Algebra(9100) Course Overview Curriculum Document

Course Description

Algebra builds students' use of algebraic symbols to describe mathematical phenomena with an emphasis on developing conceptual understanding leading to procedural fluency and application. This course provides the foundation for the study of higher levels of mathematics along with its integration into other disciplines through the study of linear, exponential, and quadratic functions.

Credits	Prerequisites
1	

Board Approved	Revised
April 1998	June 2007, April 2017, May 2019, October 2021, June 2022, June 2023

Required Assessments

District-wide, standards-based common summative assessments

Textbooks/Resources

Kennedy, D., Milou, E., Thomas, C. D., Zbiek, R. M., & Cuoco, A. (2024). *enVision Algebra 1*. Paramus, NJ: Savvas Learning Company.

Course Essential Understandings	Course Relevance Question(s)
As a result of successfully completing this course, students will understand that: ● Algebraic symbols are used to describe mathematical phenomena with an emphasis on developing conceptual understanding leading to procedural fluency and application.	How can we represent patterns and relationships mathematically?

Unit Overviews

Unit Name	Unit Description	Unit Relevance Question	Instructional Standards	Assessed Standards
Unit 1 - The Language of Algebra	Students will build foundational knowledge and vocabulary for the rest of the course. They will analyze data to interpret and communicate information from a variety of forms. Students will also recognize patterns and generate models to represent those patterns.	● How can information be displayed and how do we make sense of it? ● How can symbols be used to help us efficiently communicate? ● How does generalizing a situation help?	**Standard 1: Function Analysis** M.A.CED.A.4 **Standard 2: Manipulate Expressions** M.N.RN.A.1, 2 **Standard 4: Statistics and Probability** M.SP.ID.A.1, 2, 3 M.SP.ID.B.5	**Standard 1: Function Analysis** M.N.Q.A.1, 2, 3 M.A.CED.A.1, 2, 3 M.F.BF.A.1 M.F.IF.A1, 2 M.F.IF.B.4, 5 M.F.IF.C.7a, 9 M.SP.ID.B.6 **Standard 2: Manipulate Expressions** M.A.SSE.A.1, 2 M.A.APR.A.1 **Standard 3: Solve Equations and Inequalities** M.A.REI.A.1 M.A.REI.B.3 **Standard 4: Statistics and Probability** M.SP.ID.B.6 M.SP.ID.C.8 M.SP.ID.C.9
Unit 2 - Linear Functions	Students will expand their understanding of functions and function families to investigate linear functions and use them in problem solving. They will apply their knowledge of expressions in the context of linear functions; additionally, they will model situations graphically, numerically, and through equation manipulation and analysis.	● Why do rates of change matter and how will they help me be a better consumer? ● How do linear pictures, graphs, tables, and data "paint a thousand words?" ● How can we move from physical linear models to abstract thinking?	**Standard 1: Function Analysis** M.A.CED.A.4 M.F.BF.B.3 M.F.IF.A.1, 2 M.F.IF.B. 5 M.F.IF.C.7.a, **Standard 2: Manipulate Expressions** M.A.SSE.A.1, 2 M.A.APR.A.1 **Standard 3: Solve Equations and Inequalities** M.A.REI.A.1 M.A.REI.D.10, 12	**Standard 1: Function Analysis** M.A.CED.A.1, 2, 3 M.F.BF.A.1, 2 M.F.IF.A.3 M.F.LE.A.1, 2, 3 M.F.LE.B.5 M.N.Q.A.1, 2, 3 M.F.IF.B.4 6 M.F.IF.C.9 **Standard 3: Solve Equations and Inequalities** M.A.REI.B.3 M.A.REI.C.5, 6 M.A.REI.D.11

			Standard 4: Statistics and Probability M.SP.ID.B.6.b,c	**Standard 4:Statistics and Probability** M.SP.ID.B.6.a M.SP.ID.C.7
Unit 3 - Exponential Functions	Students will continue to expand their understanding of functions and function families to investigate exponential functions, compare them to linear functions, and use them in problem solving. They will develop their knowledge of exponents and apply these skills to rewrite expressions. Students will also model situations and data graphically, numerically, and through equation manipulation and analysis.	● Why should I have my money in a bank rather than under my mattress? ● How do Exponential and Linear pictures, graphs, tables, and data "paint a thousand words?" ● How is it possible to keep getting closer and closer to something without actually touching it?	**Standard 1: Function Analysis** M.F.IF.C.8a M.F.BF.B.3 M.F.LE.A.1 **Standard 2: Manipulate Expressions** M.N.RN.A.1,2 M.A.SSE.A.1 **Standard 3: Solve Equations and Inequalities** M.A.CED.A.1,2,3 M.A.REI.A.1 M.A.REI.D.10,11 **Standard 4:Statistics and Probability** M.SP.ID.B.6.a	**Standard 1: Function Analysis** M.N.Q.A.1, 2, 3 M.A.CED.A.1,2,3,4 M.F.BF.A.1,2 M.F.IF.A.1,2,3 M.F.IF.B.4,5,6 M.F.IF.C.8,9 M.F.LE.A.1,2,3 M.F.LE.B.5 **Standard 2: Manipulate Expressions** M.A.SSE.A.2 M.A.SSE.B.3c
Unit 4 - Quadratic Functions	Students will further their understanding of functions and function families to investigate quadratic functions and compare them to linear and exponential functions. They will develop the skills to solve quadratic equations efficiently and apply this knowledge in problem solving . Students will also model situations and data graphically, numerically, and through equation manipulation and analysis.	● How can we maximize profit or minimize cost? ● How do Quadratic, Exponential, and Linear pictures, graphs, tables, and data "paint a thousand words?" ● How can I convince you that my strategy is more effective and efficient than yours?	**Standard 1: Function Analysis** M.F.IF.B.6 M.F.IF.C.8a M.F.LE.2,3 **Standard 2: Manipulate Expressions** M.A.APR.B.3 M.N.RN.A.2 M.A.SSE.A.1 **Standard 3: Solve Equations and Inequalities** M.A.CED.A.2 M.A.REI.C.7 M.A.REI.D.10, 11	**Standard 1: Function Analysis** M.N.Q.A.1, 2, 3 M.F.BF.A.1a M.F.BF.B.3 M.F.IF.A.1, 2 M.F.IF.B.4, 5 M.F.IF.C.7a,9 M.F.LE.A.1 **Standard 2: Manipulate Expressions** M.A.SSE.A.2 M.A.SSE.B.3a M.A.APR.A.1 **Standard 3: Solve Equations and Inequalities** M.A.CED.A.1, 3 M.A.REI.A.1 M.A.REI.B.4 **Standard 4:Statistics and Probability** M.SP.ID.B.6a