INTRODUCTION

MATHEMATICAL PRACTICES

STUDENT MATHEMATICAL PRACTICES (SMPs)	NCTM EFFECTIVE MATH TEACHING PRACTICES (MTPs)
1. Make sense of problems and persevere in solving them.	1. Establish mathematics goals to focus learning.
2. Reason abstractly and quantitatively.	2. Implement tasks that promote reasoning and problem solving.
3. Construct viable arguments and critique the reasoning of others.	3. Use and connect mathematical representations.
4. Model with mathematics. *(NOTE: Modeling standards are marked with a star ★)*	4. Facilitate meaningful mathematical discourse.
5. Use appropriate tools strategically.	5. Pose purposeful questions.
6. Attend to precision.	6. Build procedural fluency from conceptual understanding.
7. Look for and make use of structure.	7. Support productive struggle in learning mathematics.
8. Look for and express regularity in repeated reasoning.	8. Elicit and use evidence of student thinking.

LITERACY SKILLS FOR MATHEMATICAL PROFICIENCY

Communication in mathematics employs literacy skills in reading, vocabulary, speaking and listening, and writing. Mathematically proficient students communicate using precise terminology and multiple representations including graphs, tables, charts, and diagrams. By describing and contextualizing mathematics, students create arguments and support conclusions. They evaluate and critique the reasoning of others and analyze and reflect on their own thought processes. Mathematically proficient students have the capacity to engage fully with mathematics in context by posing questions, choosing appropriate problem-solving approaches, and justifying solutions.

1. Use multiple reading strategies.
2. Understand and use correct mathematical vocabulary.
3. Discuss and articulate mathematical ideas.
4. Write mathematical arguments.

GENERAL RESOURCES

INSTRUCTIONAL FOCUS DOCUMENTS (IFDs)

Each unit within this guide includes detailed information from the Instructional Focus Documents (IFDs) for all standards within that unit. The IFDs are state documents that include grade-level expectations and instructional guidance for each content standard within this math course.

For the complete list of IFDs for Algebra I standards, click **HERE**.

TEXTBOOK RESOURCES

The unit structure of this curriculum guide mirrors that of the Big Ideas textbook and lessons that are aligned to the Algebra I standards have been noted in the unit information within this guide. The digital resources for the Algebra I Big Ideas curriculum can be accessed through Classlink.

ADDITIONAL RESOURCES

Additional resources can be found on our CMCSS Math Hub site. Access requires the use of your CMCSS-provided Google account.

STANDARD NUMBER QUICK REFERENCE COMPARISON

	CCSS (PREVIOUS)	TNSS 2017 (PREVIOUS)	TNSS 2023 (CURRENT)
A.APR	A.APR.A.1	A1.A.APR.A.1	A1.A.APR.A.1
	A.APR.B.3	A1.A.APR.B.2	
A.CED	A.CED.A.1	A1.A.CED.A.1	A1.A.CED.A.1
	A.CED.A.2	A1.A.CED.A.2	A1.A.CED.A.2
	A.CED.A.3	A1.A.CED.A.3	A1.A.CED.A.3
	A.CED.A.4	A1.A.CED.A.4	A1.A.CED.A.4
A.REI	A.REI.A.1	A1.A.REI.A.1	A1.A.REI.A.1
	A.REI.B.3	A1.A.REI.B.2	A1.A.REI.B.2
			A1.A.REI.B.2a
			A1.A.REI.B.2b
	A.REI.B.4	A1.A.REI.B.3	A1.A.REI.B.3
			A1.A.REI.B.3b
	A.REI.B.4a	A1.A.REI.B.3a	
	A.REI.B.4b	A1.A.REI.B.3b	A1.A.REI.B.3a
	A.REI.C.6	A1.A.REI.C.4	A1.A.REI.C.4
	A.REI.D.10	A1.A.REI.D.5	A1.A.REI.D.5
	A.REI.D.11	A1.A.REI.D.6	A1.A.REI.D.6
	A.REI.D.12	A1.A.REI.D.7	A1.A.REI.D.7

	CCSS (PREVIOUS)	TNSS 2017 (PREVIOUS)	TNSS 2023 (CURRENT)
A.SSE	A.SSE.A.1	A1.A.SSE.A.1	A1.A.SSE.A.1
	A.SSE.A.1a	A1.A.SSE.A.1a	A1.A.SSE.A.1a
	A.SSE.A.1b	A1.A.SSE.A.1b	A1.A.SSE.A.1b
	A.SSE.A.2	A1.A.SSE.A.2	
	A.SSE.B.3	A1.A.SSE.B.3	
	A.SSE.B.3a	A1.A.SSE.B.3a	
	A.SSE.B.3b	A1.A.SSE.B.3b	
	A.SSE.B.3c	A1.A.SSE.B.3c	
F.BF	F.BF.A.1	A1.F.BF.A.1	A1. F.BF.A.1
	F.BF.A.1a	A1.F.BF.A.1a	A1.F.BF.A.1a
	F.BF.B.3	A1.F.BF.B.2	A1.F.BF.B.2
F.IF	F.IF.A.1	A1.F.IF.A.1	A1.F.IF.A.1
	F.IF.A.2	A1.F.IF.A.2	A1. F.IF.A.2
			A1.F.IF.A.2a
			A1.F.IF.A.2b
	N/A	N/A	**A1.F.IF.A.3**
	F.IF.B.4	A1.F.IF.B.3	A1.F.IF.B.4
	F.IF.B.5	A1.F.IF.B.4	A1.F.IF.B.5
	F.IF.B.6	A1.F.IF.B.5	A1.F.IF.B.6

	CCSS (PREVIOUS)	TNSS 2017 (PREVIOUS)	TNSS 2023 (CURRENT)
F.IF (continued)	F.IF.C.7	A1.F.IF.C.6	A1.F.IF.C.7
	F.IF.C.7a	A1.F.IF.C.6a	
	F.IF.C.7b	A1.F.IF.C.6b	
	F.IF.C.8	A1.F.IF.C.7	A1.F.IF.C.8
	F.IF.C.8a	A1.F.IF.C.7a	A1.F.IF.C.8a
	F.IF.C.9	A1.F.IF.C.8	A1.F.IF.C.9
			A1.F.IF.C.9a
			A1.F.IF.C.9b
F.LE	F.LE.A.1	A1.F.LE.A.1	A1.F.LE.A.1
	F.LE.A.1a	A1.F.LE.A.1a	A1.F.LE.A.1a
	F.LE.A.1b	A1.F.LE.A.1b	A1.F.LE.A.1b
	F.LE.A.1c	A1.F.LE.A.1c	A1.F.LE.A.1c
	F.LE.A.2	A1.F.LE.A.2	A1.F.LE.A.2
	F.LE.A.3	A1.F.LE.A.3	
	F.LE.B.5	A1.F.LE.B.4	A1.F.LE.B.3
N.Q	N.Q.A.1	A1.N.Q.A.1	A1.N.Q.A.1
			A1.N.Q.A.1a
			A1.N.Q.A.1b
	N.Q.A.2	A1.N.Q.A.2	A1.N.Q.A.1c
	N.Q.A.3	A1.N.Q.A.3	A1.N.Q.A.1d

	CCSS (PREVIOUS)	TNSS 2017 (PREVIOUS)	TNSS 2023 (CURRENT)
S.ID	S.ID.A.1	A1.S.ID.A.1	
	N/A	N/A	**A1.S.ID.A.1**
	S.ID.A.2	A1.S.ID.A.2	A1.S.ID.A.2
	S.ID.A.3	A1.S.ID.A.3	A1.S.ID.A.3
	S.ID.B.6	A1.S.ID.B.4	A1.S.ID.B.4
	S.ID.B.6a	A1.S.ID.B.4a	
	S.ID.B.6c	A1.S.ID.B.4b	
	S.ID.C.7	A1.S.ID.C.5	A1.S.ID.C.5
	S.ID.C.8	A1.S.ID.C.6	A1.S.ID.C.6
	S.ID.C.9	A1.S.ID.C.7	A1.S.ID.C.7

