Planned Course Guide

**Title of planned course:** Mathematics

**Subject Area:** Mathematics

**Grade Level:** 7

**Course Description:** Prerequisites: Complete 6th grade math. The course is the study of Variables, Expressions, and Integers, Solving Equations and Inequalities, Exponents, Rational Numbers and Equations, Ratio, Proportion, and Probability, Percents, Linear Functions, Measurement, Area, Volume, Data Analysis and Probability, Angle Relationships, and Geometric Figures.

Applications of real-world problems will be included. Course requirements include: tests, quizzes, projects, presentations, notebook, daily homework, and usage of calculators. It is highly recommended that each student have a calculator.

**Time/Credit for this Course:** 1.0

**Curriculum Writing Committee:** Julia Morrissey
August: Expressions (8 – 12 days)

September: Expressions (cont.)
Integers (14 – 17 days)

October: Rational Numbers (10 – 13 days)
Equations and Inequalities (18 – 21 days)

November: Equations and Inequalities (cont.)
Proportion and Similarity (18 – 21 days)

December: Proportion and Similarity (cont.)

January: Percents (15 – 18 days)
Volume and Surface Area (15 – 18 days)

February: Volume and Surface Area (cont.)
Polygons and Angle Relationships (18 – 21 days)

March: Polygons and Angle Relationships (cont.)
Probability and Predictions (16 - 19 days)

April: Probability and Predictions (cont.)
Statistical Displays (5 - 10 days)

May: Linear Functions (18 – 21 days)

June: Linear Functions (cont.)
Wilson Area School District
Planned Course Materials

Course Title: Mathematics

Textbook: Math Connects Course 2

Supplemental Books: Pre-Algebra
Larson/Houghton Mifflin © 2012

Teacher Resources:
- Textbooks
- Worksheets
- Internet
- Teacher created worksheets
- Additional worksheets and cooperative learning books
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 1:** Expressions and Patterns

**Time frame:** 9 – 12 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.A-N.1.1, M07.B-E.2.3, M07.B-E.1.1

**Essential content/objectives:** At end of the unit, students will be able to:
- Use powers and exponents
- Evaluate expressions using order of operations
- Evaluate simple algebraic expressions
- Use properties to solve problems

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge

**Extensions:**
- Work with the calculator to be able to enter fractions, exponents, and convert from fractions to decimals and decimals to fractions
- Online problem solving
- Workbook enrichment

**Remediation:**
- Additional exercises
- Less complex numbers to work with to build prior knowledge
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations
Materials & Resources:
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Activity supplies
- Calculators
- Individual white boards

Assessments:
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 2:** Integers

**Time frame:** 14 – 17 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.A-N.1.1, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Find the absolute value of the integer
- Read and write integers
- Graph points on a coordinate plane
- Represent addition and subtraction on a horizontal or vertical number line
- Apply properties of operations to add and subtract integers
- Apply properties of operations to multiply and divide integers

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge

**Extensions:**
- Work with the calculator to be able to enter and understand negative exponents
- Online problem solving
- Workbook enrichment

**Remediation:**
- Additional exercises
- Less complex numbers to work with to build prior knowledge
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations
**Materials & Resources:**
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Activity supplies
- Calculators
- Individual white boards

**Assessments:**
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 3:** Rational Numbers

**Time frame:** 10 – 13 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.A-N.1.1, M07.B-E.2.1, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Graph rational numbers on the number line
- Convert between fractions and decimals
- Compare and order rational numbers
- Add and subtract fractions
- Add and subtract mixed numbers
- Multiply fractions and mixed numbers
- Divide fractions and mixed numbers

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to organize and study the rules of fractions

**Extensions:**
- Work with the calculator to be able to enter fractions, exponents, and convert from fractions to decimals an decimals to fractions
- Online problem solving
- Workbook enrichment

**Remediation:**
- Additional exercises
- Less complex numbers to work with to build prior knowledge
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Calculator instruction
- Mimio presentations
**Materials & Resources:**
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Activity supplies
- Calculators
- Individual white boards

