

High School - Modeling

Modeling as a Process 1

- 1 Estimating how much water and food is needed for emergency relief in a devastated city of 3 million people, and how it might be distributed. 1.1
- 2 Planning a table tennis tournament for 7 players at a club with 4 tables, where each player plays against each other player. 1.2
- 3 Designing the layout of the stalls in a school fair so as to raise as much money as possible. 1.3
- 4 Analyzing stopping distance for a car. 1.4
- 5 Modeling savings account balance, bacterial colony growth, or investment growth. 1.5
- 6 Engaging in critical path analysis, e.g., applied to turnaround of an aircraft at an airport. 1.6
- 7 Analyzing risk in situations such as extreme sports, pandemics, and terrorism. 1.7
- 8 Relating population statistics to individual predictions. 1.8

The basic modeling cycle 2

- 1 identifying variables in the situation and selecting those that represent essential features, 2.1
- 2 formulating a model by creating and selecting geometric, graphical, tabular, algebraic, or statistical representations that describe relationships between the variables, 2.2
- 3 analyzing and performing operations on these relationships to draw conclusions, 2.3
- 4 interpreting the results of the mathematics in terms of the original situation, 2.4
- 5 validating the conclusions by comparing them with the situation, and then either improving the model or, if it is acceptable, 2.5
- 6 reporting on the conclusions and the reasoning behind them. Choices, assumptions, and approximations are present throughout this cycle. 2.6