

Beyond Points:

Alternative Grading with Portfolios, Standards-Based Assessment, and Generative AI

Brianna Hitt, PhD
Jessica Hauschild-Eastman, PhD

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NotebookLM Reading Guides

- We provide a basic intro to GenAI tools at the start of the semester
 - Prompt engineering best practices
- We provide examples of co-creation and well-structured prompts throughout the course

Prompt Engineering

Remember, it's best to structure your prompt with the following elements:

- Role - who should your tool act as?
- Task - what should your tool do?
- Output - what should the tool's response look like?
- Context - what else does your tool need to know?

PRO TIP: Ask the tool what else it needs to know BEFORE answering

Reading Guide Prompts

- Prompt 1 - Sampling distribution vs bootstrap distribution

Ask the AI: I will explain the difference between a sampling distribution and a bootstrap distribution: [insert your explanation here]. Can you check my explanation for correctness and completeness, and suggest ways to improve my understanding?

- Prompt 3 - Quiz Me (distribution type)

Ask the AI: Can you quiz me by giving me 3-5 short descriptions of a distribution and I'll try to identify whether it's a sample distribution, a sampling distribution, or a bootstrap distribution? After I respond, check if I'm correct and explain any answers I get incorrect.

Lesson 20 – Bootstrap and Resampling

<https://notebooklm.google.com/notebook/dbe1bbf8-4bbd-43ec-a956-a51d8cbf8c2c>

Co-creation with GenAI

- Good Example 1 - Student forms a plan and presents it to the GenAI tool

Prompt: I am working on a homework problem analyzing the possum dataset in R using tidyverse. I want to compare skull width between possums from Victoria and those not from Victoria.

I think I need to use `group_by()` and `summarise()` to calculate mean and standard deviation. Can you generate tidyverse code that: groups by where the possum comes from, calculates mean, median, standard deviation, and sample size of skull width, removes missing values, and uses the pipe operator? Please explain each line briefly so I can verify I understand it.

Co-creation with GenAI

- Good Example 2 - Student uses GenAI to create a generic outline for how to approach the problem, then fills in the details

Prompt: I'm in an introductory statistics/data science course using tidyverse. I have this homework problem: [insert homework problem here]

I need to determine whether skull width differs between the two groups using summary statistics only (no hypothesis tests). We've covered measures of center and measures of spread and we're using the tidyverse for data wrangling. Can you help me create a step-by-step outline for how to approach this problem?

Please do NOT solve it — just give a structured plan I can follow."

Co-creation with GenAI

- Bad Example 1 - Student uses GenAI to do the homework problem for them

Prompt: Using the `possum.csv` dataset, determine whether the skull widths of possums from Victoria are different from those not from Victoria. Justify your answer using summary statistics.

Give me an answer that I can easily copy/paste into a `.qmd` file in Posit Cloud.

Example Prompts for Coding

- Help generating a plot in R

Basic Prompt: Generate a boxplot in R.

Better Prompt: Generate a boxplot in R using the ggplot2 package.

Even Better Prompt: Generate a boxplot in R using the ggplot2 package. Below is an example from my assigned reading: [insert code example from ModernDive].

Example Prompts for Practice Problems

- Generating practice problems when studying for the exam

Even Better Prompt: Generate 3-5 practice problems about [insert Block 1/2 topic here (e.g., sampling methodologies, data visualization, numerical summaries)] based on the attached reading assignment. These practice problems should be similar to those provided below from class: [insert example practice problems from your notetakers]. All practice problems should pertain directly to the attached core competencies 1-5 that I'm being assessed on for the next exam. Please also make the practice problems interesting to me - I like basketball, Disney/Pixar movies and Lego sets.

Block 3 GR (Statistical Inference)

<https://notebooklm.google.com/notebook/6a0870b7-5749-47ac-a9f2-d068cf93f702>

Documentation statements

1. Name of the tool being used
2. What students provided to ChatGPT (prompts)
3. What students received from ChatGPT (output/transcripts)
4. How they changed the output for the assignment
5. Transcript link

Example: I used ChatGPT 5.2 to help write code for a scatterplot with a regression line. I asked: “How can I plot a scatterplot of height vs weight in R using ggplot2 and add a regression line?” ChatGPT gave me a full ggplot() code snippet. I edited the code to use my dataset name (cadet_data) and customized axis labels and colors. <https://chatgpt.com/share/6942d3ea-f350-8013-b0a5-55aac51ba119>]

Math 378 GR Refinements

- Designed as an alternative to in-class timed GRs administered by ChatGPT
- Spring 2025 – environment created by students in ChatGPT
 - MANY instructions and intensive set up
- Spring 2026 – adapted to use NotebookLM
- Cadets improve their understanding of course material by iterating on their GR answers (with feedback) on their own time/pace with NotebookLM

GR Refinements – Spring 2025

To help you iterate on and improve your understanding of Math 378 course material following the GRs, you have the opportunity to complete a GR Refinement for each block of material.

For this course, you will now utilize an LLM and have a dialogue about what you missed, where you went wrong, and what the correct answer is. You will work with the LLM of your choice to correct your mistakes and refine your understanding of the course material. This will provide you with immediate feedback and allow you to iterate and improve upon your understanding as much as needed. Your full LLM transcript will be submitted to Gradescope as a check of your progress following the GRs and will ultimately be part of the evidence in your semester portfolio, demonstrating your growth regarding the course learning goals.

GR1 Refinements (Statistical Learning, Regression, Classification)

<https://notebooklm.google.com/notebook/c3caf1d2-a510-4b13-8ca8-b21a884867e5>