CBS 810

Introduction to mathematical modeling

1. What are the main similarities between the scientific method and the modeling process?
2. List the main steps of the modeling process.
3. What is the most important step of the modeling process? Why?
4. Explain what the main differences between compartmental and agent (individual)-based models are.
5. List some variables and parameters that you think may be important to consider in modeling the following outbreak:



“In the winter of 1977, an epidemic of type A influenza takes place in a large boarding school (~ 400 students). Early on the epidemic, some of the boys (~20 % of the boys in the boarding school) received an antiviral drug, called amantidine, as a preventive measure. Amantidine protected the individuals partially; boys treated with amantidine were getting also infected, but at lower rate. Researchers want to know what the impact of the use of the antiviral drug on the epidemic was. “