

# Utica High School

## Algebra 1 Syllabus (2024 – 2025)

Mr. Duke

### **Background:**

Mr. Duke graduated with high honors from Mount Vernon Nazarene University with a degree in Middle Childhood Education. My biggest priority is to make sure my students understand the material and feel comfortable enough in class to ask questions when they need clarification. I love to be outdoors, travel to new locations around the country, and visit unique restaurants.

### **Course Description:**

Extends the student's proficiency in the use of linear equations, exponential functions, sequences, polynomial equations, factoring, quadratic functions, data analysis, and problem solving.

### **Grading Policy:**

Each student's grade will be determined by the following criteria:

- Test/Quizzes
- Homework/Classwork
- Activities/Projects
- Participation

This will be a points-based system.

### **Grading Scale:**

90 – 100 = A	80 – 89 = B
70 – 79 = C	60 – 69 = D 0 – 59 = F

### **Class Rules:**

Be Respectful                      Be Prepared  
Be on Time                      Be Attentive

\*\*\*\*\* All school rules will also be enforced\*\*\*\*\*

### **Class Procedures:**

1. Make sure your name, the date, and the class period are on all assignments.
2. Assignments are to be turned in at the beginning of class or they are late.
3. iPads are to be charged and ready to use on a regular basis.
4. Focus during class discussion and work on assignments/activities when time is given.
5. All cell phones must be left in lockers per school policy. Failure to comply with this school rule; student will be sent to the office.

**Attendance:**

**Tardiness:** Students are expected to arrive on time for class. The fourth and fifth time a student is tardy during a grading period they will receive a lunch detention. The sixth tardy they will receive a Wednesday detention. A seventh tardy in a grading period they will receive a referral to the office for a Saturday School, In-School Suspension, or Suspension.

**Absences:** Make-up work due to an unexcused absence must be made up promptly. The time allotted for makeup work shall not exceed one day of absence. It is the pupil's responsibility to arrange for and complete the necessary work. Work missed through truancy or unexcused absence cannot be accepted for credit.

**Homework Policy:**

- Assignments must be turned in on time for full credit
- All homework must be organized with your **name, the date, and period** at the top of the page. Homework will most often be graded on completion, but sometimes may be collected for correctness.
- To receive full credit, you must attempt all homework questions. This includes work organized in a manner that is easy to follow, showing all the steps and work required to get an answer, having your answer be either boxed or circled, and doing your work in pencil. Do not be afraid to attempt a problem, whether you know how to do it or not. You learn best from your mistakes.
- Late assignments will receive half credit for the first day late. Each day after that, the full amount that can be received will be reduced by 10%. (i.e., second day late – worth up to 40%, third day late – worth up to 30%, etc.)

**Activity/Project Policy:**

Students are expected to remain on task when given time for activities and projects. Any student who abuses the time given for activities/projects will no longer be given the opportunity to participate in the activity or project. Students who lose the privilege to participate will be given an alternative assignment to complete.

**Testing Policy:**

Students will be able to retake a test for any chapter. The retake test will not be the same test, but it will cover the same material as the original. Every student that wishes to retake a test must complete the necessary remediation's. This could include completing missing homework assignments throughout the chapter, reteaching sessions to cover important skills, or completing alternative assignments as needed.

**Cheating:**

Cheating includes plagiarism, copying someone else's work or allowing someone to copy your work.

First Offense: The student(s) will receive a zero on the assignment, test, or quiz.

Second Offense: The student(s) will be reported to the office, and disciplinary action will occur.

**Denial of Credit Policy:**

Semester course: Any student who accumulates more than eight (8) incidents per class of non-professional absences in a year-long course, excused or unexcused, will receive a zero (0) for that class period, for that day, and every day more than eight (8) days.

Full-year course: Any student who accumulates more than sixteen (16) incidents per class of non-professional absences in a year-long course, excused or unexcused, will receive a zero (0) for that class period, for that day, and every day more than the sixteen (16) days.

