**Is Population Growth Linear?**

Since the 1960’s, the world population has grown rapidly. During this same time period, world food production has also increased. There are many reasons why people have been able to produce more crops. Farmers rotate crops more efficiently causing crop yields to expand. New and improved fertilizers and chemical pesticides allow farmers to grow more crops on the same amount of land. In dry, arid regions, large irrigation systems convert land to farmland. Also, farmers use genetically altered crops that greatly increase crop yields.

Crop yields are increasing but so is the world population. Scientists need to know if one quantity is growing much faster than the other. What could happen if the world population is growing much faster than the amount of food produced?

Let’s begin by exploring the growth in the world population. Below is a table that gives year and population data for a sample of years from 1804 to 2010.

**Question:** **Are the population vs. year data linear?**

Explain why they are or why they are not. Justify your position in as many ways as you can.

|  |  |
| --- | --- |
| **Year** | **Population**  **(in billions)** |
| 1804 | 1 |
| 1850 | 1.2 |
| 1900 | 1.6 |
| 1927 | 2 |
| 1950 | 2.55 |
| 1955 | 2.78 |
| 1960 | 3.04 |
| 1965 | 3.35 |
| 1970 | 3.71 |
| 1975 | 4.09 |
| 1980 | 4.45 |
| 1985 | 4.85 |
| 1990 | 5.28 |
| 1995 | 5.7 |
| 2000 | 6.1 |
| 2005 | 6.48 |
| 2008 | 6.71 |
| 2010 | 6.87 |