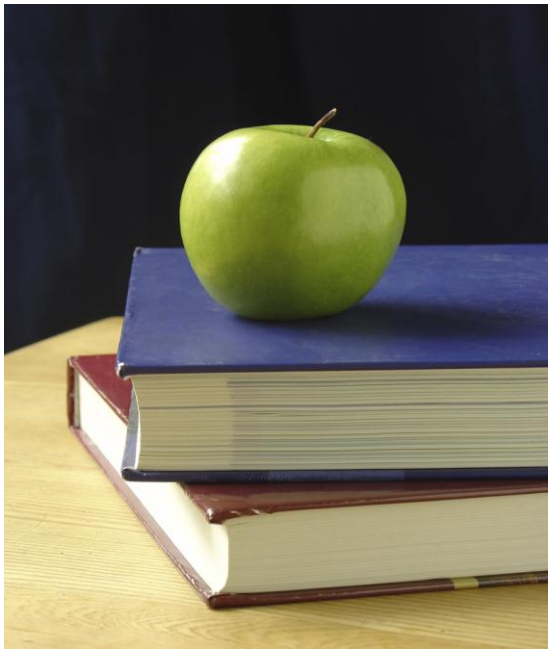
Wolcott Public Schools

154 Center Street
Wolcott, Connecticut 06716
www.wolcottps.org – 203-879-8183

High School Curriculum
Grades 9 & 10
Algebra I



Children are our Future…

ALGEBRA I – GRADES 9 & 10

Mission Statement:
The mission of the Wolcott Public Schools is to develop in each student the knowledge, skills, and attitudes necessary to become a productive member of the community and a contributing member of society.

Departmental Philosophy:
The philosophy of the Mathematics Department at Wolcott High School is that mathematics education should support the development of mathematical literacy in all students, prepare students for successful post-secondary endeavors, and motivate more students to pursue careers in mathematics, technology, and engineering. Students will be offered appropriately sequenced instruction which promotes the development of deep understanding of key mathematical concepts and skills, including the ability to compute, reason, communicate and solve problems. The department will set high expectations for all students to ensure earlier and more equitable opportunities to learn mathematics. Students will be actively involved with mathematics and will be required to use a variety of mathematical tools and strategies to solve problems using appropriate technology. All students will be proficient with the TI-83/84 graphing calculator where applicable, including but not limited to, evaluating expressions, graphing and using the statistic package.

Course Descriptions:

- **Algebra I Level 2** is a course that will help students become independent thinkers capable of communicating about mathematics numerically, algebraically, graphically and verbally. The course is designed to prepare students for the formal mathematics in Geometry, Algebra II, and Pre-Calculus. Topics such as numerical and algebraic expressions, equations, inequalities, direct and indirect variation, work with polynomials, rational expressions, the coordinate plane, measures of central tendency, and quadratics will be covered as well as other skills needed for standardized testing during high school. An emphasis will be placed on the student's ability to develop strategies for solving sentences and word problems and developing logical thinking skills. Students will be introduced to the graphing calculator for appropriate applications throughout the course.

- **Algebra I Level 3** is an Algebra I course designed for students who have difficulty with high school mathematics. Students will be introduced to beginning algebra concepts with real world applications as well as have an opportunity to review arithmetic and geometry concepts. They will acquire basic knowledge presented in a concrete manner of such topics as numerical and algebraic expressions, equations, inequalities, direct and indirect variation, work with simple polynomials, the coordinate plane, measures of central tendency as well as other skills needed for standardized testing during their high school years. Students will be introduced to the graphing calculator for appropriate applications throughout the course.

