

# Million Dot Project

A central issue that confuses discussions of the human population on our planet is the inherent difficulty involved in intuitively grasping the size of large numbers. It is interesting that these numbers (million, billion, even trillion) have common usage, for example, in the press, usually when discussing cost, in dollars, of some governmental program. In the digital world, *mega-*, *giga-*, and *tera-* denote sizes of invisible processes that we take for granted. However, these words do not translate adequately or meaningfully into our perception of their true size, since they are so far outside any range with which we have direct experience. When we then incorporate these words (million, billion) into sentences describing groups of enormous size (when our own personal experience of a group is less than a hundred thousand or so), the ability to communicate important concepts on an intuitive level is exceedingly difficult.

Using a simple graphical demonstration, the reality of this conceptual difficulty may be illustrated. By creating a new *Word* document, and setting the format to a size 11 font, then entering dots (periods) as “.....”, one can fill a standard 8 ½” X 11” page with **10,000 dots**.

Copying this sheet 100X will yield 100 pages - each containing 10,000 dots - **1 million dots** total. Positioned **side by side**, these 100 sheets can be stretched out in a hallway to a length of **71 feet** (8 ½” X 100). Walking along this display, one may observe 1,000,000 dots. [ Hint : *actually doing* this simple physical exercise – to *view* one million dots – is the point here. ]

This gives a visual method to begin to obtain an intuitive concept of terms used when discussing the enormity of Earth’s human population.

<b>10,000</b>	<b>8.5 inches</b>
100 thousand	7 feet
<b>1 million</b>	<b>71 feet</b>
19 million	0.25 miles
<b>300 million</b>	<b>4 miles</b>
1 billion	13 miles
<b>7 billion</b>	<b>94 miles</b>
10 billion	134 miles

Imagining these visual comparisons and then translating them into the relative size of human groups ( filled megachurch @ 10,000, largest football stadium filled to capacity @ 100,000, large U.S. city @ 1 million, largest megalopolis areas @ 19 million, total U.S. population @ 300 million, populations of India or China @ 1 billion) gives a starting point to understand the enormity of Earth’s human population ( 7 billion ).

The demographic realities created by our species, once it dissociated 10,000 years ago from the restricting influences of relevant ecosystems - while still *genetically bound* to tribalism and to the biologic mandate for survival and reproduction (which operate at an individual / small group level) - underlie the environmental conundrum that we now face.