**Assessments:**
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 4:** Equations and Inequalities

**Time frame:** 18 – 21 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.B-E.1.1, M07.B-E.2.1, M07.B-E.2.2, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Write and solve one step equations
- Write and solve two step equations
- Write and solve problems using inequalities
- Write and solve one step inequalities
- Write and solve two step inequalities
- Use the Distributive Property to write equivalent expressions

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Create visual representation in the form of a mobile on balanced equations

**Extensions:**
- Use less technology to assist in operations with numbers
- Online problem solving
- Workbook enrichment

**Remediation:**
- Additional exercises
- Use more technology to assist in operations with numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations
Materials & Resources:
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Activity supplies
- Calculators
- Individual white boards

Assessments:
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 5:** Proportions and Similarity

**Time frame:** 18 – 21 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.A-R.1.1, M07.B-E.2.1, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Find ratios and unit rates
- Calculate unit rates
- Identify proportional and non-proportional relationships
- Write and solve proportions
- Use proportions to solve problems
- Use proportions to estimate populations
- Solve problems by drawing a diagram
- Solve problems involving scale drawings
- Identify similar and congruent figures
- Solve problems involving similar figures

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- “Are We Similar?” project

**Extensions:**
- Create and solve more challenging problems involving proportion
- Online problem solving
- Workbook enrichment

**Remediation:**
- Additional exercises
- Use more technology to assist in operations with numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice
**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations

**Materials & Resources:**
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Project supplies
- Calculators
- Individual white boards

**Assessments:**
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Planned Course: Mathematics

Unit 6: Percent

Time frame: 15 – 18 class periods

State Standards/ Anchor(s) or adopted anchor: M07.A-R.1.1.6; M07.B-E.2.1; M07.B-E.2.2; M07.B-E.2.3

Essential content/objectives: At end of the unit, students will be able to:
- Convert between fractions, decimals, and percents
- Find the percent of a number
- Estimate percents
- Solve problems involving percents
- Solve problems using the percent equation
- Solve problems by determining reasonable answers
- Find the percent of increase and decrease
- Solve problems involving sales tax and tips
- Solve problems involving discount
- Solve problems involving simple interest

Core Activities: Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete Cellular Phone project

Extensions:
- Work with problems that have fractional values
- Online problem solving
- Workbook enrichment

Remediation:
- Additional exercises
- Break problems into smaller sections
- Give more instructions on what process to use for particular problems
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice
**Instructional Methods:**
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations

**Materials & Resources:**
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Project supplies
- Calculators
- Individual white boards

**Assessments:**
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

Planned Course: Mathematics

Unit 7: Volume and Surface Area (Chapter 10)

Time frame: 15 – 18 class periods


Essential content/objectives: At end of the unit, students will be able to:
- Find circumference and area of circles
- Find the surface area of prisms and cylinders
- Describe two-dimensional figures that result from slicing three-dimensional solids
- Find the volume of prisms and cylinders

Core Activities: Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Exploratory exercises to develop knowledge
- Work with partners to solve mixed real-world problems
- Work with a group to determine the more efficient package

Extensions:
- Write and solve your own problems that model real-world situations
- Work with more difficult numbers, fractions, and decimals
- Online problem solving
- Workbook enrichment

Remediation:
- Chapter review exercises which revisits concepts and vocabulary
- Give specific instructions for each type of problem and which formula to use
- Teacher/peer tutoring
- Online practice

Instructional Methods:
- Projector notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Warm ups
- Teacher directed examples
- Mimio presentations
**Materials & Resources:**
- Warm ups
- Textbook
- Mimio lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Project supplies
- Calculators
- Individual white boards

**Assessments:**
- Warm ups
- Pretests
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 8:** Angle Relationships (Chapter 12)

**Time frame:** 18 – 21 class periods

**Anchor(s) or adopted anchor:** M07.C-G.1.1.2, M07.C-G.1.1.3, M07.C-G.2.1, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Classify triangles by sides and angles
- Solve problems involving triangles
- Use and apply the triangle inequality theorem
- State and identify special pairs of angles
- Identify angles when a transversal intersects lines
- Find the measure of missing angles using special angle pairs

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts

**Extensions:**
- Workbook Enrichment
- Work with more difficult angle measures including decimals and fractions
- Identify real-life examples and find missing angle measures