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
1.1 Understand and describe patterns and functional relationships.	**a.** Describe relationships and make generalizations about patterns and functions.	**1.** Identify, describe, create and generalize numeric, geometric, and statistical patterns with tables, graphs, words, and symbolic rules. **2.** Make and justify predictions based on patterns. **3.** Identify the characteristics of functions and relations including domain and range.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
1.2 Represent and analyze quantitative relationships in a variety of ways.	**a.** Represent and analyze linear and nonlinear functions and relations symbolically and with tables and graphs.	**1.** Represent functions and relations on the coordinate plane. **2.** Identify an appropriate symbolic representation for a function or relation displayed graphically or verbally. **3.** Recognize and explain the meaning of slope and x- and y – intercepts as they relate to a context, graph, table or equation.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
1.3 Use operations, properties and algebraic symbols to determine equivalence and solve problems.	**a**. Manipulate equations, inequalities, and functions to solve problems. **b.** Use and extend algebraic concepts to include real numbers.	**1.** Model and solve problems with linear, quadratic, and absolute value equations; and linear inequalities. **2.** Determine equivalent representations of an algebraic equation or inequality to simplify and solve problems. **3.** Solve systems of two linear equations using algebraic or graphical methods. **1.** Determine equivalent representations of an algebraic equation or inequality to simplify and solve problems.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
2.1 Understand that a variety of numerical representations can be used to describe quantitative relationships	**a.** Extend the understanding of number to include integers, rational numbers, and real numbers. **b.** Interpret and represent large sets of numbers with the aid of technology.	**1.** Compare, locate, label and order real numbers on number lines, scales, coordinate grids and measurement tools. **2.** Select and use an appropriate form of number (integer, fraction, decimal, ratio, percent, exponential, scientific notation, irrational) to solve practical problems. **1.** Use technological tools such as spreadsheets, probes, computer algebra systems and/or graphing utilities to organize and analyze large amounts of numerical information.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
2.2 Use numbers and their properties to compute flexible and fluently, and to reasonably estimate measures and quantities.	**a.** Develop strategies for computation and estimation using properties of number systems to solve problems.	**1.** Select and use appropriate methods for computing to solve problems in a variety of contexts. **2.** Solve problems involving scientific notation and absolute value. **3.** Develop and use a variety of strategies to estimate values of formulas, functions and roots; to recognize the limitations of estimation; and to judge the implications of the results.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com
	b. Solve proportional reasoning problems.	**1.** Use dimensional analysis to determine equivalent rates. **2.** Solve problems using direct and inverse variation.		

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
4.1 Collect, organize and display data using appropriate statistical and graphical methods.	**a.** Create the appropriate visual or graphical representation of real data.	**1.** Collect real data and create meaningful graphical representations of the data.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

Algebra I – Grades 9 & 10

Content Standards	*Performance Standards*	*Sample Activities*	*Assessment Strategies*	*Resources*
4.3 Understand and apply basic concepts of probability.	**a.** Understand and apply the principles of probability in a variety of situations.	**1.** Solve problems involving the probabilities of mutually exclusive events or complementary events.	**1.** Tests **2.** Quizzes **3.** Projects **4**. Homework **5.** Class Work **6.** Take Home Tests **7.** Extra Credit **8.** Rubrics	**1**. Text **2.** Course organizers **3.** State of CT Mathematics Curriculum Framework **4.** Graphing Calculators **5.** Cooperative Learning Groups **6**. On-line supplemental text resources www.PHschool.com

ALGEBRA I, Level 2
PACING GUIDE

All students must be proficient with the TI-83/84 graphing calculator <u>where applicable</u> throughout the course, including but not limited to, evaluating expressions, graphing and using the statistic package. This is essential for standardized testing. Students should be encouraged to purchase their own in order to have an adequate opportunity for independent practice with the calculator.

