**WALLINGTON JUNIOR – SENIOR HIGH SCHOOL**

# MATH 8: COURSE PROFICIENCY

## STATEMENT OF PURPOSE

This course with teach new skills and strategies important for developing their comprehension of mathematics. Using appropriate tools and strategies, students will reason abstractly and quantitatively to solve real-world problems and applications.

## STATEMENT OF EXPECTED STUDENT OUTCOMES

Upon successful completion of this course the student will be able to:

1. Know that there are numbers that are not rational, and approximate them by rational numbers.
2. Work with radicals and integer exponents.
3. Understand the connections between proportional relationships, lines, and linear equations.
4. Analyze, solve, and graph linear equations and pairs of simultaneous linear equations.
5. Define, evaluate, and compare functions.
6. Use functions to model relationships between quantities.
7. Understand congruence and similarity using physical models, transparencies, smart board, or geometry software.
8. Understand and apply the Pythagorean Theorem.
9. Solve real-world and mathematical problems involving perimeter, area, and volume.
10. Use a basic understanding of probability to make conjectures about the results of experiments.
11. Compute probability for simple and compound events.
12. Select appropriate methods and tools for computing permutations and combinations.
13. Work flexibly with fractions, decimals, and percents to solve problems.
14. Apply concepts of percent to solving real-world problems involving tax, discount, tip, and commission.
15. Find, use, and interpret measures of central tendency.
16. Collect, analyze, understand, and interpret data sets and their graphical representation.
17. Represent, analyze, and generalize patterns with tables, graphs, words, and symbolic rules.

## EVALUATION METHOD

Grades will be determined numerically. The final average is based on the average of the four marking period grades. In order to receive credit a student must meet the attendance requirements established by the Wallington Board of Education.

# ALGEBRA I: COURSE PROFICIENCY

## STATEMENT OF PURPOSE

This course covers relationships characterized by new symbols, language and concepts. A much greater degree of generalization and abstraction than previously encountered is dealt with. The understanding of the language and the mastery of the fundamental operations of algebra are the main objectives. The ability to analyze, summarize, interpret, and translate the data to algebraic operations is emphasized.

## STATEMENT OF EXPECTED STUDENT OUTCOMES

Upon successful completion of this course the student will be able to:

1. Extend the properties of exponents to rational exponents.
2. Use properties of rational and irrational numbers.
3. Reason quantitatively and use units to solve problems.
4. Interpret the structure of expressions.
5. Write expressions in equivalent forms to solve problems.
6. Create equations that describe numbers or relationships.
7. Understand solving equations as a process of reasoning and explain the reasoning.
8. Solve equations and inequalities in one variable.
9. Solve systems of equations.
10. Represent and solve equations and inequalities graphically.
11. Understand the concepts of a function and use function notation.
12. Analyze functions using different representations.
13. Build a function that models a relationship between two quantities.
14. Build new functions from existing functions.
15. Interpret expressions for functions in terms of the situation they model.
16. Summarize, represent, and interpret data on a single count or measurement variable.
17. Summarize, represent, and interpret data on two categorical and quantitative variables.
18. Interpret linear models.

## EVALUATION METHOD

Grades will be determined numerically. Students will be required to take a mid-term and final assessment during the second and fourth marking periods. The final average is based on the average of the four marking period grades. In order to receive credit a student must meet the attendance requirements established by the Wallington Board of Education.

# GEOMETRY: COURSE PROFICIENCY

STATEMENT OF PURPOSE

This intensified course covers the material typically studied in Geometry at a more rigorous pace with greater detail.

Students will become familiar with basic geometric concepts. They will learn to apply definitions, properties, theorems, and postulates. They will make constructions and perform computations when applicable.