PACING

Link to 23-24 Electronic Pacing Calendar Template

Instructional plans should be developed based on the state standards & IFD information included in this curriculum guide. ***The Big Ideas material explicitly or implicitly addresses all grade-level (L3) indicators unless highlighted in yellow.*** *Highlighted L3 indicators should be supplemented. See comments for additional information.*

SEMESTER 1 August 7 - December 19, 2024 (83 TOTAL DAYS)			
UNIT #	**UNIT TITLE**	**APPROXIMATE DATE RANGE**	**APPROXIMATE # OF DAYS**
1	Solving Linear & Absolute Value Equations	August 7 - August 28, 2024	14
2	Solving Linear & Absolute Value Inequalities	August 29 - September 12, 2024	10
3	Characteristics of Functions	September 13 - October 11, 2024 Benchmark 1 (2 Days)	20
4	Linear Functions & Arithmetic Sequences	October 21 - November 7, 2024	13
5	Solving Systems of Equations & Inequalities	November 8 - December 10, 2024 Benchmark 2 (2 Days)	19
	Midterm Review (2 days) **& Exams** (4 days)	December 11 - December 19, 2024	6
SEMESTER 2 January 6 - May 21, 2025 (89 TOTAL DAYS)			
6	Exponential Functions & Geometric Sequences	January 6 - January 23, 2025	13
7	Polynomials & Factoring	January 24 - February 14, 2025	15
8	Graphing Quadratic Functions	February 18 - March 7, 2025 Benchmark 3 (2Days)	14
9	Solving Quadratic Equations	March 17 - April 2, 2025	13
10	Data Analysis & Displays	April 3- April 11, 2025	7
	EOC Review & Testing Window	April 14 - May 3, 2025	14
11	Skills Reinforcement for Geometry & ACT Concepts (dates may be adjusted based on when state testing ends)	May 5- May 9, 2025	5
	Finals Review (2 days) **& Exams** (4 days)	May 12 - May 21, 2025	8

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ASSESSMENT INFO

DISTRICT & STATE ASSESSMENTS	
Assessment	**Administration Window**
Fall Universal Screener	August 12 - 23
Benchmark #1 (Units 1-3)	September 25 - October 4
Winter Universal Screener	December 2 - 13
Midterm Exams	Dec. 16-19, 2024 *(tentative)*
Benchmark #2 (Units 1-5)	December 4 - 13
Benchmark #3 (Units 1-8)	February 24-25
State End-of-Course	April 14-May 2, 2025 *(tentative)*
Spring Universal Screener	April 1 - 11
Final Exams	May 15-16 & 19-20, 2025 *(tentative)*

SCOPE & SEQUENCE

NUMBER & QUANTITY	A1.N.Q.A.1 ★***	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.N.Q.A.1a ★***	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.N.Q.A.1b ★***	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.N.Q.A.1c ★***	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.N.Q.A.1d ★***	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
ALGEBRA	A1.A.SSE.A.1 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.SSE.A.1a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.SSE.A.1b ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.APR.A.1	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.CED.A.1 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.CED.A.2 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.CED.A.3 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.CED.A.4 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.A.1	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.B.2	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.B.2a	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.B.2b	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.B.3	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.B.3a	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10

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ALGEBRA	A1.A.REI.B.3b	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.C.4 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.D.5	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.D.6 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.A.REI.D.7	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
FUNCTIONS	A1.F.IF.A.1	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.A.2 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.A.2a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.A.2b ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.A.3 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.B.4 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.B.5 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.B.6 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.7 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.8 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.8a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.9 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.9a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.IF.C.9b ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.BF.A.1 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.BF.A.1a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.BF.B.2	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10

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FUNCTIONS	A1.F.LE.A.1 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.LE.A.1a ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.LE.A.1b ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.LE.A.1c ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.LE.A.2 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.F.LE.B.3 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
STATISTICS	A1.S.ID.A.1 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.A.2 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.A.3 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.B.4 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.C.5 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.C.6 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10
	A1.S.ID.C.7 ★	UNIT 1	UNIT 2	UNIT 3	UNIT 4	UNIT 5	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10

Mathematical Modeling is a Standard for Mathematical Practice (MP4) and a Conceptual Category. Specific modeling standards appear throughout the high school standards indicated with a star (★).

***Apply the N.Q standards to any real-world problems studied within the scope of this course:

A1.N.Q.A.1 | Use units as a way to understand real-world problems. ★
- **A1.N.Q.A.1a** | Choose and interpret the scale and the origin in graphs and data displays. ★
- **A1.N.Q.A.1b** | Use appropriate quantities in formulas, converting units as necessary. ★
- **A1.N.Q.A.1c** | Define and justify appropriate quantities within a context for the purpose of modeling. ★
- **A1.N.Q.A.1d** |Choose an appropriate level of accuracy when reporting quantities. ★

UNITS OF STUDY

UNIT 1 | Solving Linear & Absolute Value Equations

Approximately 14 Days | August 7 - August 28, 2023

Unit 1 presents the foundational skills related to solving linear equations and the connected skills of solving absolute value equations and rewriting equations and formulas.

Big Ideas Lessons - 1.1*, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 **(*NOTE: Use Lesson 1.1 to address foundational prerequisites as needed)**

LESSON	STANDARD	UNIT 1 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
1.1 **1.2** **1.5** **1.6**	A1.A.CED.A.1 Create equations ~~and inequalities~~ in one variable and use them to solve problems in a real-world context. ★ ***S&C***	*Tasks are limited to* ***linear***, ~~***quadratic,***~~ *and* ***absolute value*** *equations* ~~*and inequalities.*~~ *(also included in Units 2 & 9)*	➔ **L1#1** Choose a linear equation in one variable that represents a real-world situation. ➔ **L1#2** Solve a one-variable linear equation. ➔ **L1#3** Represent real-world problems using equations in the form $px + q = r$ or $p(x + q) = r$. ➔ **L2#1** Create and solve a one-variable linear equation that represents a real-world situation. ➔ **L2#2** Choose an absolute value equation to represent a real-world situation. ➔ **L2#3** Solve a one-variable absolute value equation.	➔ **L3#1** Create and solve a one-variable linear or absolute value equation that represents a real-world situation.	➔ **L4#1** Create a real-world situational problem to represent a given linear or absolute value equation. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.

1.1 **1.2** **1.5** **1.6**	A1.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. ***S&C*** *| Tasks are limited to* ***linear***, ~~***quadratic,***~~ *and* ***absolute value*** *equations.* *(also included in Units 7 & 9)*	➔ **L1#1** Choose the inverse operations used in solving the equation, given a linear or absolute value equation and a list of steps representing the solution path. ➔ **L1#2** Choose a possible next step to solve the equation, given a linear or absolute value equation and a partial list of steps representing the solution path. ➔ **L1#3** Arrange steps in the order they should be applied to solve an equation, given a linear or absolute value equation and a list of unordered steps representing the solution path. ➔ **L2#1** Explain the reasoning for each step, given a linear equation and a list of steps representing the solution path.**L2#3** Explain the reasoning for each step, given an absolute value equation and a list of steps representing the solution path.	➔ **L3#1** Solve linear and absolute value equations using multiple solution strategies and explain the solution path. ➔ **L3#2** Construct a viable argument to justify a chosen solution path used to solve a linear and absolute value equation. ➔ **L3#3** Determine an efficient solution path given a linear or absolute value equation with multiple solution paths.	➔ **L4#1** Solve the problem and justify the solution path chosen, given a real-world problem and an equation that represents the contextual situation. ➔ **L4#2** Compare and contrast two given solution paths to a contextual problem and construct a viable argument on which method is most efficient. ➔ **L4#3** Correct the mistakes in the solution path and provide an explanation of the misconception using precise mathematical vocabulary, given a solution for a linear and absolute value equation.
1.1 **1.2** **1.5** **1.6**	A1.A.REI.B.2 Solve linear and absolute value equations ~~and inequalities~~ in one variable. A1.A.REI.B.2a Solve linear equations ~~and inequalities,~~ ~~including compound inequalities~~, in one variable. Represent solutions algebraically and graphically. A1.A.REI.B.2b Solve absolute value equations ~~and inequalities~~ in one variable. Represent solutions algebraically and graphically. ***S&C*** *| Equations ~~and inequalities~~s should include integer, rational, and/or irrational coefficients. If coefficients are irrational, rationalization of a denominator is not required. Tasks may or may not have a real-world context.*	➔ **L1#1** Solve equations in the form x + p = q, px = q, x – p = q, or x/p = q when p, q, and x are all non-negative rational numbers. ➔ **L2#1** Solve linear equations in one variable with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. ➔ **L2#2** Determine if a linear equation in one variable has one solution, infinitely many solutions, or no solutions.	➔ **L3#1** Solve multi-step linear equations in one variable with integer, rational, and/or irrational coefficients. ➔ **L3#3** Solve absolute value equations in one variable. Represent solutions algebraically and graphically on a number line. ➔ **L3#4** Solve linear and absolute value equations with one solution, infinitely many or no solutions.	➔ **L4#1** Create a linear or absolute value equation in one variable that has one solution, no solution, or infinitely many solutions and provide mathematical justification as to why.

	There are no assessment limits for this standard. The entire standard is assessed in this course. *(also included in Unit 2)*			
1.3 **1.4**	A1.N.Q.A.1 Use units as a way to understand real-world problems. ★ A1.N.Q.A.1b Use appropriate quantities in formulas, converting units as necessary. ★ A1.N.Q.A.1c Define and justify appropriate quantities within a context for the purpose of modeling. ★ A1.N.Q.A.1d Choose an appropriate level of accuracy when reporting quantities. ★ ***S&C**	*Apply this standard to any real-world problems studied within the scope of this course.* *(include in all units when appropriate)*	➔ **L1#1** Identify units appropriately when solving contextual problems. ➔ **L1#3** Identify individual quantities in context, label them with appropriate units, and connect the units to the values in the real-world problem. ➔ **L1#4** Explain the difference between precision and accuracy. ➔ **L2#1** Choose units appropriately when solving contextual problems, including problems that contain real-world formulas. ➔ **L2#3** Identify and interpret necessary information, recognize any extraneous information, and attend to unit selection and/or conversions in order to select a quantity that models a real-world situation. ➔ **L2#4** Choose a solution that is both accurate and reasonable with respect to the contextual situation. ➔ **L2#5** Describe how using inaccurate measurements when reporting quantities can affect the solution.	➔ **L3#3** Use appropriate quantities in formulas, converting units when necessary. ➔ **L3#4** Define and justify with precision the appropriate quantities, and their units, within a context to model a real-world problem. ➔ **L3#6** Choose an appropriate level of accuracy, including appropriate units, when reporting quantities in a real-world context. ➔ **L3#7** Explain the reasonableness of answers with respect to the context of the problem when reporting quantities as a result of solving the contextual problem. ➔ **L3#8** Describe the most common causes of inaccuracies in contextual problems (e.g., when using measurement tools).	➔ **L4#1** Explain if the information is represented appropriately using mathematical justification, given a numerical representation of a real-world problem. ➔ **L4#5** Describe the accuracy of a measurement embedded in a real-world context by stating the possible error when appropriate. ➔ **L4#6** Explain why it is important to choose an appropriate level of accuracy and what limitations exist on measurement when reporting quantities in contextual problems.
1.5	A1.A.SSE.A.1 Interpret expressions that represent a quantity in terms of its context. ★ A1.A.SSE.A.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. ★ ***S&C**	*For example, one truck can transport A cubic feet,*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#2** Define the formal definition of the terms: *factor*, *coefficient*, and *term*. ➔ **L1#3** Define the formal definition of the term *expression*. ➔ **L1#4** Label the single entities in an	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation and explain each part in terms of the context. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or

	and a second truck can transport B cubic feet. The first truck makes x trips to a job site, while the second makes y trips. Interpret the expression Ax + By in terms of the context. *There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 4 & 6)*	expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of *terms*, *factors*, *coefficients*, and *like terms* in order to describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity. ➔ **L2#4** Recognize that individual parts of an expression affect the whole expression. ➔ **L2#5** State arithmetic operations performed within an expression.	expression and recognizing when combining like terms is appropriate. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the relationship to the expression.	more of their parts as a single entity. ➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then considering them as a part of the expression.
1.7	A1.A.CED.A.4 Rearrange formulas to isolate a quantity of interest using algebraic reasoning. ★ ***S&C*** *| Tasks are limited to formulas involving* ***linear***, ~~***quadratic***~~, *and* ***absolute value*** *expressions. For example, rearrange the formula for the perimeter of a rectangle to isolate the length or width.* *(also included in Unit 9)*	➔ **L1#1** Solve linear equations with rational coefficients. ➔ **L2#1** Choose equivalent forms of a given linear real-world formula. ➔ **L2#2** Solve linear and absolute value equations and explain the solution path.	➔ **L3#1** Describe the properties that allow an equation to be written in an equivalent form. ➔ **L3#2** Rearrange real-world linear or absolute value formulas to highlight a quantity of interest.	➔ **L4#1** Rearrange real-world linear and absolute value formulas and explain the benefit of solving the formula for the various variables.

UNIT 2 | Solving Linear & Absolute Value Inequalities

Approximately 10 Days | August 29 - September 12, 2023

Unit 2 presents the skills and understanding related to solving linear inequalities, and the connected skills of solving absolute value inequalities.

Big Ideas Lessons - 2.1*, 2.2*, 2.3*, 2.4, 2.5, 2.6 **(*NOTE: Use Lessons 2.1, 2.2, & 2.3 to address foundational prerequisites as needed)**

LESSON	STANDARD	UNIT 2 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
2.1	A1.A.SSE.A.1a Interpret parts of an expression, such as terms, factors, and coefficients. ★ ***S&C**	For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P.* *There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 3 & 7)*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#2** Define the formal definition of the terms: *factor*, *coefficient*, and *term*. ➔ **L1#3** Define the formal definition of the term *expression*. ➔ **L1#4** Label the single entities in an expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of *terms*, *factors*, *coefficients*, and *like terms* in order to describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity. ➔ **L2#4** Recognize that individual parts of an expression affect the whole expression. ➔ **L2#5** State arithmetic operations performed within an expression.	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation and explain each part in terms of the context. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the expression and recognizing when combining like terms is appropriate. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the relationship to the expression.	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or more of their parts as a single entity. ➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then considering them as a part of the expression. ➔ **L4#5** Identify and explain structure in patterns represented pictorially or graphically and write an

				algebraic expression to represent the pattern.
2.1 2.2 2.3 2.4 2.5 2.6	A1.A.CED.A.1 Create ~~equations and~~ inequalities in one variable and use them to solve problems in a real-world context. ★ ***S&C***	*Tasks are limited to* ***linear***, ~~***quadratic***~~, *and* ***absolute value*** ~~*equations and*~~ *inequalities.* *(also included in Units 1 & 9)*	➔ **L1#1** Choose a linear inequality in one variable that represents a real-world situation. ➔ **L1#2** Solve a one-variable linear inequality. ➔ **L2#1** Create and solve a one-variable linear inequality that represents a real-world situation. ➔ **L2#2** Choose an absolute value inequality to represent a real-world situation. ➔ **L2#3** Solve a one-variable absolute value inequality.	➔ **L3#2** Create and solve a one-variable linear inequality that represents a real-world situation. ➔ **L3#3** Create and solve a one-variable absolute value inequality that represents a simple real-world situation.	➔ **L4#1** Create a real-world situational problem to represent a given linear or absolute value inequality. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.
2.2 2.3 2.4 2.5 2.6	A1.A.REI.B.2 Solve linear and absolute value ~~equations and~~ inequalities in one variable. A1.A.REI.B.2a Solve linear ~~equations and~~ inequalities, including compound inequalities, in one variable. Represent solutions algebraically and graphically. A1.A.REI.B.2b Solve absolute value ~~equations and~~ inequalities in one variable. Represent solutions algebraically and graphically. ***S&C***	~~*Equations and*~~ *inequalities should include integer, rational, and/or irrational coefficients. If coefficients are irrational, rationalization of a denominator is not required. Tasks may or may not have a real-world context. There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Unit 1)*	➔ **L1#2** Determine the solution set to a linear inequality in one variable by graphing on a number line. ➔ **L2#3** Solve linear inequalities in the form px + q > r or px + q < r.	➔ **L3#1** Solve multi-step linear inequalities in one variable with integer, rational, and/or irrational coefficients. ➔ **L3#2** Solve compound inequalities in one variable. Represent solutions algebraically and graphically on a number line. ➔ **L3#3** Solve absolute value inequalities in one variable. Represent solutions algebraically and graphically on a number line.	➔ **L4#2** Explain the difference between an equation and an inequality and provide examples when each would be used in a real-world context.

UNIT 3 | Characteristics of Functions *(emphasis on Linear & Absolute Value)*

Approximately 19 Days | September 13 - October 17, 2023

Functions were introduced in grade 8. Students may remember a "function machine" in which an input value is entered , a rule is applied, and the output value is obtained. There is a pairing of the input and output, and each input is associated with exactly one output. Unit 3 extends this introductory understanding so that functions are seen as describing situations in which one quantity determines another. Function notation and characteristics of functions are also studied, often in the context of graphing linear functions.

Big Ideas Lessons - 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, ~~3.7~~, 3.8

LESSON	STANDARD	UNIT 3 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
3.1 3.3 3.4	A1.F.IF.A.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$. ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Determine if a given table of values represents a function. ➔ **L1#2** Identify the domain is the set of input values. ➔ **L1#3** Identify the range is the set of output values. ➔ **L2#1** Determine if a given graph represents a function. ➔ **L1#3** Find *f(a)* where *a* is a real number when given a function *f.*	➔ **L3#1** Create an example of a function using a set of ordered pairs, a graph, and a table of values to show the correspondence between one input value (domain) and one output value (range). ➔ **L3#2** Explain the meaning of a function using correct mathematical vocabulary.	➔ **L4#1** Identify the domain and the range and determine if the relationship represents a function, given a real-world situation. ➔ **L4#2** Determine if the domain and range is continuous or discrete and explain your reasoning, given a real-world situation. ➔ **L4#3** Create a real-world situation that does not represent a function and explain the reasoning.
3.1	A1.F.IF.A.3 Understand geometric formulas as functions. ★ ***S&C**	Limit to **linear** functions. For example, see geometric formulas such as interior angle sum, perimeter of a square, and circumference of a circle as linear functions.*	➔ **L1#1** Understand the definition of *function.* ➔ **L1#2** Apply geometric formulas to find a given characteristic of a shape (such as the perimeter of a square, the circumference of a circle, or the measure of an interior angle). ➔ **L2#1** Explain how the parts of a	➔ **L3#1** See a geometric formula as a function that has characteristics such as intercepts and a rate of change. ➔ **L3#2** Apply the characteristics of a linear function to geometric formulas.	➔ **L4#1** Create a real-world situation that can be solved using a geometric function.

	(exclusively in this unit)	geometric formula relate to the shape that it is describing. ➔ **L2#2** Graph the function related to the geometric formula. ➔ **L2#3** Interpret the parts of a linear function, such as intercepts and the rate of change.	➔ **L3#3** Explain how the parts of a geometric formula relate to the graph of the related function. ➔ **L3#4** Interpret the parts of a geometric formula as it relates to a real-world situation. ➔ **L3#5** Write a geometric formula as a function of the variable measure (i.e., the perimeter of a square is a function of the side lengths of the square *P(s) = 4s*).	
Include with 3.2 3.6 3.8	A1.F.IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★ ***S&C**	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *Tasks are limited to **linear** functions, **absolute value** functions, ~~**quadratic** functions, and **exponential** functions with integer exponents.~~* *(also included in Units 6 & 8)*	➔ **L1#1** Identify intercepts, maximums and minimums when provided a graphical representation of the (linear or absolute value) function. ➔ **L1#2** Identify intervals where a given function is increasing, decreasing, positive or negative when provided a graphical representation of the (linear or absolute value) function. ➔ **L2#1** Identify key features of the graph or table of values and interpret the meaning of the key features in relationship to the context of the problem, given a graph or table of values representing a linear function embedded in a real-world context. ➔ **L2#2** Identify evident intercepts, maximums and minimums when provided a table of values representing a linear or absolute value function. ➔ **L2#3** Sketch a graph of the function, given a verbal description of the key features of a linear function.	➔ **L3#2** Identify all evident key features when provided a table of values representing a linear or absolute value function. ➔ **L3#4** Identify key features of the graph or table and interpret the meaning of the key features in relationship to the context of the problem, given a graph or table of values representing an absolute value function embedded in a real-world context. ➔ **L3#6** Sketch a graph of the function, given a verbal description of the key features of an absolute value function.	➔ **L4#2** Identify key features of the graph and interpret the meaning of the key features in relationship to the context of the problem, given an absolute value function embedded in a real-world context, graph the function. ➔ **L4#3** Create a real-world context that would generate a (linear or absolute value) function with the provided attributes, given key features of a linear or absolute value function..
3.2 3.4	A1.F.IF.C.9 Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal	➔ **L1#1** Identify the *y*-intercept of a function from multiple representations.	➔ **L3#2** Compare properties of two absolute value functions each represented in a different way.	➔ **L4#1** Compare properties of two functions within a context. ➔ **L4#2** Use precise mathematical

	descriptions. ★ A1.F.IF.C.9a Compare properties of two different functions. Functions may be of different types and/or represented in different ways. ★ A1.F.IF.C.9b Compare properties of the same function on two different intervals or represented in two different ways. ★ ***S&C**	*Functions may or may not have a real-world context. Function types are limited to **linear** functions, ~~**quadratic** functions~~, **absolute value** functions, ~~**and exponential** functions with integer exponents.~~* *(also included in Unit 8)*	➔ **L1#2** Identify the slope of a linear function from multiple representations. ➔ **L1#3** Describe connections among multiple representations of a linear function. ➔ **L1#4** Compare properties of two linear functions each represented in a different way. ➔ **L2#6** Describe connections among multiple representations of an absolute value function. ➔ **L2#7** Move fluently among multiple representations of a function.	➔ **L3#5** Compare properties of the same function on two different intervals or represented in two different ways.	vocabulary to explain the relationships of the various representations of a function.
3.3	A1.A.REI.D.5 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). ***S&C**	*There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Plot the ordered pairs on a coordinate plane, given a table of values. ➔ **L1#2** Determine if points on a graph form a line. ➔ **L1#3** Represent the set as a table of values, given a set of ordered pairs. Use technology to produce the graph of a given equation. ➔ **L1#4** Give an equation in the form $y = mx + b$ or $y = mx$ to represent a line graphed on a coordinate plane. ➔ **L2#1** Find corresponding values of y, given an equation and a set of values of x. ➔ **L2#2** Graph ordered pairs to identify whether they represent a linear or non-linear equation. ➔ **L2#3** Understand that the solution to an equation in two variables is an	➔ **L3#1** Find a set of solutions that can be used to create the graph, given an equation. ➔ **L3#2** Interpret the graph of an equation as the solution set to the equation with two variables. ➔ **L3#3** Understand how the coordinates of the points on a graph are related to a given equation. ➔ **L3#4** Explain the relationship between the graphical representation and the solutions (ordered pairs) to the equation, given a real-world situation.	➔ **L4#1** Analyze the pattern of the points to determine the type of equation represented by the graph, given a set of ordered pairs. ➔ **L4#2** Determine if the graphical representation for a real-world situation is continuous or discrete and justify the reasoning.

		ordered pair. ➔ **L2#4** Represent a linear equation with an integer-valued slope in two variables graphically on a coordinate plane.		
3.1 **3.3** **3.8**	A1.F.IF.B.5 Relate the domain of a function to its graph and, where applicable, to the context of the function it models. ★ ***S&C*** *| For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* *Tasks are limited to* ***linear*** *functions,* ~~***piecewise*** *functions (including* ***step*** *and* ***absolute value*** *functions),~~ ~~***quadratic*** *functions, and* ***exponential*** *functions with integer exponents.~~ *(also included in Units 4, 6, & 8)*	➔ **L1#1** Explain the difference between domain and range. ➔ **L1#2** Identify the domain and range from a table of values. ➔ **L1#3** Identify the domain and range from a discrete graph. ➔ **L1#4** Identify the domain and range, given a mapping. ➔ **L1#5** Identify the domain and range from a set of ordered pairs. ➔ **L1#6** Explain the difference between a continuous function and a discrete function. ➔ **L2#1** Explain how domain relates to the definition of a function. ➔ **L2#2** Identify the domain, given the continuous graph of the function. ➔ **L2#3** Explain why a function is continuous or discrete given its graph.	➔ **L3#1** Explain how the domain relates to the graph of a function. ➔ **L3#2** Explain why a function is continuous or discrete given an equation. ➔ **L3#3** Describe how a function's domain is affected when situated within a context. ➔ **L3#4** Explain if a function is continuous or discrete, given a context.	➔ **L4#1** Determine an appropriate domain and range, given a function in context. ➔ **L4#2** Create a contextual situation to describe a function with a given domain and range. ➔ **L4#3** Using the definition of discrete and continuous, compare and contrast sequences and the functions used to model them.
3.3 **3.6**	A1.F.LE.A.1a Know that linear functions grow by equal differences over equal intervals ~~and that exponential functions grow by equal factors over equal intervals~~. ★ A1.F.LE.A.1b Recognize situations in which one quantity	➔ **L1#1** Recognize a function as linear from a graph, a table, and an equation. ➔ **L2#1** Find the slope of a line from a graph, table of values, or given two coordinate points. ➔ **L2#2** Recognize that a line has a constant rate of change.	➔ **L3#1** Know that linear functions have a constant rate of change. ➔ **L3#2** Show informally or explain that linear functions grow by adding the same number per unit. ➔ **L3#4** Determine if a given	➔ **L4#1** Create a real-world example of a situation that can be modeled by a linear function and explain why it is linear.

	changes at a constant rate per unit interval relative to another. ★ ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 4 & 6)*		real-world situation has a constant rate per unit interval and can be modeled by a linear function.	
3.4 3.5 3.6 3.8	A1.A.CED.A.2 ~~Create equations and inequalities in two variables to represent relationships between quantities and use them to solve problems in a real-world context.~~ Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. ★ ***S&C**	Tasks are limited to **linear**, ~~**quadratic**~~, and **absolute value** equations ~~and inequalities.~~* *(also included in Units 4, 8, & 9)*	➔ **L1#1** Choose a linear equation that represents a real-world situation. ➔ **L1#2** Choose a linear graph to represent a real-world situation. ➔ **L1#3** Identify appropriate units of measure within a given real-world context. ➔ **L2#2** Graph a two-variable linear equation that represents a real-world situation. ➔ **L2#5** Create a graph with appropriate scales and labels for a given real-world (absolute value or linear) context.	➔ **L3#2** Graph a two-variable linear or absolute value equation or inequality that represents a real-world context. ➔ **L3#3** Make predictions using the graph of a two-variable linear or absolute value equation or inequality that represents a real-world context.	➔ **L4#1** Create a real-world situational problem to represent a given linear or absolute value equation or inequality. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.
3.4	A1.F.IF.A.2 Use function notation. ★ A1.F.IF.A.2a Use function notation to evaluate functions for inputs in their domains, including functions of two variables. ★ A1.F.IF.A.2b Interpret statements that use function notation in terms of a context. ★ ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course. Use function notation with various functions of two variables. See functions as defined symbolically (e.g., f(a,b) = 3ab – a or a newly defined symbol like a % b = 3ab – a).* *(exclusively in this unit)*	➔ **L1#1** Determine the input-output table that represents a given function. ➔ **L1#2** Write an ordered pair given the function notation (e.g., *f(2) = 10* is the coordinate (2, 10). ➔ **L1#3** Construct an input-output table given a set of ordered pairs. ➔ **L2#1** Substitute input values into a given function of one variable to reveal output values. ➔ **L2#2** Substitute input values into a given function of two variables to reveal output values.	➔ **L3#1** Given a function that represents a real-world problem, determine what each variable represents. ➔ **L3#2** Given a function that represents a real-world problem, interpret the meaning of output values when given input values and vice versa. ➔ **L3#3** Use multiple representations to model a function in a real-world situation.	➔ **L4#1** Explain situations when it is imperative to use function notation. ➔ **L4#2** Construct a viable argument to explain the solution of a function in a real-world situation. ➔ **L4#3** Given a real-world situation, identify and explain possible restrictions on the domain and range.

3.4 3.5 3.6 3.8	A1.F.IF.C.7 Graph functions expressed algebraically and show key features of the graph by hand and using technology. ★ ***S&C**	Function types are limited to **linear** functions, ~~**quadratic** functions~~, **absolute value** functions~~, and **exponential** functions with integer exponents.~~* *(also included in Units 6 & 8)*	➔ **L1#1** Represent a constant rate of change between two variables as slope of a line. ➔ **L1#2** Use characteristics of the algebraic representation of a function to determine the function type and behavior of the graph. ➔ **L1#3** Identify $y=x$ as the parent function for linear functions. ➔ **L1#4** Explain the effects of slope and intercepts on a linear function. ➔ **L2#1** Graph a linear function by hand and using technology. ➔ **L2#5** Infer restrictions on the domain and range from a (linear or absolute value) graph.	➔ **L3#1** Graph a linear function by hand and using technology and identify the slope and intercepts. ➔ **L3#3** Graph an absolute value function by hand and using technology. ➔ **L3#4** Attend to precision when illustrating intercepts, maxima, and minima and determine the domain and range of the (linear or absolute value) function.	➔ **L4#1** Explain the relationship that exists between a contextual problem and the key features of a graph for linear and absolute value functions. ➔ **L4#2** Critique (linear or absolute value) graphs drawn by others to ensure key features are shown efficiently and appropriately. ➔ **L4#3** Given a (linear or absolute value) graph, write the corresponding function algebraically. ➔ **L4#4** Explain restrictions on domain and range in context (of a linear or absolute value function).
3.6	A1.A.SSE.A.1a Interpret parts of an expression, such as terms, factors, and coefficients. ★ ***S&C**	For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P. There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 2 & 7)*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#2** Define the formal definition of the terms: *factor*, *coefficient*, and *term*. ➔ **L1#3** Define the formal definition of the term *expression*. ➔ **L1#4** Label the single entities in an expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of *terms*, *factors*, *coefficients*, and *like terms* in order to describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity.	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation and explain each part in terms of the context. ➔ **L3#2** Interpret parts of an expression (i.e., term, factor, and coefficient) and explain each part in terms of the function the expression defines. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the expression and recognizing when combining like terms is appropriate. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or more of their parts as a single entity. ➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then

		➔ **L2#4** Recognize that individual parts of an expression affect the whole expression. ➔ **L2#5** State arithmetic operations performed within an expression.	relationship to the expression.	considering them as a part of the expression. ➔ **L4#5** Identify and explain structure in patterns represented pictorially or graphically and write an algebraic expression to represent the pattern.
3.6	**A1.F.LE.B.3** Interpret the parameters in a linear ~~or exponential~~ function in terms of a context. ★ ***S&C**	For example, the total cost of an electrician who charges 35 dollars for a house call and 50 dollars per hour would be expressed as the function y = 50x + 35. If the rate were raised to 65 dollars per hour, describe how the function would change.* *(also included in Units 4 & 6)*	➔ **L1#1** Define slope as a rate of change. ➔ **L1#2** Identify the slope and the *y*-intercept in a linear function written in slope-intercept form. ➔ **L2#1** Determine the slope and *y*-intercept of a linear function in a graph. ➔ **L2#2** Calculate the slope of a line that passes through two given points. ➔ **L2#3** Calculate the *y*-intercept of a linear function algebraically.	➔ **L3#1** Explain the meaning of the slope and y-intercept in context of the real-world situation, given a linear function. ➔ **L3#3** Predict and determine how a linear function is affected by a change in the slope or y-intercept. Explain this change in context.	➔ **L4#1** Create a real-world scenario that can be modeled by a given linear function.
3.7 **3.8**	**A1.F.BF.B.2** Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given graphs. ***S&C**	Experiment with cases and illustrate an explanation of the effects on the graph using technology. Tasks are limited to **absolute value** ~~**and quadratic**~~ **functions**.* *(also included in Unit 8)*	➔ **L1#1** Describe transformations that would map a geometric figure to its image using precise mathematical vocabulary. ➔ **L1#2** Write the function defined by *f(x)+k*, *kf(x)*, *f(x+k)*, and *f(kx)* given the (absolute value) parent function and a positive value of *k*. ➔ **L1#3** Graph the parent functions $y = \|x\|$ using technology. ➔ **L2#1** Know and graph the parent function for absolute value. ➔ **L2#2** Use function notation to identify the difference between *f(x) + k* and *f(x+k)* and the difference between *kf(x)* and *f(kx)*.	➔ **L3#1** Describe the effect on the graph for specific values of *k*, given two (absolute value) functions, *f(x)* and *f(x) + k*. ➔ **L3#2** Describe the effect on the graph for specific values of k, given two (absolute value) functions, *f(x)* and *f(x + k)*. ➔ **L3#3** Describe the effect on the graph for specific values of k, given two (absolute value) functions, *f(x)* and *f(kx)*. ➔ **L3#4** Describe the effect on the graph for specific values of k, given two (absolute value) functions, *f(x)* and *kf(x)*.	➔ **L4#1** Given a graph of a (absolute value) function, write the equation by identifying the transformation(s) to the parent function. ➔ **L4#2** Apply transformations to a (absolute value) function that has already been transformed. ➔ **L4#3** Explain why changes to the argument of f(x) affect the input values and changes outside the function affect the output values.

			➔ **L3#5** Describe the effects on a graph for more than one transformation using specific values of *a*, *h*, and *k* given two (absolute value) functions, *f(x)* and *af(x + h) + k*. ➔ **L3#6** Determine the value of *k* for vertical and horizontal translations, stretches, and compressions, given the graphs of the image and preimage (of an absolute value function).	

UNIT 4 | Linear Functions & Arithmetic Sequences

Approximately 13 Days | October 18 - November 6, 2023

The focus of this unit is writing linear functions. Students create equations in two variables to represent relationships between quantities. Information may be given in the form of data, a context, or a graph and students are asked to write a linear function. Understanding that the information represents a linear function is incorporated in the learning.

Big Ideas Lessons - 4.1, 4.2, 4.3*, 4.4, 4.5, 4.6, 4.7 **(*NOTE: Lesson 4.3 can be used at teacher discretion)**

LESSON	STANDARD	UNIT 4 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
4.1 4.2 4.7	A1.A.CED.A.2 Create equations and inequalities in two variables to represent relationships between quantities and use them to solve problems in a real-world context. ~~Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions.~~ ★ ***S&C**	*Tasks are limited to **linear**, **~~quadratic~~**, and **absolute value** equations and inequalities.* *(also included in Units 3, 8, & 9)*	➔ **L1#1** Choose a linear equation that represents a real-world situation. ➔ **L1#3** Identify appropriate units of measure within a given real-world context. ➔ **L2#1** Create and solve a two-variable linear equation that represents a real-world situation. ➔ **L2#3** Choose a two-variable absolute value equation or inequality to represent a real-world situation. ➔ **L2#4** Solve a two-variable absolute value equation or inequality.	➔ **L3#1** Create and solve a two-variable linear or absolute value equation or inequality that represents a real-world context.	➔ **L4#1** Create a real-world situational problem to represent a given linear equation or inequality. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.
4.1 4.2 4.6	A1.F.BF.A.1 Build a function that describes a relationship between two quantities. ★ A1.F.BF.A.1a Determine steps for calculation, ~~a recursive process~~, or an explicit expression from a context. ★		➔ **L1#1** Write a function defined by an expression to model a linear relationship, given a table or graph. ➔ **L1#2** Identify the independent and dependent variable in a real-world (linear) context. ➔ **L1#3** Identify the first term and rate of change of a linear function, given a	➔ **L3#1** Write a function defined by an expression to model a linear relationship, given a real-world context. ➔ **L3#3** Compare key characteristics of real-world contexts that can be described by various types of functions.	➔ **L4#1** Create a real-world context that would generate the given function, given a function defined by an expression, a recursive process, or steps for calculation. ➔ **L4#2** Explain the various ways a function can be defined and in what real-world contexts they

	S&C *| Tasks are limited to* ***linear*** ~~***and exponential***~~ *relationships. For example, create a function from a visual pattern and describe how each component of their function relates to characteristics of figures in the pattern.* *(also included in Unit 6)*	table or graph. ➔ **L2#1** Determine whether a real-world context would be represented by a linear or non-linear function.		would be appropriate. ➔ **L4#3** Justify why a specific type of function should be used to describe a given real-world context.
4.1 **4.2**	**A1.F.LE.A.1b** Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. ★ ***S&C*** *| There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Unit 3)*	➔ **L1#1** Recognize a function as linear, both from a graph, a table, and an equation. ➔ **L2#1** Find the slope of a line from a graph, table of values, or given two coordinate points. ➔ **L2#2** Recognize that a line has a constant rate of change, while (other function types) do not.	➔ **L3#1** Know that linear functions have a constant rate of change. ➔ **L3#2** Show informally or explain that linear functions grow by adding the same number per unit. ➔ **L3#4** Determine if a given real-world situation has a constant rate per unit interval and can be modeled by a linear function.	➔ **L4#1** Create a real-world example of a situation that can be modeled by a linear function and explain why it is linear.
Include with **4.1** **4.2** **4.7**	**A1.F.IF.B.6** Calculate and interpret the average rate of change of a function (presented algebraically or as a table) over a specified interval. Estimate and interpret the rate of change from a graph. ★ ***S&C*** *| Tasks are limited to* ***linear*** *functions,* ***piecewise*** *functions (including* ***step*** *and* ***absolute value*** *functions),* ~~***quadratic*** *functions, and* ***exponential*** *functions with integer exponents.*~~ *(also included in Units 6 & 8)*	➔ **L1#1** Choose the average rate of change for a linear function when given a symbolic representation, table, or graph. ➔ **L1#2** Choose the estimated rate of change when given a graph of a linear function. ➔ **L2#1** Calculate the average rate of change of a linear function when given a graph. ➔ **L2#2** Calculate the average rate of change of a linear function when given a table. ➔ **L2#3** Calculate the average rate of change of a linear function when given the function. ➔ **L2#4** Interpret the rate of change for a linear function in terms of a real-world context.	➔ **L3#1** Calculate the average rate of change when given an equation or table of an (absolute value or other piecewise) function. ➔ **L3#2** Interpret the average rate of change of an (absolute value or other piecewise) function. ➔ **L3#3** Estimate the average rate of change for a specific interval of an (absolute value or other piecewise) function when given a graph.	➔ **L4#1** Identify the average rate of change for specific intervals of a (absolute value) function as being greater or less than other intervals of the same function. ➔ **L4#2** Compare the average rate of change of multiple intervals of the same (absolute value or linear) function and make connections to the real-world situation. ➔ **L4#3** Create a contextual situation and identify and interpret the average rate of change with a specific interval.

4.1 4.2 4.3? 4.6	A1.F.LE.A.2 Construct linear ~~and exponential~~ functions, including arithmetic ~~and geometric~~ sequences, given a graph, a table, a description of a relationship, or input-output pairs. ★ ***S&C**	*Tasks are limited to constructing **linear** ~~and exponential~~ functions in simple context (not multi-step).* *(also included in Unit 6)*	➔ **L1#1** Recognize a graph of a function as linear. ➔ **L2#1** Recognize a function as linear from a table, a description, or a set of ordered pairs and justify it using rates of change.	➔ **L3#1** Construct a linear function given a graph. ➔ **L3#2** Construct a linear function given a table of values. ➔ **L3#3** Construct a linear function given a description of a simple real-world relationship. ➔ **L3#4** Construct a linear function given a set of input-output pairs (ordered pairs). ➔ **L3#9** Construct a function given an arithmetic sequence or a description of one.	➔ **L4#1** Analyze (linear) functions created by others to determine accuracy and explain and correct any errors. ➔ **L4#2** Create a real-world situation that may be modeled by a linear function and write the function. ➔ **L4#4** Collect data for a real-world situation that can be represented by a linear function and write the function that models it. Define the variables and explain in context why the function models the situation.
4.4 4.5	A1.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. ★ ***S&C**	*Fitted functions are limited to **linear, ~~exponential, and quadratic~~** functions.* *(also included in Units 6 & 9)*	➔ **L1#1** Choose a linear function to fit a given data set. ➔ **L1#2** Informally decide if a given scatter plot is best represented by a linear or non-linear function. ➔ **L2#1** Represent data from two quantitative variables on a scatter plot. ➔ **L2#3** Informally fit a linear function to a given set of data represented in a scatter plot. ➔ **L2#4** Use a given linear function to solve a problem.	➔ **L3#1** Represent data from two quantitative variables (that suggest a linear relationship) on a scatter plot and describe how the variables are related. ➔ **L3#2** Fit a linear function to a given set of data. ➔ **L3#3** Use a linear function fitted to data to solve problems in the context of the data. ➔ **L3#4** Recognize that extrapolation may be unreliable for making predictions.	➔ **L4#1** Create a contextual situation with an embedded data set derived from a given (linear) function. Explain the relationship between the function, data set, and the contextual situation using precise mathematical language and justifications. ➔ **L4#2** Use a given (linear) function or function type to explain the relationship between two quantities in context. ➔ **L4#3** Explain why extrapolation may be unreliable for making predictions.
4.4 4.5	A1.S.ID.C.5 Interpret the rate of change and the constant term of a linear model in the context of data. ★ ***S&C**	*There are no assessment limits for this standard.*	➔ **L1#1** Identify the slope and *y*-intercept, given a linear function in slope-intercept form. ➔ **L1#2** Identify two points on a scatterplot that could be used to build the line of best fit.	➔ **L3#1** Interpret the rate of change of a linear model in the context of the data. ➔ **L3#2** Interpret the constant term of a linear model in the context of the data.	➔ **L4#1** Justify the appropriateness of the slope and *y*-intercept of a linear model in the context of the data.

	The entire standard is assessed in this course. *(exclusively in this unit)*	➔ **L2#1** Understand that the rate of change in a linear model refers to the slope and the constant term when written in slope-intercept form is the *y*-intercept. ➔ **L2#2** Identify the slope and *y*-intercept of the graph of a line. ➔ **L2#3** Estimate the slope and *y*-intercept of a linear model that would best fit data on a given scatterplot.		
4.4 4.5	A1.F.LE.B.3 Interpret the parameters in a linear ~~or exponential~~ function in terms of a context. ★ ***S&C**	For example, the total cost of an electrician who charges 35 dollars for a house call and 50 dollars per hour would be expressed as the function y = 50x + 35. If the rate were raised to 65 dollars per hour, describe how the function would change.* *(also included in Units 3 & 6)*	➔ **L1#1** Define slope as a rate of change. ➔ **L1#2** Identify the slope and the *y*-intercept in a linear function written in slope-intercept form. ➔ **L2#1** Determine the slope and *y*-intercept of a linear function in a graph. ➔ **L2#2** Calculate the slope of a line that passes through two given points. ➔ **L2#3** Calculate the *y*-intercept of a linear function algebraically.	➔ **L3#1** Explain the meaning of the slope and *y*-intercept in context of the real-world situation, given a linear function. ➔ **L3#3** Predict and determine how a linear function is affected by a change in the slope or *y*-intercept. Explain this change in context.	➔ **L4#1** Create a real-world scenario that can be modeled by a given linear function.
4.5	A1.S.ID.C.6 Use technology to compute the correlation coefficient of a linear model; interpret the correlation coefficient in the context of the data. ★ ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Describe the correlation of the data set that it represents as strong or weak, given a correlation coefficient. ➔ **L1#2** Describe the correlation of the data set as having a positive or negative direction, given a scatter plot. ➔ **L2#1** Choose a correlation coefficient that represents a data set given a scatter plot suggesting a linear fit. ➔ **L2#2** Choose the strength and direction that describes the relationship, given a scatter plot that represents a data set.	➔ **L3#1** Calculate the correlation coefficient of a linear model using technology. ➔ **L3#2** Interpret the correlation coefficient of a linear model in the context of the data.	➔ **L4#1** Create a real-world linear situation and calculate and interpret an appropriate correlation coefficient. ➔ **L4#2** Explain what the correlation coefficient represents with respect to the contextual problem, using mathematically precise vocabulary and justifications.

4.5	**A1.S.ID.C.7** Explain the differences between correlation and causation. Recognize situations where an additional factor may be affecting correlated data. ★ ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Given a correlation coefficient, describe the correlation of the data set that it represents as strong or weak. ➔ **L1#2** Given a scatter plot, describe the correlation of the data set as strong or weak. ➔ **L2#1** Define correlation as the association between two variables and provide an example. ➔ **L2#2** Define causation between two variables as a cause-and-effect relationship and provide an example.	➔ **L3#1** Explain the differences between correlation and causation. ➔ **L3#2** Explain why a strong correlation does not imply causation. ➔ **L3#3** Distinguish variables that are correlated because one is a cause of another and justify their reasoning. ➔ **L3#4** Recognize situations where an additional factor may be impacting correlated data.	➔ **L4#1** Critique and recognize misinterpretation of correlation as causation in worked examples and explain why the reasoning is incorrect. ➔ **L4#2** Create or find real-world data points that suggest a strong linear correlation between two variables, but one is not caused by the other.
Include with 4.7	**A1.F.IF.B.5** Relate the domain of a function to its graph and, where applicable, to the context of the function it models. ★ ***S&C**	For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* *Tasks are limited to **~~linear functions~~**, **piecewise** functions (including **step ~~and absolute value~~** functions), **~~quadratic functions, and exponential functions with integer exponents.~~*** *(also included in Units 3, 6, & 8)*	➔ **L1#2-5** Identify the domain and range (of a piecewise function) from a: ◆ Table of values ◆ Discrete graph ◆ Mapping ◆ Set of ordered pairs ◆ Continuous graph **L2#2** ➔ **L2#3** Explain why a (piecewise) function is continuous or discrete given its graph.	➔ **L3#1** Explain how the domain relates to the graph of a (piecewise) function. ➔ **L3#2** Explain why a (piecewise) function is continuous or discrete given an equation. ➔ **L3#3** Describe how a (piecewise) function's domain is affected when situated within a context. ➔ **L3#4** Explain if a (piecewise) function is continuous or discrete, given a context.	➔ **L4#1** Determine an appropriate domain and range, given a (piecewise) function in context. ➔ **L4#2** Create a contextual situation to describe a (piecewise) function with a given domain and range.
4.7	**A1.A.SSE.A.1b** Interpret complicated expressions by viewing one or more of their parts as a single entity. ★ ***S&C**	For example, one truck can transport A cubic feet, and a second truck can transport B cubic feet. The first truck makes x trips to a job site, while the second makes y trips. Interpret the expression Ax + By in terms of the context.* *There are no assessment limits for this standard. The*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#4** Label the single entities in an expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of terms, factors, coefficients, and like terms in order to	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation (that suggests a linear relationship) and explain each part in terms of the context. ➔ **L3#2** Interpret parts of an expression (i.e., term, factor, and coefficient) and explain each part in terms of the (linear) function	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or more of their parts as a single entity.

	entire standard is assessed in this course. *(also included in Units 1 & 6)*	describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity. ➔ **L2#4** Recognize that individual parts of an expression affect the whole expression. ➔ **L2#5** State arithmetic operations performed within an expression.	the expression defines. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the expression and recognizing when combining like terms is appropriate. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the relationship to the expression.	➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then considering them as a part of the expression. ➔ **L4#5** Identify and explain structure in patterns represented pictorially or graphically and write an algebraic expression to represent the pattern.

UNIT 5 | Solving Systems of Equations & Inequalities

Approximately 19 Days | November 7 - December 7, 2023

The focus of this unit is writing and solving systems of linear equations & inequalities. The big understanding for students is that a solution of a system must satisfy every equation or inequality in the system. Many of the applications in this unit require students to write a system to represent a context, which is an essential skill for modeling with mathematics.

Big Ideas Lessons - 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

LESSON	STANDARD	UNIT 5 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
5.1 5.2 5.3 5.4 5.5 5.6 5.7	A1.A.CED.A.3 Create individual and systems of equations and/or inequalities to represent constraints in a contextual situation, and interpret solutions as viable or non-viable. ★ ***S&C**	For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.* *There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	→ **L1#1** Identify unknown values in a real-world situation. → **L1#2** Describe the difference between a viable solution and a non-viable solution. → **L2#1** Choose an equation or inequality that models the constraint on a variable given a contextual problem. → **L2#2** Determine when a solution would be viable or non-viable, given an equation or inequality that represents a real-world problem. → **L2#3** Determine the viability of each solution, given an equation or inequality that represents a contextual situation and a set of possible solutions.	→ **L3#1** Write an equation or inequality that models the constraint on a variable given a contextual situation. → **L3#2** Write a system of equations or inequalities that models the constraint on a variable given a contextual situation. → **L3#3** Explain constraints on a variable in context of a real-world situation. → **L3#4** Justify solutions that model real-world situations when there are limitations on a variable. → **L3#5** Interpret solutions as viable or non-viable options in a contextual situation.	→ **L4#1** Create and provide a solution to a real-world problem that has natural limitations on variables. Explain the solution and its viability using multiple representations (i.e., table, graph, equation) and precise mathematical language. → **L4#2** Explain examples of both viable and nonviable solutions in context of a real-world problem. → **L4#3** Use multiple representations to justify a solution's viability and explain when one representation elicits a more efficient justification.
5.1 5.2 5.3 5.4	A1.A.REI.C.4 Write and solve a system of linear equations in real-world context. ★ ***S&C**	*Systems are limited to at most two equations in two*	→ **L1#1** Identify the solution to a system of linear equations in two variables given a graphical representation of the system. → **L1#2** Identify the solution to a system	→ **L3#1** Solve a system of linear equations in two unknowns algebraically using the substitution method. → **L3#2** Solve a system of linear	→ **L4#1** Create a real-world scenario to represent a system of linear equations in two variables. → **L4#2** Determine if the solution

	unknowns. *(exclusively in this unit)*	of linear equations in two variables given a tabular representation of the system. ➔ **L1#3** Use substitution to determine if a given solution satisfies a given system of linear equations. ➔ **L2#1** Solve a system of linear equations by graphing. ➔ **L2#2** Determine if two linear equations create parallel lines, the same line, or intersecting lines. ➔ **L2#3** Analyze a system of linear equations to determine if there is one solution, no solution or infinitely many solutions.	equations in two unknowns algebraically using the elimination method. ➔ **L3#3** Write and solve a system of linear equations in two unknowns given a real-world context. ➔ **L3#4** Interpret the solution of a system of linear equations in two unknowns in relationship to a context.	to a system of linear equations in two variables is reasonable in relationship to a real-world context. ➔ **L4#3** Justify whether the substitution or elimination method would be most efficient to solve a system of linear equations in two variables.
5.5	**A1.A.REI.D.6** Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$. Find approximate solutions by graphing the functions or making a table of values, using technology when appropriate. ★ ***S&C**	Include cases where f(x) and/or g(x) are **linear, quadratic, absolute value**, and **exponential** functions. For example, f(x) = 3x + 5 and g(x) = x^2 + 1. When finding solutions approximately, students may be expected to produce graphs of functions that are **linear, quadratic, exponential**, or **absolute value**, but may be given graphs of other function types. Exponential functions are limited to domains in the integers.* *(exclusively in this unit)*	➔ **L1#1** Represent a linear equation with an integer-valued slope in two variables graphically on a coordinate plane. ➔ **L1#2** Estimate solutions to a system of equations by graphing. ➔ **L1#3** Identify solutions to a system of linear equations by inspecting graphs. ➔ **L2#1** Identify the solution(s) for *f(x) = g(x)* when *f(x)* and *g(x)* are linear, quadratic, absolute value or exponential, given graphs of two equations *f(x)* and *g(x)*. ➔ **L2#2** Graph linear, quadratic, absolute value and/or exponential functions (with and without technology). ➔ **L2#3** Generate a table of values for linear, quadratic, absolute value and/or exponential functions (with and without technology).	➔ **L3#1** Explain why the *x*-coordinates of the points where the graphs of the equations *y = f(x)* and *y = g(x)* intersect are the solutions of the equation *f(x) = g(x)*. ➔ **L3#2** Approximate the solution(s) for *f(x) = g(x)* by graphing, making a table of values or using technology. ➔ **L3#3** Approximate the solution(s) for *f(x) = g(x)* when *f(x)* and *g(x)* are linear, quadratic, absolute value or exponential, given two equations *f(x)* and *g(x)*.	➔ **L4#1** Approximate the solution(s) for *f(x) = g(x)* and explain the meaning of the solution(s) in terms of a real-world context when given two equations *f(x)* and *g(x)* embedded in a real-world situation. ➔ **L4#2** Create a contextual situation for the equations *y = f(x)* and *y = g(x)*, approximate the solution(s) for *f(x) = g(x)* and explain the meaning of the solution(s) in terms of a real-world context.

5.7	**A1.A.REI.D.7** Graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. ***S&C**	There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Identify if a point is a solution to a linear inequality in two variables. ➔ **L1#2** Identify if a point is a solution to a system of linear equalities in two variables. ➔ **L2#1** Choose the graphical representation of the solution to a linear inequality in two variables. ➔ **L2#2** Choose the graphical representation of the solution set to a system of linear inequalities in two variables.	➔ **L3#1** Graph the solution set to a system of two linear inequalities in two variables as the intersection of the corresponding half-planes.	➔ **L4#1** Graph the solution set to a system of more than two linear inequalities in two variables.

UNIT 6 | Exponential Functions & Geometric Sequences

Approximately 13 Days | January 4 - January 23, 2024

The focus of this unit is understanding exponential functions and sequences. Students will review the properties of integer exponents, which leads to an introduction of exponential functions and then making a connection between exponential functions and geometric sequences.

Big Ideas Lessons - 6.1*, 6.2, 6.3, 6.4, 6.5 **(*NOTE: Use Lesson 6.1 to address foundational prerequisites as needed)**

LESSON	STANDARD	UNIT 6 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
6.1 6.3	A1.A.SSE.A.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. ★ ***S&C*** *| For example, one truck can transport A cubic feet, and a second truck can transport B cubic feet. The first truck makes x trips to a job site, while the second makes y trips. Interpret the expression Ax + By in terms of the context. There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 1 & 4)*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#2** Label the single entities in an expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of terms, factors, coefficients, and like terms in order to describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity. ➔ **L2#4** Recognize that individual parts of an expression affect the whole expression.	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation (that suggests an exponential relationship) and explain each part in terms of the context. ➔ **L3#2** Interpret parts of an expression (i.e., term, factor, and coefficient) and explain each part in terms of the (exponential) function the expression defines. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the expression. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the relationship to the expression.	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or more of their parts as a single entity. ➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then considering them as a part of the expression. ➔ **L4#5** Identify and explain structure in patterns

				represented pictorially or graphically and write an algebraic expression to represent the pattern.
6.2 6.3	A1.F.LE.B.3 Interpret the parameters in a ~~linear or~~ exponential function in terms of a context. ★ ***S&C*** *| For example, a population is modeled by a function* $y = 30000(1.04)^x$. *Interpret the value 30000 as the initial population and 1.04 as a 4% increase per year.* *(also included in Units 3 & 4)*	➔ **L1#3** Identify the coefficient, base, and exponent in an exponential function. ➔ **L2#4** Identify the initial value of an exponential function in a graph. ➔ **L2#5** Calculate the initial value of an exponential function algebraically. ➔ **L2#6** Calculate the growth rate of an exponential function by finding the ratio of successive terms.	➔ **L3#2** Explain the meaning of the coefficient, the base, and the exponent in context of the real-world situation, given an exponential function with a domain in the integers. ➔ **L3#4** Predict and determine how an exponential function is affected by a change in the coefficient, base, or exponent. Explain this change in context.	➔ **L4#2** Create a real-world scenario that can be modeled by a given exponential function.
6.2 6.3	A1.F.IF.C.7 Graph functions expressed algebraically and show key features of the graph by hand and using technology. ★ ***S&C*** *| Function types are limited to* ***~~linear functions, quadratic~~*** *functions,* ***~~absolute value~~*** *functions, and* ***exponential*** *functions with integer exponents.* *(also included in Units 3 & 8)*	➔ **L1#2** Use characteristics of the algebraic representation of a function to determine the function type and behavior of the graph. ➔ **L2#5** