

## MA103: Mathematical Modeling & Intro to Calculus Modeling with Descriptive Analytics 2

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**Lesson Objectives:** Cadets will

1. understand the types of questions that can be modeled with descriptive statistics.
  2. understand how to apply the modeling triangle using descriptive statistics.
  3. identify and justify assumptions.
  4. identify modeling decisions.
  5. apply the MA103 ethical framework to assess modeling decisions.
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### 1 Warm-Up:

Go to the board and think of the French Fry problem - come up with an example of EVERY variable type which COULD be considered when applying descriptive analytics to this research question? Feel free to use last lesson's AFT example as a guide.

### 2 Admin Notes

- Honor Brief
- Discuss readings by lesson and green book vs. section book
- Show me MA103 3-ring binder and folder on computer

ID	SDC	MDL	Run	Age
2901	124	225	15:30	18
2902	110	275	14:45	20
2903	130	0	970	210
2904	118	250	14:30	21
2905	105	300	13:50	19
2906	140	185	17:00	19
2907	11	265	15:00	22

Look at this dataset and complete the Make Assumptions step.

Next, visit the instructor site and download the dataset. Work in groups on the modeling steps on the Boards - everyone needs to do the work on their own computer.

## Modeling Steps:

### 1. Transform

- Given:
- Find:
- Explore:
  - Define variables: build a data dictionary.
  - Make assumptions about the data and how to summarize it: are your assumptions *reasonable* and *necessary*?
  - Model type: select visualization tools and summary statistics.
- Final Model:

2. **Solve:** Calculate any necessary statistics and generate visualizations

3. **Interpret:** Communicate your calculations and visualizations in the context of the problem.

