

Sanborn Regional School District
Middle School Course Syllabus and Competencies

Course Title: **Integrated Math 3**

Grade: **8**

Course Description:

This is the third course of a three-part program in middle school integrated mathematics called Mathscape. In this standards-based program, students will spiral through topics in number sense, data and statistics, algebra, and geometry. Students will be expected to think mathematically, to write and reflect on what they are learning in the classroom, and to use acquired math skills to interpret situations and solve real-world problems. This course is designed to extend students' knowledge of Pre-Algebra and Geometry in preparation for high school. Attention is given to analyzing data, determining probabilities, applying equations involving distance, time and speed, and finding surface areas and volumes. Further attention is given to using variables and equations to build growth sequences, using equations to solve real world problems, applying the Pythagorean Theorem, graphing functions, and writing equations of lines using slopes and y-intercepts.

Text/Major Resources:

MathScape: Seeing and Thinking Mathematically, Course 3, by Glencoe (2005)

Texas Instruments TI-84 Graphing Calculator Technology

Manipulatives

Math Lab

Other handouts and resources as provided by the teacher

Core Course Competencies:

1. Student will be able to describe and analyze data.
 - Find and use measures of central tendency
 - Use stem-and-leaf plots
 - Use scatter plots, lines of best fit, and correlations to describe relationships in data
 - Apply the concepts of combinations, permutations, and probability to counting
2. Student will be able to use appropriate mathematics analyze motion.
 - Be able to represent motion in words, pictures, and diagrams
 - Compare graphs with maps and stories to find the best way to represent motion in any situation
 - Understand the difference between average and instantaneous speed
 - Use a formula to calculate distance, speed, and time of travel
3. Student will understand what mathematical ideas are used in the exploration of three-dimensional shapes.
 - Use nets to construct a cube
 - Be able to estimate surface area and volume of various rectangular and non-rectangular solids
 - Be able to use appropriate units of measurement when calculating the volume or surface area of a three-dimensional figure
 - Be able to estimate the volume of large objects
4. Student will use math to make forecasts.
 - Be able to build a mathematical model to make forecasts and think about when forecasts are useful for a given situation
 - Calculate growth sequences from actual data and build these into mathematical models to use for forecasting
 - Be familiar with how statistics is used to model population growth in our world
5. Student will use basic algebra to analyze and solve problems.
 - Use manipulatives to simplify and evaluate algebraic expressions
 - Identify the three ways to use negative signs
 - Work with expressions that involve parentheses
 - Use basic algebra rules to solve equations

6. Student will use math in real world situations such as designing and building roads and ramps.
- Understand the concept of slope and how to estimate it for real-world objects
 - Understand how to measure and calculate the side lengths and slope angles of right triangles
 - Use two different methods for calculating triangle side lengths: scale drawings and the Pythagorean Theorem
 - Identify the relationships between slope and ratio, slope angle, and percent grade in stairs
 - Understand how to use the tangent ratio

Essential Questions:

- How can math help you describe and analyze data?
- How can mathematics be used to analyze motion?
- What mathematical ideas can we expect to consider when we explore three-dimensional shapes?
- How can we use math to make forecasts?
- How can algebra help you analyze and solve problems?
- What math is used in designing and building roads and ramps?
- How can you describe mathematical relationships?
- What problem solving strategies could you use to answer an open response question?

Instructional Practices

Lecture, Demonstrations, Research, Independent Learner, Reading, Writing, Education By Design, Essential Questions, Class Discussions, Cooperative Learning, Investigations, Constructed Response Questions, Test-Taking Strategies, Differentiated Instruction, and Other Practices as Needed

Assessment Strategies

Do Nows, Class Participation, Portfolios/Notebooks, Quizzes & Tests, Presentations, Projects & Labs, Homework & Classwork, Midterm & Final Exam, NWEA Map Goal Area Assessments, NECAP, Reading and Writing Assignments, Writing Portfolios & Journals, and Other Strategies as Needed.

SRMS

Mission and Expectations

The faculty and staff of the Sanborn Regional Middle School have a commitment to recognize and nurture each student's abilities within the context of the educational setting. Through reflection, reinforcement and challenge we anchor within the student a sense of his/her ability, success, and dignity.

We believe this goal is best served when a holistic approach is used.

Students

Recognize student ability
Nurture student ability
Help students recognize their strengths and needs
Help students recognize their success
Help students behave with dignity

Classroom Lessons and

Activities
Ask students to reflect on their learning
Create experiences that reinforce skills
Offer opportunities for students to be challenged

Classroom Climate

Create a safe classroom climate
Develop clear and coherent expectations
Provide a consistent system for expectations, behavior, and assessment

Communications

Develop partnerships with community
Develop partnerships with parents

GRADEQUICK: Parents and students may access grades and course information on EDLINE:

<https://www.edline.net/index.page>

All student grades are updated every two weeks.