**Algebra 1: Course Outline [REVEAL: Algebra 1]**

Resources Used: *Reveal Math Table of Contents - McGraw Hill*. (n.d.). Retrieved from <https://www.mheducation.com/unitas/school/explore/sites/reveal-math/table-of-contents-brochure-9-12.pdf>

**Module 1: Expressions**

1-1	Numerical Expressions <ul style="list-style-type: none"> <li>Explore Order of Operations</li> </ul>	A.SSE.1b, A.SSE.2
1-2	Algebraic Expressions <ul style="list-style-type: none"> <li>Explore Using Algebraic Expressions in the Real World</li> </ul>	A.SSE.1, A.SSE.2
1-3	Properties of Real Numbers <ul style="list-style-type: none"> <li>Explore Testing the Associative Property</li> </ul>	A.SSE.2, N.RN.3

1-4	Distributive Property <ul style="list-style-type: none"> <li>Explore Using Rectangles with the Distributive Property</li> <li>Explore Modeling the Distributive Property</li> </ul>	A.SSE.1a, A.SSE.2
1-5	Expressions Involving Absolute Value <ul style="list-style-type: none"> <li>Explore Distance Between Points on a Number Line</li> </ul>	A.SSE.2
1-6	Descriptive Modeling and Accuracy	N.Q.2, N.Q.3

## Module 2: Equations in One Variable

2-1	Writing and Interpreting Equations <ul style="list-style-type: none"> <li>Explore Writing Equations by Modeling a Real-World Situation</li> </ul>	A.CED.1, A.CED.3
2-2	Solving One-Step Equations <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Solve One-Step Equations Involving Addition or Subtraction</li> <li>Explore Using Algebra Tiles to Solve One-Step Equations Involving Multiplication</li> </ul>	A.CED.1, A.REI.1, A.REI.3
2-3	Solving Multi-Step Equations <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Model Multi-Step Equations</li> </ul>	A.CED.1, A.REI.3
2-4	Solving Equations with the Variable on Each Side <ul style="list-style-type: none"> <li>Explore Modeling Equations with the Variable on Each Side</li> </ul>	A.CED.1, A.REI.3

2-5	Solving Equations Involving Absolute Value <ul style="list-style-type: none"> <li>Explore Modeling Absolute Value</li> </ul>	A.CED.1, A.REI.3
2-6	Solving Proportions <ul style="list-style-type: none"> <li>Explore Comparing Two Quantities</li> </ul>	A.CED.1, A.REI.3
2-7	Using Formulas <ul style="list-style-type: none"> <li>Explore Centripetal Force</li> <li>Explore Using Dimensional Analysis</li> </ul>	A.REI.3, A.CED.4

### Module 3: Relations and Functions

3-1	Representing Relations <ul style="list-style-type: none"> <li>Explore Choosing Scales</li> </ul>	N.Q.1, F.IF.1
3-2	Functions <ul style="list-style-type: none"> <li>Explore Vertical Line Test</li> </ul>	F.IF.1, F.IF.2
3-3	Linearity and Continuity of Graphs <ul style="list-style-type: none"> <li>Explore Representing Discrete and Continuous Functions</li> </ul>	F.IF.4, F.IF.5
3-4	Intercepts of Graphs	A.REI.10, F.IF.4
3-5	Shapes of Graphs <ul style="list-style-type: none"> <li>Explore Line Symmetry</li> <li>Explore Relative High and Low Points</li> </ul>	F.IF.4
3-6	Sketching Graphs and Comparing Functions <ul style="list-style-type: none"> <li>Explore Modeling Relationships by Using Functions</li> </ul>	F.IF.4, F.IF.9

### Module 4: Linear and Nonlinear Functions

4-1	Graphing Linear Functions <ul style="list-style-type: none"> <li>Explore Points on a Line</li> <li>Explore Lines Through Two Points</li> </ul>	A.REI.10, F.IF.7a, F.LE.5
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4-2	<b>Rates of Change and Slope</b> <ul style="list-style-type: none"> <li>Explore Investigating Slope</li> </ul>	F.IF.6, F.LE.5
4-3	<b>Slope-Intercept Form</b> <ul style="list-style-type: none"> <li>Explore Graphing Linear Equations by Using the Slope-Intercept Form</li> </ul>	A.CED.2, F.IF.7a, F.LE.5, F.LE.1a
4-4	<b>Transformations of Linear Functions</b> <ul style="list-style-type: none"> <li>Explore Transforming Linear Functions</li> </ul>	F.IF.7a, F.BF.3
4-5	<b>Arithmetic Sequences</b> <ul style="list-style-type: none"> <li>Explore Common Differences</li> </ul>	F.BF.1a, F.BF.2, F.LE.2
4-6	<b>Piecewise and Step Functions</b> <ul style="list-style-type: none"> <li>Explore Age as a Function</li> </ul>	F.IF.4, F.IF.7b
4-7	<b>Absolute Value Functions</b> <ul style="list-style-type: none"> <li>Explore Parameters of an Absolute Value Function</li> </ul>	F.IF.7b, F.BF.3

