"n-dimensional real space" is denoted by R° and it consists of all "n-tuples of real numbers" which are ordered lists (x1, x2, x3, ..., xn) of n real numbers.

Note R is the symbol for the set of all real numbers. (R consists precisely of the numbers that are needed to measure distances between objects.)

Example R² is the set of ordered pairs (x, y) of real numbers. Importantly these ordered pairs correspond exactly to the points in the xy-plane.

Example 1R3 consists of ordered triples (x,y, 2) and correspond to points in xyz-space - there's how it works:

Choose three lines which have a common point of intersection (the "origin") where each line is perpendicular to the other. Typically these lines might be called the "x-axis" "y-axis" and "z-axis". Is we start at the origin and more a writs in the direction of the x-axis that is write parallel to y-axis and c write in direction of z-axis then we arrive at a point P that we'll identify with the ordered triple (a,b,c). Then every point P in xyz-space can be identified this way with a unique ordered triple (a,b,c).





FIGURE 5

(Note that a,b,c can be positive or negative and should be interpreted as directed distances.)

Important things to know about xyz-space: 1) distance formula (2) how to describe 3 "coordinate planes" (3) how to describe 3 "coordinate axes" @ what the "octants" are (5) how to understand the graph in Kyz-space associated with an equation with variables Xy and z.