1 2 3

4 5 6

7 8 9

A 2-dimensional number is a number that can represent a point in 2-dimensional space. This differs from conventional numbers which represent a point on a line.

Within each quadrant sub-divide according to the same grid pattern as above (the first quadrant being the space between 1, 2, 4 and 5.

The region covered by the number system is the space within the 1, 3, 7 and 9, extending 1 step to the right of the 3.

This example is a 2-dimensional number system using base 3. If base 2 is used in 3-dimensions 8 digit characters are required, higher bases need a larger number of digit symbols.

Continue sub-dividing to smaller levels of scale

Example of a point on the grid 2.317

Conversion to x/y Cartesian co-ordinates:

X across the page

Y up the page

Total of 1 unit from 1 across to 3 along the top line

Start with x=0, y=0

Add amounts to x and y for each digit in the number

The total scale for each digit is 1, then ½, ¼, 1/8 etc.

Reverse conversion

Select a digit from 1 to 9 based on the x and y values

Allocate 0, ½, or 1

Continue at finer levels ensuring that the new number does not overflow the total x, y values

Conversion from a 2-d number to x, y co-ordinates

scale = 1

digit = first digit in the number

x = 0

y = 0

repeat for each digit in the number

If digit = 1, 2 or 3 then

Yn=scale

If digit = 4, 5 or 6 then

Y n= scale \* 0.5

If digit = 7, 8 or 9 then

Y n= 0

If digit = 1, 4 or 7 then

xn=0

If digit = 2, 5 or 8 then

x n= scale \* 0.5

If digit = 3, 6 or 9 then

x n= scale

x =x + xn

y = y + yn

scale = scale \* 0.5

advance to the next digit

end repeat