



SCHOOL DISTRICT OF MONROE

Preparing for the Future, One Child at a Time

Mathematics (Grade 7)

Course Description:

The curriculum for this course is developed from: [Wisconsin Common Core State Math Standards for 7th Grade](#). This is a required course. The information in this course overview outlines what students should understand and be able to do by the end of the semester/year. This course uses the *College Preparatory Math (CPM), Core Connections, Course 2* is the second of a three-year sequence of courses designed to prepare students for a rigorous college preparatory high school mathematics course. On a daily basis, students in *Core Connections, Course 2* use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their thinking. Under teacher guidance, students learn in collaboration with others while sharing information, expertise, and ideas. The course helps students to develop multiple strategies to solve problems and to recognize the connections between concepts. The lessons in the course meet all of the content standards and embed the “Mathematical Practices” of the Common Core State Standards released in June 2010.

Mastery Standards:

Compute unit rates associated with ratios of fractions. ([CCSS.MATH.CONTENT.7.RP.A.1](#))

Decide whether two quantities are in a proportional relationship. ([CCSS.MATH.CONTENT.7.RP.A.2.A](#))

Use proportional relationships to solve multistep ratio and percent problems. ([CCSS.MATH.CONTENT.7.RP.A.3](#))

Solve real world and mathematical problems involving the four operations with rational numbers. ([CCSS.MATH.CONTENT.7.NS.A.3](#))

Solve multi-step real life and mathematical problems posed with positive and negative rational numbers in any form using tools strategically and apply properties of operations to calculate with numbers in any form. ([CCSS.MATH.CONTENT.7.EE.B.3](#))

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. ([CCSS.MATH.CONTENT.7.EE.B.4](#))

Find probabilities of compound events using organized lists, tables, tree diagrams and simulations. ([CCSS.MATH.CONTENT.7.SP.C.8](#))

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. ([CCSS.MATH.CONTENT.7.SP.B.4](#))

Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. ([CCSS.MATH.CONTENT.7.SP.C.8.A](#))

Solve real world and mathematical problems involving area, volume, and surface area of two- and three- dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. ([CCSS.MATH.CONTENT.7.G.B.6](#))

Solve problems involving scale drawings of geometric figures including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. ([CCSS.MATH.CONTENT.7.G.A.1](#))

Unit	Description of Unit and Learning Targets
Unit 1 Title: Introduction and Probability <u>Essential Questions:</u>	Students will.....determine probabilities of events. <u>Learning Targets:</u>

<ul style="list-style-type: none"> • What do effective problem solvers do when rational numbers appear in a problem? • What does probability mean and how can I express it mathematically? • What are the differences between theoretical and experimental probability? 	<ul style="list-style-type: none"> • I can explain the likelihood that a specific event will occur. • I can compare the probabilities of two separate events to decide which is more likely to happen. • I can find both experimental and theoretical probabilities of events. • I can add and subtract fractions by finding common denominators.
<p>Unit Title: 2</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What do I have to do to make fractions, decimals, and percents all represent the same amount? • How can I determine if a decimal is repeating or terminating? • How can multiplying integers be written as an addition statement? • What are some differences between integers and rational numbers? • How can I tell how to scale numbers on a graph? 	<p>Students will...compare fractions, decimals, and percents and simplify integer operations</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can rewrite numbers in different forms in order to compare them. • I can determine whether a fraction can be rewritten as a repeating or terminating decimal. • I can build (compose) and take apart (decompose) numbers and lengths. • I can add and multiply positive and negative integers and rational numbers. • I can choose appropriate scales and set up useful graphs for data.
<p>Unit Title: 3</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • Why does “order of operations” matter? • How are dividing mixed numbers and decimals similar? • What are the processes for dividing mixed numbers? • How is solving a rational subtraction problem similar and different to solving a rational addition problem? 	<p>Students will...simplify rational number order of operations.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can simplify expressions with multiple operations by identifying and evaluating groups. • I can subtract and multiply positive and negative numbers. • I can build (compose) and take apart (decompose) numbers and lengths. • I can divide with fractions, mixed numbers, and decimals.
<p>Unit Title: 4</p> <p><u>Essential Questions:</u></p> <p>What are the similarities and differences between ratios and rates? Why are ratios important for solving proportions?</p> <ul style="list-style-type: none"> • How do ratios, rates, graphs, tables and rules all relate to show proportionality? • How can I apply different methods to simplify algebraic expressions 	<p>Students will... show proportional relationships in many ways.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can find solutions to problems involving proportional relationships. • I can identify proportional relationships in tables, graphs, and equations. • I can calculate unit rates. • I can combine like terms and simplify algebraic expressions by using distributive, commutative, and associative properties. • I can rewrite algebraic expressions using algebra tiles and zero pairs. • I can simplify and compare two algebraic expressions using algebra tiles.
<p>Unit Title:5</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How are percents and ratios used to solve problems? 	<p>Students will... solve all types of percent and probability problems.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can find and use percentages to solve problems. • I can calculate the probability of compound (multiple) events.

