

Polson Middle School

Mathematics

Madison Public Schools Long Term Mathematics Goals

Students will be able to independently use their learning to:

- model relationships among quantities.
- manipulate equations/expressions or objects to create order and establish relationships.
- represent and interpret patterns in numbers, data and objects.
- draw conclusions about graphs, shapes, equations, or objects.
- demonstrate fluency with math facts, computation and concepts.
- make sense of a problem, initiate a plan, execute it, and evaluate the reasonableness of the solution.
- use appropriate tools to make reaching solutions more efficient, accessible and accurate.
- apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem.
- evaluate the accuracy and efficiency of a given solution.
- justify reasoning using clear and appropriate mathematical language.

Grade 7 Math

Grade 7 Math is the standard course for students who have completed Grade 6 Math.

The major areas of focus are working with positive and negative numbers, solving equations and simplifying expressions, geometry (including circles, surface area and volume), becoming fluent with rational numbers, proportional reasoning, application of percent and using statistics to compare two populations.

Students who meet the standards of Grade 7 Math will progress to Pre-Algebra the following year.

Students will engage in the following units of study:

Timeline	Unit Title
September – October	Unit A: Building Blocks Integers, Expression and Equations
November - December	Unit B: 2D + 3D Geometry Surface Area and Volume
January - February	Unit C: Lets change into.... Rational Numbers
February - March	Unit D: Ratios, Proportions and Percent
April	Unit E: Is this Likely? Probability and Statistics
May - June	Unit F: All the Angles Geometry

Grade 7 Pre-Algebra

Grade 7 Pre-Algebra is a rigorous course that differs from Grade 7 Math in that it contains content from Grade 8 Math. The additional content demands a faster pace for instruction and learning. Students in this accelerated course are expected to reach abstract thinking and make connections with less teacher guidance. The expectation is that students will be able to independently apply their knowledge to novel problems.

The major areas of focus are working with positive and negative numbers to simplify expressions and solve equations, geometry (including transformations, circles, surface area and volume), proportional reasoning, application of percent, using statistics to compare two populations, using graphs to make predictions, graphing equations and solving systems of equations.

Students who meet the standards of Grade 7 Pre-Algebra will progress to Algebra 1 the following year.

Students will engage in the following units of study:

	Unit Title
September-October	Unit A: Tools of the Trade: Integers, Expression and Equations
Nov-December	Unit B: Parts of Wholes: Factors and Rational Numbers
Jan- February	Unit C: Geometry: Surface Area, Volume, Angles
February-Apr	Unit D: Ratios, Proportions and Percent
April-May	Unit E: Statistics and Probability
May-June	Unit F: Visualizing Solutions Graphing Equations and Systems of Equations

Pre-Algebra B

Pre-Algebra B is for grade 8 students that have achieved proficiency with many of the concepts and skills of Grade 7 Math yet require additional support for mastery and/or independence. Additional supports include frequent formal assessments to reduce the number of concepts assessed at a time, student access to notes during assessments, flexible pacing of instruction, small class size, re-teaching of prerequisite skills as needed, extensive guided and independent practice to achieve mastery, and additional adult support. These strategies all combine to help ensure student success and learning.

The major areas of focus in Pre-Algebra B are formulating and reasoning about expressions and equations, modeling with equations, graphing equations with two variables, grasping the concept of functions and using functions to describe relationships, application of percents, analyzing two and three dimensional space and figures using distance, angles, transformations and the Pythagorean Theorem.

Students who meet the standards of Pre-Algebra B will progress to Algebra 1 or Integrated Algebra and Geometry the following year.

Students will engage in the following units of study:

Timeline	Unit Title
September – October	Unit A Connect and Predict Transformations and Graphing
October - December	Unit B: Pouring the Foundation Integers, Expressions, Equations and Inequalities
January - February	Unit C: Ratio, Percent and Proportion
March - April	Unit D: Geometry Angles, Volume, Pythagorean Theorem
May	Unit E: Breaking Apart and Pulling Together Factors and Monomials
June	Unit F: Visualizing Solutions Graphing Lines

Grade 8 Pre-Algebra

Grade 8 Pre-Algebra is the standard course for students who have completed Grade 7 Math.

The major areas of focus in Pre-Algebra are formulating and reasoning about expressions and equations, modeling with equations including equations with two variables, grasping the concept of functions and using functions to describe relationships, application of percents, analyzing two and three dimensional space and figures using distance, angles, transformations and the Pythagorean Theorem.

Students who meet the standards of Pre-Algebra will progress to Algebra 1 the following year.

Students will engage in the following units of study:

Timeline	Unit Title
September	Unit A: Connect and Predict Transformations and Graphing
September - November	Unit B: Pouring the Foundation Integers, Expressions, Equations and Inequalities
November - December	Unit C: Ratio, Percent and Proportion
January - March	Unit D: Geometry Angles, Volume, Pythagorean Theorem
March - April	Unit E: Breaking Apart and Pulling Together Factors and Monomials
April - May	Unit F: Visualizing Solutions Graphing Lines
May - June	Unit G: Visualizing Solutions of More than One Equation Systems of Equations

Algebra I

Algebra I is viewed as the introductory core course to high school mathematics. Topics include: real number system, algebraic functions and relations and their graphs, applying linear models to data that exhibit a linear trend, modeling with, analyzing and solving linear and quadratic functions, exponential relationships, inequalities, and data analysis.

Students who meet the standards of Algebra I will progress to Geometry the following year.

Students will engage in the following units of study:

Timeline	Unit Title
September	Unit A: Cracking Codes: Patterns and Repetition in Our World
October - November	Unit B: Linear Relationships: Equations, Inequalities and Functions
November - December	Unit C: What's in a Line: Elements of Linear Equations
January - February	Unit D: Describing Data: Identifying Trends and Making Decisions
March	Unit E: Points in Common: Systems of Equations and Inequalities
April - May	Unit F: Beyond Straight Lines: Quadratic and Absolute Value
May - June	Unit G: Growth and Decay: Understanding Exponential Functions

Honors Geometry

This course will fully explore topics in plane, solid and coordinate geometry through the study of spatial relationships and the use of an articulated, logical deductive system. Rigorous proofs will be an integral part of this course. Geometric concepts will be reinforced utilizing algebraic skills.

The fundamental purpose of the course in Geometry is to formalize and extend students' geometric experiences from the middle grades. Students explore more complex geometric situations and deepen their explanations of geometric relationships, moving towards formal mathematical arguments. Students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.

Students who meet the standards of Geometry will progress to Algebra II the following year.

Students will engage in the following units of study:

Timeline	Unit Title
September - October	Unit A: Basic Concepts and Proofs
October - November	Unit B: Congruent Triangles
November - January	Unit C: Lines and Angles in Planes and in Space
January - February	Unit D: Polygons
March	Unit E: Circles
April - May	Unit F: Area and Volume
June	Unit G: Coordinate Geometry