

## Mth126 Projects – Overview

### Notes:

- Students will be assigned randomly to report and present **ONE of the THREE** topics; students may then trade assignments at will.

### Purpose of and Motivation for this assessment:

- Provide an opportunity for you to build on your mathematical knowledge for teaching and apply your content knowledge to design an age-appropriate activity
- To motivate you to think critically about how one comes to *know* how a student thinks about a particular topic

### Project 1 (Due Friday, Feb. 17): Probability

- Counting Techniques
- Probability of Simple & Compound Events

### Project 2 (Due Monday, Mar. 28): Data Analysis

- Prediction based on Experimental & Theoretical Probabilities
- Formulation of Statistical Questions
- Analysis and Interpretation of Data

### Project 3 (Due Wednesday, Apr. 20): Algebra

- Use of variables to describe mathematical situations
- Model real world situations with various functions
- Multiple representations of relations

### **Project 1 (Due Friday, Feb. 17): Counting & Probability**

The National Council of Teachers of Mathematics recommends that data analysis and probability be developed across the grades, from pre-kindergarten through grade 12. More specifically, instructional programs should enable all students to “understand and apply basic concepts of probability (NCTM, 2000, p.48).”

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

This project requires you to create a counting / probability activity for K-8 students.

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### **Project 2 (Due Monday, Mar. 28): Statistics & Data Analysis**

The National Council of Teachers of Mathematics recommends that data analysis and probability be developed across the grades, from pre-kindergarten through grade 12. More specifically, instructional programs should enable all students to “formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them; select and use appropriate statistical methods to analyze data; develop and evaluate inferences and predictions that are based on data (NCTM, 2000, p.48).”

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

This project requires you to create a data analysis activity for K-8 students.

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### **Project 3 (Due Wednesday, Apr. 20): Algebraic Reasoning**

The National Council of Teachers of Mathematics recommends that algebraic reasoning be developed across the grades, from pre-kindergarten through grade 12. More specifically, instructional programs should enable all students to: “(1) understand patterns, relations, and functions; (2) represent and analyze mathematical situations and structures using algebraic symbols; (3) use mathematical models to represent and understand quantitative relationships; and (4) analyze change in various contexts” (NCTM, 2000, p.37).

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

This project requires you to create an algebra activity for K-8 students.

## PROJECT COMPONENTS – Common to all projects!

Write a three- to four-page description of the activity including:

1. Specify what grade level this project is designed for and how you came to this decision.
2. Describe how the activity addressed the recommendations presented in the Common Core WI State Standards.
3. Detail and justify your choices for the assessment tasks you will present to students.
  - What knowledge about the student thinking do you expect to evaluate using your assessment task(s)?
  - Give at least 2 hypothetical student responses to your assessment task(s).
  - Describe what each hypothetical response tells you about student understanding. Is there a misconception? What is it? Based on your hypothetical student responses and the misconception(s) you describe, what will your “next step” be? If intervention is needed, what tasks will you present to the student. If no intervention is needed, what extension activity will you present?

*Remember, to learn about student thinking there need not be a huge lesson or activity. Keep it simple but informative!!*

Core Standards <http://www.corestandards.org/the-standards/mathematics>

## PROJECT EVALUATION

Projects will be evaluated according to the following criteria:

- evidence of understanding of the Common Core Standards related to measurement, data analysis, and/or probability (for projects 1 and 2) or those related to algebra, algebraic thinking, functions, etc. (for project 3). All projects should also address the Common Core Standards for Mathematical Practice. (All of this is available via the link above, or just search for Common Core Math Standards.)
- quality of the assessment tasks to inform you about student understanding
- inclusion of required components for each part of the project
- quality of writing, including grammar and spelling
- quality, clarity, and coherence of ideas presented to the class (5 minute maximum)

**Together, your project and presentation count for 15% of your final grade.**