



LINCOLN-WOODSTOCK COOPERATIVE SCHOOL DISTRICT COURSE SYLLABUS

Course Name: Quantitative Reasoning

Length: Full year

Teacher: Jessica Halm

Course Description:

This course is designed to expose the student to a wide range of general mathematics. Problem-solving and critical thinking skills, along with the use of technology, will be emphasized and reinforced throughout the course as the student becomes actively involved in solving applied problems. Topics to be covered include: Number Theory and Systems, Functions and Modeling, Finance, Geometry and Measurement, Probability and Statistics, and selected subtopics related to the student's major field of study.

- **PRE-REQUISITES:** MATH0610L or equivalent with a grade of C or better, or competence demonstrated on math placement exam.

Competencies or Standards Assessed:

1. **Symbolic Expression:** Students will reason abstractly and manipulate symbolic expressions and models to represent relationships and interpret expressions, equations, and inequalities in terms of a given context (including real-world phenomena) for determining unknown values.
2. **Numbers and Number Systems:** Students will expand their understanding of number systems, thinking flexibly and attending to precision and reasonableness, when solving problems using complex numbers.
3. **Reasoning and Computational Strategies:** Students will expand the use of computational strategies and algorithms, using evidence to support authentic application.
4. **Metacognitive Skills and Communication:** Students will use reasoning and metacognitive skills to develop mathematical arguments to justify the reasonableness of conjectures and outcomes and to support formal proofs.
5. **Measurement:** Students will explain reasoning when applying and modeling geometric measurement formulas.
6. **Algebraic Functions, Patterns, and Relations:** Students will make use of patterns, relations, and functions to interpret, compare, and analyze pure and applied situations, using the information to make conjectures and support conclusions.
7. **Geometry:** Students will solve problems involving spatial reasoning using properties of 2- and 3-dimensional figures to analyze, represent, and model geometric relationships in pure/theoretical and authentic applied contexts.

Anchor Texts or Major Curriculum:

Thinking Mathematically, 5th Ed., Blitzer, Pearson Education, Inc.

Calculator
TI-89 Graphing Calculator (available for long-term loan) or similar model (see instructor for approval).

Course Outline (major units of study):

Unit Title	Essential Question or Overarching Understanding
Problem-Solving Process/Habits of the Mind	How can we use the problem-solving process and/or problem-solving heuristics to solve a variety of problems?
Number Theory/Number Systems	How can we apply basic computational skills, relationships, and properties to various math problems?
Functions & Family of Functions	Can we recognize basic function families and transform them in the coordinate plane? Can we use a graph and our understanding of these concepts to write functions?
Regression Analysis	Can we write linear and non-linear equations to model applied problems, and analyze the appropriateness of the model based on regression analysis?
Finance	Can we correctly apply various interest formulas in various real-world scenarios, including planning for retirement and loan payment plans?
Measurement	Do we know how to convert from English to Standard measurements and vice versa? Can we convert within each measurement system using appropriate conversion factors?
Counting Techniques & Probability	Can we define a sample space, calculate the probability of individual events, and solve problems using permutations and combinations?
Analyzing & Interpreting Representations & Distributions of Data	Can we organize and present data in various ways, and accurately use mean, median, mode, and midrange to paint a clear picture of datasets? Can we pinpoint sources of bias in data and/or statistics presented in the media?



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Portrait of a Learner

Independent Learner

I make thoughtful plans and do my best to reach personal goals using feedback to work through challenges.

Responsible Collaborator

I work with others to achieve shared goals by listening actively, contributing ideas, and managing conflict.

Critical Thinker

I analyze information, ask thoughtful questions, and apply reasoning skills to solve problems and make decisions.

Effective Communicator

I express ideas clearly, adapting strategies based on the audience, setting, and/or purpose.

Global Citizen

I show that I care and take responsibility by helping in my community and the world around me.

Additional Classroom Expectations:

Homework (Formatives):

- assigned daily Monday-Thursday via Google Classroom
- accounts for 20% of your overall grade each quarter
- checked and graded based on visually apparent effort OR by randomly selected problem submission
- Students who have fallen behind due to absences, etc., should use the weekends to get caught up

Quizzes, Tests, Written Summaries, Presentations, and Projects (Summatives):

- account for 80% of the overall grade each quarter
- Individual quiz and test responses will be evaluated based on the above rubric
- presentations, written summaries, and projects have their own separate evaluation rubric
- Traditional tests/quizzes are open notes
- may be corrected for an improved grade (see "Corrections" below)

Summative Corrections:

- Resubmit the original summative, with corrections attached to the front
- Corrections must be made for ***each and every problem/portion for which the student lost points***
- Complete corrections are consistent with a "4" on the above rubric
- notes, classmate, and/or teacher assistance may be used for corrections
- Corrections are due no later than 1 week after the summative is graded and returned

to the student

Equipment:

- writing utensil, straightedge, textbook, and preferred note-taking system.
- TI-89 graphing calculators are available for short and long-term loan, course dependent.