September: .....Chapters 1 and 2

October..... Chapter 3

November:.....Chapter 4

December: .....Chapter 5

January: .....Chapter 5, Mid-Year Review, Mid-Year Exam, Sections 1.6, 2.6, 2.7, 3.7

February: .....Chapter 6

March:.....Chapters 6 and 7

April: .....Chapter 8

May:.....Chapters 8 and 9

June: .....Chapter 9, Final Review, Final Exam

ALGEBRA I, Level 3
PACING GUIDE

All students must be proficient with the TI-83/84 graphing calculator <u>where applicable</u> throughout the course, including but not limited to, evaluating expressions, graphing and using the statistic package. This is essential for standardized testing. Students should be encouraged to purchase their own in order to have an adequate opportunity for independent practice with the calculator.

September: .....Chapter 1

October: .....Chapters 2 and 3

November:.....Chapters 3 and 4

December: .....Chapters 4 and 5

January: .....Chapter 5, Mid-Year Review, Mid-Year Exam, Begin Chapter 6

February: .....Chapter 6

March:.....Chapter 7

April: .....Chapters 7 and 8

May:.....Chapters 9 and 10

June: .....Chapter 10 (Through Section 3), Final Review, Final Exam

Algebra I – Grades 9 & 10

Essential Questions

1. How do we use Algebra in our lives?
2. What are the sets that make up the real numbers?
3. How do we determine which subset of the real numbers is appropriate to use when doing real world application problems?
4. How do we simplify expressions?
5. How do we solve mathematical sentences?
6. How do we develop strategies to solve literal problems?
7. Why is it important to understand function behavior?
8. How can we use technology to graphically illustrate abstract mathematical concepts in a concrete way?
9. How do we choose an appropriate mathematical model to represent a real word situation?
10. How can we communicate our mathematical findings numerically, algebraically, graphically, and verbally?

Algebra I – Grades 9 & 10

Skills Objectives

Upon successful completion of any Algebra 1 course, students will be able to:

1. **Understand and describe patterns and functional relationships**
    - Identify, describe, create and generalize numeric and statistical patterns with tables, graphs, words, and symbolic rules.
    - Make and justify predictions based on patterns.
    - Identify the characteristics of functions and relations including domain and range.
2. **Represent and analyze quantitative relationships in a variety of ways**
    - Represent functions and relations on the coordinate plane.
    - Identify an appropriate symbolic representation for a function or relation displayed graphically or verbally.
    - Recognize and explain the meaning of slope and x- and y – intercepts as they relate to a context, graph, table or equation.
3. **Use operations, properties and algebraic symbols to determine equivalence and solve problems**
    - Model and solve problems with linear and absolute value equations and linear inequalities.
    - Determine equivalent representations of an algebraic equation or inequality to simplify and solve problems.
    - Solve systems of two linear equations using algebraic or graphical methods
4. **Understand that a variety of numerical representations can be used to describe quantitative relationships**
    - Compare, locate, label and order real numbers on number lines, scales, coordinate grids and measurement tools.
    - Select and use an appropriate form of number (integer, fraction, decimal, ratio, percent, exponential, scientific notation, irrational) to solve practical problems.
    - Use technological tools such as spreadsheets, computer algebra systems and/or graphing utilities to organize and analyze large amounts of numerical information.

Continued…….

Algebra I – Grades 9 & 10

Skills Objectives

5. **Use numbers and their properties to compute flexible and fluently, and to reasonably estimate measures and quantities**
    - Select and use appropriate methods for computing to solve problems in a variety of contexts.
    - Solve problems involving scientific notation and absolute value.
    - Develop and use a variety of strategies to estimate values of formulas, functions and roots; to recognize the limitations of estimation; and to judge the implications of the results.
    - Use dimensional analysis to determine equivalent rates.
    - Solve problems using direct and inverse variation.

6. **Collect, organize and display data using appropriate statistical and graphical methods**
    - Collect real data and create meaningful graphical representations of the data.
    - Understand and apply the principles of probability in a variety of situations.

Assessments

[That are aligned to the curriculum – this will be done through the data teams throughout the year – no need to do them now, I just wanted to let you know where they will go in the curriculum, as we complete them. Thank.]