

Points of Emphasis in M212

Often, coursework with data is focused on performing computations by hand or by using a handheld graphing calculator. Instead, students should be given continuous access to:

- tools within spreadsheets and coding languages that allow for a sharp focus on understanding how to fit models to data, rather than computing models by hand (LP 7).
- online tools and resources such as databases, integrated development environments, videos, and data analysis platforms to allow for model creation (LP 7).

Students should also be given opportunities to understand and reflect on the ways that predictive modeling authentically involves real-world situations (LP 6).

Whereas a typical instructional unit on modeling might begin with a focus on students independently performing computations or manipulating various functions disconnected from real-world contexts, in M212, students should:

- regularly encounter real-world tasks involving a need for predictions that require them to employ models for these predictions (LP 1).
- engage with multiple parts of the modeling cycle (see above), especially naming their own assumptions and variables and defending their choice of model as much as possible (LP 1).
- be able to choose tasks that are organized around different scientific, social, or other topics, allowing students to have agency in their learning (LP 4).
- frequently collaborate and share their solution methods (LP 2).

Spending time computing or manually completing tables with predictive models should not be a focus of this badge. In fact, the opposite is true. In M212, students should:

- regularly engage with tasks that do not require any computation, but instead focus on understanding and reasoning with models. For example, students should:
 - explain the real-world meaning of a predictive model.
 - compare two or more predictive models.
 - explain the relationship between parameters in a predictive model and features of its graph, if applicable.
 - use a predictive model to justify a claim about a real-world context.
 - identify and explain circumstances where making predictions would be considered extrapolations and might not be a trusted prediction.
- have frequent opportunities to use reasoning to relate the algebraic form of a predictive model to its graph (LP 3).
- have opportunities to share their reasoning with partners or in groups, allowing for practice sharing, critiquing, and revising their arguments and including social interaction as part of the learning process (LP 2).