

MA103: Mathematical Modeling & Intro to Calculus

What is Modeling? 2

Lesson Objectives: Cadets will

1. learn how to contribute positively to our classroom culture.
 2. be familiar with course documents and know the course expectations, including how the Honor Code applies to this course.
 3. describe the modeling triangle.
 4. describe the modeling process.
 5. be able to identify and explain what modeling decision and assumptions are.
 6. be able to justify a modeling assumption as *reasonable* and *necessary*.
 7. define the MA103 ethics framework.
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Admin Check List

- Instructor Website
- Schedule meeting: outlook invite and office location
- Bonus Point sign-up: the link is good
- Homework: Scavenger Hunt Exercise
- More Bonus Points: MA103 3-ring binder and folder on computer

Focus: Our focus today is on **modeling decisions** and the MA103 **ethical framework**.

Modeling decisions:

Ethical Framework:

- Data validity
- Model validity
- Communication

Problem: Let's revisit the peanut butter problem from yesterday with a focus on these two concepts. You are given the following data to help answer the question: how many jars of peanut butter does the Corps of Cadets eat?

Month	1	2	3	4	5	6
Jars Consumed	155	161	21	263	277	229

Modeling Steps: work through the following steps to solve the peanut butter question. Make a note each time you make a modeling decision. Be prepared to discuss your answers to the guided questions as part of the ethical framework.

1. Transform

- Given:
 - What questions should we ask about the given data?

- Find:

- Explore:
 - Define variables:

 - Make assumptions:

 - Model type:

- Final Model:
 - What questions should we ask about our model?

2. Solve

3. Interpret

- What questions should we ask ourselves when we communicate results?

Reflect: How did the addition of data change this problem? What considerations did data introduce into the modeling process?