and, from the resulting list, find Microsoft Equation. If it's not there you'll have to re-run Setup on the Office CD and select Equation Editor from the list of Office Tools.

To save the hassle of having to use the menu, lets add it to the toolbar – right-click on Toolbar | **Customize** | **Commands** | **Insert** – then scroll down the right hand list until you find Equation Editor and drag'n'drop it onto your Toolbar. (While you're in the Insert section, why not add a button for Insert Symbol?).

Now that Equation Editor (EE) is just a click away let's try it out. We'll go through the stages required to produce this equation... $F_g = G \frac{m_1 \times m_2}{d^2}$ which is the equation for the force of gravity (F_g) between two masses (m_1 and m_2) separated by a distance (d); G is Newton's gravitational constant.

Start off by clicking your newly added Equation Editor button. Notice how the menu titles change, a new toolbar pops up and an editing box (with a dashed border) appears in your document.

In the editing box you should see a cursor flashing. Start off by typing the easy part of the equation "F". Notice how EE automatically makes it italicised. This is because it assumes (correctly) that it is a variable. Variables aren't allowed spaces, so if you wanted to do the following equation.. $Mean = \frac{\text{Sum of values}}{\text{Number of values}}$.. then you'd have to go to the **Style** menu and change from Math to Text. Now we need to enter the subscript 'g'. This time we need to use the template Toolbar.



Click and hold on the super/subscripts button. Note that a load of new buttons fly-out. For each of these the boxes (dashed, grey or solid) show where the text will be placed into that particular template. For subscripts we pick the middle option on the top row. Now the cursor drops down to subscript slot where you can type in the 'g', then move out of the slot by pressing the right arrow (or Tab) key. Now type in '=G', note how EE adds spaces either side of the equality.

Now we need to enter a fraction – press on the Fractions/Roots button, the two top options both give fraction templates, the left one gives normal size, the right, reduced size, select the left hand template. An empty fraction will appear with the cursor in the top slot. Type in m_1 (using the same subscript method as earlier) then the multiplication symbol (selected from the leftmost operators button) and m_2 . Then move to the bottom slot using the right arrow (or Tab) key. Type in 'd' then use the super/subscripts button and select the superscript template (top left), type in the '2' and move the cursor to the end. To exit from EE click outside the editing area.

You'll have to experiment with the rest of the templates to figure out how they work, but the idea is the same for all templates. Once you've exited EE you can edit an equation just by double-clicking on it.

$$F_g = G \frac{m_1 \times m_2}{d^2}$$