

In 2011 when the world population reached 7 billion the United Nations commissioned a report on World Population. The purpose of this lab is for YOU to create your own report, using the mathematics you have learned to analyze and make predictions. Your report must have the following components:

Section 1 – Data

- Use a reasonable set of data on human population from the last 100 years (there are several links on *MathwithSteve/Exponents*). The data should be displayed in a properly labeled table.
- Research some of the many values for the *Carrying Capacity* of Earth. Choose the value that makes the most sense to you and explain the reasoning behind your choice. Don't simply choose a value that "fits" your model.

Section 2 – Model

- Develop and state a mathematical model (exponential or logistic) of population growth. You should explain the motivation for choosing your particular model. Why do you think one is better than the other?
- Create a graph (*not* hand-drawn) that includes your data points and a graph of your model as well as a line representing the carrying capacity. The graph should be appropriately titled, axes labeled, reasonable scale, etc. Be sure to show where your model intersects the Carrying Capacity line.
- Use your model to predict when human population will reach the carrying capacity you have chosen.

Section 3 - Essay

Jacques Cousteau has said that every environmental problem we currently face is a direct consequence of overpopulation. Research one issue related to overpopulation and write a brief description of the issue, consequences and possible solutions. (Brief = 300-500 words).