<ul style="list-style-type: none"> • What are the similarities and differences in calculating the probabilities of compound and singular events? • How does experimental probability compare to theoretical probability? • How can I apply strategies to solve multistep problems using tools and graphic organizers that organize problem solving processes? 	<ul style="list-style-type: none"> • I can use experimental results to make and test conjectures about unknown sample spaces. • I can describe how the relationship between experimental and theoretical probabilities for an experiment changes as the experiment is conducted many times. • I can solve situational problems using the 5-D Process.
<p>Unit Title:6 <u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What real-life problems use equation solving or simplifying expressions? • What do problems look like that have more than one solution and why would they have more than one solution? • How can you tell if an equation has something other than just one solution? • What methods do good problem solvers use to model problems and solve them? 	<p>Students will... set up and solve equations from word problems.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can simplify and compare two algebraic expressions. • I can write and solve algebraic inequalities. • I can solve for a variable when two expressions are equal. • I can write and solve an equation to solve a word problem. • I can recognize when an equation has no solution or infinite solutions.
<p>Unit Title:7 <u>Essential Questions:</u></p> <ul style="list-style-type: none"> • What is the relationship between distance, time, and rate of travel? • How can we analyze and apply strategies to simplify and solve equations when they contain rational numbers? • How can I apply strategies to solve equations relating to direct variation, interest, and percentages? • What are various ways you can find a sale price? 	<p><u>Students will...</u> set up, simplify, and solve percent and proportional problems.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can solve problems involving distance, rate, and time. • I can solve equations that have fractional or decimal coefficients by using fraction busters, proportions, or division. • I can find the whole amount if you only know a percentage of • I can calculate simple interest. • I can set up and solve proportional equations. • I can eliminate fractions in equations to solve fractions
<p>Unit Title:8 <u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How do I know which statistical measurement is the best to use for a specific set of data? • How do I determine the method of sampling that gives the best representation for a set of data? • How do I identify parts of geometric figures? • What special circumstances allows quadrilaterals and triangles to be constructed? 	<p>Students will... collect data from population samples, use statistical graphs to compare and interpret data. Construct angles, triangles, and quadrilaterals.</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • I can describe, analyze and compare sets of data using measures of central tendency, such as mean and median, and using the variation, including range and inter quartile range (IQR). • I can determine which population sample works best in a survey. • I can identify angles by their characteristics and use correct vocabulary to describe and name them. • I can construct triangles and quadrilaterals with given side lengths and/or angles and predict if they will be unique shapes.

Unit Title:9

Essential Questions:

- What is the relationship between the parts of the circle and the way they are used to calculate the circumference and area?
- How do I recognize the areas in a shape to calculate composite areas?
- What is the difference between volume and surface area?
- What 3-dimensional shapes are related and how is finding their volume and surface area related?

Students will... solve circles, surface area, and volume.

Learning Targets:

- I can calculate the circumferences and areas of circles.
- I can find the areas of shapes made up of special quadrilaterals, circles, and triangles.
- I can calculate the volumes of some three-dimensional shapes.
- I can find the surface areas and volumes of rectangular prisms.