## Module 5: Creating Linear Equations

5-1	<b>Writing Equations in Slope-Intercept Form</b> <ul style="list-style-type: none"> <li>Explore Slope-Intercept Form</li> </ul>	A.CED.2, S.ID.7
5-2	<b>Writing Equations in Standard and Point-Slope Forms</b> <ul style="list-style-type: none"> <li>Explore Forms of Linear Equations</li> </ul>	A.CED.2, A.CED.3
5-3	<b>Scatter Plots and Lines of Fit</b> <ul style="list-style-type: none"> <li>Explore Making Predictions by Using a Scatter Plot</li> </ul>	S.ID.6a, S.ID.6c
5-4	<b>Correlation and Causation</b> <ul style="list-style-type: none"> <li>Explore Collecting Data to Determine Correlation and Causation</li> </ul>	S.ID.9

5-5	Linear Regression	S.ID.6, S.ID.8
5-6	Inverses of Linear Functions <ul style="list-style-type: none"> <li>Explore Comparing a Function and Its Inverse</li> </ul>	A.CED.2, F.BF.4a

## Module 6: Linear Inequalities

6-1	Solving One-Step Inequalities <ul style="list-style-type: none"> <li>Explore Graphing Inequalities</li> <li>Explore Properties of Inequalities</li> </ul>	A.CED.1, A.REI.3
6-2	Solving Multi-Step Inequalities <ul style="list-style-type: none"> <li>Explore Modeling Multi-Step Inequalities</li> </ul>	A.CED.1, A.REI.3
6-3	Solving Compound Inequalities <ul style="list-style-type: none"> <li>Explore Guess the Range</li> </ul>	A.CED.1, A.CED.3
6-4	Solving Absolute Value Inequalities <ul style="list-style-type: none"> <li>Explore Solving Absolute Value Inequalities</li> </ul>	A.CED.1, A.CED.3
6-5	Graphing Inequalities in Two Variables <ul style="list-style-type: none"> <li>Explore Graphing Linear Inequalities on the Coordinate Plane</li> </ul>	A.CED.3, A.REI.12

## Module 7: Systems of Linear Equations and Inequalities

7-1	Graphing Systems of Equations <ul style="list-style-type: none"> <li>Explore Intersections of Graphs</li> </ul>	A.REI.6, A.REI.11
7-2	Substitution <ul style="list-style-type: none"> <li>Explore Using Substitution</li> </ul>	A.CED.3, A.REI.6

7-3	Elimination Using Addition and Subtraction	A.CED.3, A.REI.6
7-4	Elimination Using Multiplication <ul style="list-style-type: none"> <li>Explore Graphing and Elimination Using Multiplication</li> </ul>	A.REI.5, A.REI.6
7-5	Systems of Inequalities <ul style="list-style-type: none"> <li>Explore Solutions of Systems of Inequalities</li> </ul>	A.CED.3, A.REI.12

## Module 8: Exponents and Roots

8-1	Multiplication Properties of Exponents <ul style="list-style-type: none"> <li>Explore Products of Powers</li> </ul>	A.SSE.2, A.SSE.3c
8-2	Division Properties of Exponents <ul style="list-style-type: none"> <li>Explore Quotient of Powers</li> </ul>	A.SSE.2, A.SSE.3c
8-3	Negative Exponents <ul style="list-style-type: none"> <li>Explore Simplifying Expressions with Negative Exponents</li> </ul>	A.SSE.2
8-4	Rational Exponents <ul style="list-style-type: none"> <li>Explore Expressions with Rational Exponents</li> </ul>	N.RN.1, N.RN.2
8-5	Simplifying Radical Expressions <ul style="list-style-type: none"> <li>Explore Square Roots and Negative Numbers</li> </ul>	N.RN.2
8-6	Operations with Radical Expressions	N.RN.2, N.RN.3
8-7	Exponential Equations <ul style="list-style-type: none"> <li>Explore Solving Exponential Equations</li> </ul>	N.RN.2, A.SSE.2

## Module 9: Exponential Functions

9-1	Exponential Functions <ul style="list-style-type: none"> <li>Explore Exponential Behavior</li> <li>Explore Restrictions on Exponential Functions</li> </ul>	F.IF.7e, F.LE.1c, F.LE.5
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9-2	Transformations of Exponential Functions <ul style="list-style-type: none"> <li>• Explore Translating Exponential Functions</li> <li>• Explore Dilating Exponential Functions</li> <li>• Explore Reflecting Exponential Functions</li> </ul>	F.IF.7e, F.BF.3
9-3	Writing Exponential Functions <ul style="list-style-type: none"> <li>• Explore Writing an Exponential Function to Model Population Growth</li> </ul>	F.LE.2, F.LE.5
9-4	Transforming Exponential Expressions	A.SSE.3c, F.IF.8b
9-5	Geometric Sequences <ul style="list-style-type: none"> <li>• Explore Modeling Geometric Sequences</li> </ul>	F.BF.2, F.LE.2
9-6	Recursive Formulas <ul style="list-style-type: none"> <li>• Explore Writing Recursive Formulas from Sequences</li> </ul>	F.IF.3, F.BF.2

