

Algebraic Modeling (Math 145)

The purpose of this assignment is to explore world population growth and the effect it can have on the environmental and societal structure of the planet.

This is a semester-long project that will examine three different types of mathematical models. The project is broken up into three parts to help develop the models and analysis.

To motivate in class, I showed a YouTube video on world population growth.

<https://www.youtube.com/watch?v=b98JmQ0Cc3k>

Students will need use the US Census Bureau website to obtain 20 years of world population data and growth rate data.

Students will then approximate the growth of the data using a linear model, an exponential model, and a quadratic model. Students will compare the accuracy of their models against the data they obtained and determine which model approximated world population growth best.

They will also examine the trend in growth and try to determine what historical factors could have cause a decrease/increase in the growth rate.

Students will then use that model to predict what the world population will be 20 years from now and compare that with the prediction from the US Census Bureau.

Finally, the students will Watch Miniature Earth (www.minature-earth.com) and read about the UN Millennium Goals (<http://www.un.org/millenniumgoals/>)

They will then need to answer the following (taken from my project guidelines):

How do you think the increase in human population will affect the millennium goals?

What do you believe to be the **biggest** issue when it comes to population growth? (fresh water shortage, food, energy/resources, human rights, gender inequality, available open space, education, access to information, fair trade, human trafficking, slavery, just to name a few examples)

What are ways that we can prepare to combat this issue before the population becomes too large? How can you bring awareness to this issue to you peers, family, and community members? Are there aid organizations already in place that someone contact? Name this organization(s).