Typesetting Mathematics in Microsoft Word

The goal of this in-class activity is to explore the capabilities of a desktop publishing software program in typesetting mathematics. The focus will be on Microsoft Word 2007/2010.

# Inserting Equations

Go to the **Insert** Tab, and choose **Equation** from the Symbols group. Alternatively, press: **Alt =**

## Two Ways to Input Symbols into a New Equation

1. **Point-Click:** Construct the *form* using “boxes”, then type symbols into the boxes.
   1. Try looking for preset forms when you’re getting started.
   2. Use the arrow keys to navigate through the boxes faster
2. **Keyboard:** Type symbols much like you would into a graphing calculator, pressing the spacebar after each grouping.
   1. Word recognizes several special characters, including \sqrt(2), \alpha, \pi, \infty
   2. Subscripts use underscore (e.g., x\_1) and exponents use carrot (e.g., 25^4). For inequalities, use <, <=, /=, etc.
   3. For all shortcuts, see [chem.mtu.edu/~tbco/cm416/EquationEditor\_main.pdf](http://www.chem.mtu.edu/~tbco/cm416/EquationEditor_main.pdf)

## Some Examples

|  |  |
| --- | --- |
| Keyboard | Equation |
| 5\*(3-(1+2/3))+1/=7 |  |
| (2/3)^3+(x/2)\cdot(1-1/2)/3 |  |
| \sqrt(2+\sqrt(2+\sqrt(2+\cdots)))=2 |  |

## Practice Area for Inserting Equations

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## Your Notes on Inserting Equations

# Inserting Shapes

To maintain structure in your document, it’s usually best to draw shapes inside a Drawing Canvas. From there, you can Insert Shapes, Group objects, and Align groups of shapes.

Go to the **Insert** Tab, and choose **Shapes** from the Illustrations group and select **New Drawing Canvas**.

## Tips for Inserting Shapes

1. **Hold down Shift** while you draw a shape to constrain its proportions (e.g., keep a circle from becoming an ellipse).
2. Many “AutoShapes” contain yellow and green handles that allow you to adjust features.
3. To **Group** two or more objects, hold down Shift while selecting the objects, then right click on one of the objects and choose **Group**.
4. To change the formatting of an object, select it and use the **Drawing Tools** tab. In particular, consider adjusting the **Shape Outline** and **Shape Fill** properties.

## Examples

Great Circle

## Practice Area for Inserting Shapes

## Your Notes on Inserting Shapes

## Formatting Text

A general principle of typesetting can be especially useful when typing mathematical documents: start by typing *all* the content, then revisit the content to establish (1) the **structure** of the text and (2) the **visual** appearance.

## Key Formatting Tools

1. Use **Styles** whenever possible.
   1. Select all instances of text that you would like to look the same, then choose the appropriate style from the **Home** tab. Typical styles include Title, Heading 1, Heading 2, paragraph, etc.
   2. Once you’ve applied a style to some text, you can modify the look of one instance of the style, then apply the change to all the similar text. Just right-click on the modified text, choose **Styles**, **Update [Style] to Match Selection**.
2. To put space between content, use **Before Spacing** and **After** **Spacing** instead of hitting the Enter key.
3. Use the **Ruler** (View, Show Ruler) to adjust indents, and insert **tab stops** (left, right, center, and decimal tabs are all extremely useful for mathematics).
4. For accessibility and readability, stick to a few fonts in a few sizes. It’s usually better to use borders, indents, spacing, and bold to emphasize text rather than underline, italics, different fonts, or all caps.
5. It is usually helpful to center complicated math expressions on a separate line. Variables are typically italicized (or you can input them with Insert Equation, which will italicize variables by default).

## Practice Area for Formatting Text

What’s Infimum?

A story of a funny sounding word.

By “The Mathematist”

Overview

The concept of a greatest lower bound for a set of numbers was first introduced to mathematics after the invention of calculus as a way of explaining the meaning of limits. Since then, infima have been used throughout advanced mathematics as a tool for analyzing orderings of abstract objects.

Definition

The infimum of a set of numbers is defined to be the largest number that is less than or equal to every number in the set.

Definition

A set of real numbers is bounded if it is contained in some interval of finite length.

Theorem

Every bounded set of real numbers has exactly one infimum.

Corollary

If a set of real numbers is finite, it contains its infimum.

Related Exercises

What is the infimum of the set of numbers given by 1/n, where n=1,2,3,4,5,6,7,…?

What is the infimum of the set of numbers satisfying 2<x<5?

What is the infimum of the set of numbers formed by 0, -.1, .1, -.2, .2, -.3, .3?

What is the infimum of the numbers 2, 4, 6, 8, 10, …?

What is the infimum of the solutions to the inequality 1/x > 0?

What is the infimum of all numbers that satisfy:

|(2x-1)|^(1/3)=3/2