

In many college-level mathematics courses, we explore various real-world situations using mathematics as a tool to help us understand the situation and see the implications of various choices that could be made. In this course, we are helping you make the transition from a typical developmental algebra class to a class where algebra and other mathematical concepts are used as tools.

In our work in the first two modules, we practiced this in some short real-world problems and then, at the end of the Exponential Growth module, in Lesson 11, we investigated the limit of the number of people the earth can feed and an exponential model for the world population over the next hundred years or so. One objective was to think about when the models predict that we will run out of room on the earth to feed all the people. But another objective was to think about what forces might change this prediction, and in particular, how those forces would change the mathematics we were using to make the prediction. The mathematical techniques we used were ratios, percentages, exponential growth formula, and finding the point of intersection of two formulas by looking at a graph.

In our third module in the course, called Systems, we will look at an even more complex real-world system and see how the mathematics we know can help us understand how this system works. This is an ecological system, having to do with fishing in Lake Victoria in southern Africa. The mathematical techniques needed here include linear formulas, solving linear equations, and solving systems of two equations in two variables by substitution. (Email me to receive some suggestions for reviewing these topics if you need help on them.)

Classwork today:

Go over the homework/quiz from the last class.

Look at pages 4-6. This is set up like a newspaper instead of like a book. Skim through the article called "Ecosystem Disrupted." Do you see both parts of it? Focus on the last third of the article. How does that help you answer questions 4 and 5 on the next page? What are your answers to those?

Page 7, Homework. Read the paragraph before problem 1. What does this graph describe? Does this make sense over the limited range of values for the size of the predator population and the size of the prey population? Each of questions 1-4 talks about what happens if you extended one or both of the axes. Discuss some of these.

Homework:

- Read the three articles on pages 4-6.
- Find some information on the web about the ecology and fishing in Lake Victoria. Print at least one page of what you find and give the URL of where you found it.
- Pages 7-9: 1, 2, 3, 4, 6bcd, 7acd, 8ac

Quiz (to be turned in at the beginning of class March 24.)

Page 6. 1, 2, 3, 4, 5

Pages 7-9. 6a, 7b