**Remediation:**
- Break problems into smaller sections
- Create flashcards to study concepts and vocabulary
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Teacher directed examples
- Warm ups
- Individual, pair, and whole group practice
- Higher ordering questioning
**Materials & Resources:**
- Warm Ups
- Textbook
- Mimio lessons
- Projector
- Teacher directed notes
- Handouts (worksheets)
- Calculators
- Individual white boards

**Assessments:**
- Warm Ups
- Teacher observation of student work
- Student pair-share and group discussion
- Homework assignments
- Test/quizzes
- Questioning techniques
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 9:** Probability and Predictions (Chapter 8)

**Time frame:** 16 – 19 class periods

**State Standards/ Anchor(s) or adopted anchor:** M07.D-S.1.1; M07.D-S.2.1; M07.D-S.3.1; M07.D-S.3.2, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Find the probability of a simple event
- Find the sample spaces and probabilities
- Use multiplication to count outcomes and find probabilities
- Find the probability of independent and dependent events
- Find and compare experimental and theoretical probabilities
- Investigate experimental probability by conducting a simulation
- Predict actions of a larger group by using a sample

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Data Collection group Project to understand the sampling methods

**Extensions:**
- Workbook Enrichment
- Perform experiments and calculate the probability
- Find probabilities of dependent events

**Remediation:**
- Additional exercises
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

**Instructional Methods:**
- Projector notes
- Teacher directed examples
- Warm ups
- Individual, pair, and whole group practice
- Higher ordering questioning
Materials & Resources:
- Warm Ups
- Textbook
- Mimio lessons
- Projector
- Teacher directed notes
- Handouts (worksheets)
- Calculators
- Individual white boards

Assessments:
- Warm Ups
- Teacher observation of student work
- Student pair-share and group discussion
- Homework assignments
- Test/quizzes
- Questioning techniques
Planned Course: Mathematics

Unit 10: Data Analysis

Time frame: 5 – 10 class periods

Anchor(s) or adopted anchor: M07.D-S.1.1; M07.D-S.2.1; M07.D-S.3.1; M07.D-S.3.2, M07.B-E.2.3

Essential content/objectives: At end of the unit, students will be able to:
- Identify populations and sampling methods
- Make conclusions about populations using surveys
- Compare two numerical data distributions using measures of center and variability

Core Activities: Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Data Collection group Project to understand the sampling methods

Extensions:
- Workbook enrichment
- Collect and display data in an appropriate graph
- Online problem solving

Remediation:
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

Instructional Methods:
- Projector notes
- Warm ups
- Teacher directed examples
- Higher order thinking questions
- Individual, pair, and small group practice
- Group project
Materials & Resources:
- Warm Ups
- Textbook
- Projector
- Mimio Presentations
- Teacher directed notes
- Handouts (worksheets)
- Calculators
- Individual white boards

Assessments:
- Warm Ups
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
- Project Observation
Curriculum Scope & Sequence

**Planned Course:** Mathematics

**Unit 11:** Linear Functions

**Time frame:** 18 – 21 class periods

**Anchor(s) or adopted anchor:** M08.B-E.2.1.1, M08.B-F.1.1.1, M08.B-F.1.1.2, M08.B-F.1.1.3, M07.B-E.2.3

**Essential content/objectives:** At end of the unit, students will be able to:
- Use graphs to represent relations and functions
- Find solutions of equations in two variables
- Understand that functions can be linear or nonlinear
- Use x and y intercepts to graph linear equations
- Find and interpret slopes of lines

**Core Activities:** Students will complete/participate in the following:
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Complete graphing transfer project

**Extensions:**
- Workbook enrichment
- Represent situations in an equation and calculate slope

**Remediation:**
- Additional exercises
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online Practice

**Instructional Methods:**
- Projected notes
- Warm ups
- Mimio Presentations
- Teacher directed examples
- Higher order thinking questions
- Individual, pair, and small group practice
**Materials & Resources:**
- Warm Ups
- Textbook
- Projector
- Teacher directed notes
- Handouts (worksheets)
- Calculators
- Individual white boards
- Project materials

**Assessments:**
- Warm Ups
- Student pair-share and group discussion
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
- Project Rubric