Upon successful completion of this course the student will be able to:

1. Pose and solve mathematical problems in mathematics, other disciplines, and everyday experiences.
2. Communicate mathematically through written, oral, symbolic, and visual forms of expression.
3. Connect mathematics to other learning by understanding the interrelationships of mathematical ideas and the roles that mathematics and mathematical modeling play in other disciplines and in life.
4. Develop reasoning ability and will become self-reliant, independent mathematical thinkers.
5. Use calculators, computers, manipulatives, and other mathematical tools to enhance mathematical thinking, understanding, and power.
6. Understand, select, and apply various methods of performing numerical operations.
7. Develop an understanding of and use measurement to describe and analyze phenomena.
8. Use a variety of estimation strategies and recognize situations in which estimation is appropriate.
9. Develop an understanding of patterns, relationships, and functions and use then to represent and explain real-world phenomena.
10. Demonstrate high levels of mathematical thought through experiences which extend beyond traditional computation, algebra, and geometry.
11. Develop spatial sense an use geometric properties and relationships to solve problems in mathematics and everyday life.
12. Demonstrate knowledge of geometric symbols and notation through use and application.
13. Demonstrate knowledge of geometric concepts by describing, classifying, and measuring.
14. Apply properties of deductive reasoning to draw, test, form, and support hypotheses.
15. Understand and apply definitions, properties, theorems, and postulates to angles.
16. Understand and apply theorems and postulates dealing with triangles and their parts, including the right angle.
17. Understand and apply definitions, properties, theorems, and postulates to quadrilaterals.
18. Use ratios and proportions to show triangles and other polygons are similar.
19. Understand and apply definitions, properties, theorems, and postulates of the circle.
20. Apply and analyze surface area, perimeter, circumference, area, and volume.
21. Locate points on a coordinate plane and utilize these points to further understand geometric concepts.
22. Understand and apply the techniques of reflection, rotation, and translation.

23. Explore and compare quadratic functions in relation to linear functions.
24. Apply the slope, midpoint, and distance formulas.
25. Recognize and apply the forms for writing the equation of a line.

EVALUATION METHOD

Grades will be determined numerically. The final grade is based on the average of the four marking period grades. In order to receive credit the student must meet the attendance requirements established by the Wallington Board of Education.

GRADING POLICY

See attached.

# ALGEBRA II: COURSE PROFICIENCY

STATEMENT OF PURPOSE

This intensified course covers the material typically studied in Algebra II at a more rigorous pace with greater detail.

Algebra II is the study of the structure of the system of real and complex numbers by applying algebraic concepts and skills. The course includes a review of Algebra I and concepts such as solving equations, inequalities and absolute value. Students will expand their study to roots, rational expressions, irrational numbers, complex numbers, and quadratic equations and functions.

Upon successful completion of this course the student will be able to:

1. Pose and solve mathematical problems in mathematics, other disciplines, and everyday experiences.
2. Communicate mathematically through written, oral, symbolic, and visual forms of expression.
3. Connect mathematics to other learning by understanding the interrelationships modeling play in other disciplines and in life.
4. Develop reasoning ability and will become self-reliant, independent mathematical thinkers.
5. Use calculators, computers, manipulatives, and other mathematical tools to enhance mathematical thinking, understanding, and power.
6. Understand, select, and apply various methods of performing numerical operations.
7. Develop an understanding of and use measurement to describe and analyze phenomena.
8. Use a variety of estimation strategies and recognize situations in which estimation is appropriate.
9. Develop an understanding of patterns, relationships, and functions and use them to represent and explain real-world phenomena.
10. Demonstrate high levels of mathematical thought through experiences which extend beyond traditional computation, algebra, and geometry.
11. Understand the process of solving graphically the variables in linear and quadratic equations and functions.
12. Work effectively with exponents that are positive, negative, or fractional.
13. Simplify polynomials over the basic four math operations.
14. Use and applying factoring techniques.
15. Understand the concept of slope of a line and graph both linear and quadratic equations as well as the distance formula.
16. Understand the methods of solving linear systems of equalities and inequalities.
17. Work effectively with absolute value found in equations and inequalities.
18. Work effectively with rational expressions.
19. Understand the development and properties of complex and irrational numbers.
20. Understand statistics and probability and use them to describe sets of data, model situations, and support appropriate inferences and arguments.
21. Perform Matrix operations.

22. Locate points on a coordinate plane and utilize these points to further understand geometric concepts.
23. Understand and apply the techniques of reflection, rotation, and translation.
24. Explore and compare quadratic functions in relation to linear functions.
25. Recognize and apply the forms for writing the equation of a line.

EVALUATION METHOD

Grades will be determined numerically. The final grade is based on the average pf the four marking period grades. In order to receive credit the student must meet the attendance requirements established by the Wallington Board of Education.

GRADING POLICY

See attached.