## Module 10: Polynomials

10-1	Adding and Subtracting Polynomials <ul style="list-style-type: none"> <li>• Explore Using Algebra Tiles to Add and Subtract Polynomials</li> </ul>	A.SSE.1a, A.APR.1
10-2	Multiplying Polynomials by Monomials <ul style="list-style-type: none"> <li>• Explore Using Algebra Tiles to Find Products of Polynomials and Monomials</li> </ul>	A.APR.1
10-3	Multiplying Polynomials <ul style="list-style-type: none"> <li>• Explore Using Algebra Tiles to Find Products of Two Binomials</li> </ul>	A.APR.1
10-4	Special Products <ul style="list-style-type: none"> <li>• Explore Using Algebra Tiles to Find the Squares of Sums</li> <li>• Explore Using Algebra Tiles to Find the Squares of Differences</li> <li>• Explore Using Algebra Tiles to Find Products of Sums and Differences</li> </ul>	A.APR.1

10-5	Using the Distributive Property <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Factor Polynomials</li> </ul>	A.SSE.2, A.REI.5
10-6	Factoring Quadratic Trinomials <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Factor Trinomials</li> </ul>	A.SSE.2
10-7	Factoring Special Products <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Factor Differences of Squares</li> </ul>	A.SSE.2

## Module 11: Quadratic Functions

11-1	Graphing Quadratic Functions <ul style="list-style-type: none"> <li>Explore Graphing Parabolas</li> </ul>	F.IF.4, F.IF.7a
11-2	Transformations of Quadratic Functions <ul style="list-style-type: none"> <li>Explore Transforming Quadratic Functions</li> </ul>	F.IF.7a, F.BF.3
11-3	Solving Quadratic Equations by Graphing <ul style="list-style-type: none"> <li>Explore Roots and Zeros of Quadratics</li> </ul>	F.IF.7a, F.IF.8a
11-4	Solving Quadratic Equations by Factoring <ul style="list-style-type: none"> <li>Explore Using Factors to Solve Quadratic Equations</li> </ul>	A.SSE.3a, A.REI.4b, F.IF.8a
11-5	Solving Quadratic Equations by Completing the Square <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Complete the Square</li> </ul>	A.SSE.3b, A.REI.4, F.IF.8a
11-6	Solving Quadratic Equations by Using the Quadratic Formula <ul style="list-style-type: none"> <li>Explore Deriving the Quadratic Formula Algebraically</li> <li>Explore Deriving the Quadratic Formula Visually</li> </ul>	A.CED.1, A.REI.4

11-7	Solving Systems of Linear and Quadratic Equations <ul style="list-style-type: none"> <li>Explore Using Algebra Tiles to Solve Systems of Linear and Quadratic Equations</li> </ul>	A.CED.2, A.REI.7
11-8	Modeling and Curve Fitting <ul style="list-style-type: none"> <li>Explore Using Differences and Ratios to Model Data</li> </ul>	F.LE.1, F.LE.3, F.LE.1a
11-9	Combining Functions <ul style="list-style-type: none"> <li>Explore Using Graphs to Combine Functions</li> </ul>	F.BF.1b

## Module 12: Statistics

12-1	Measures of Center <ul style="list-style-type: none"> <li>Explore Finding Percentiles</li> </ul>	N/A
12-2	Representing Data	N.Q.1, S.ID.1
12-3	Using Data <ul style="list-style-type: none"> <li>Explore Phrasing Questions</li> </ul>	N/A
12-4	Measures of Spread <ul style="list-style-type: none"> <li>Explore using Measures of Spread to Describe Data</li> </ul>	N.Q.1, S.ID.1
12-5	Distributions of Data	S.ID.3
12-6	Comparing Sets of Data <ul style="list-style-type: none"> <li>Explore Transforming Sets of Data by Using Addition</li> <li>Explore Transforming Sets of Data by Using Multiplication</li> </ul>	S.ID.2, S.ID.3
12-7	Summarizing Categorical Data <ul style="list-style-type: none"> <li>Explore Categorical Data</li> </ul>	S.ID.5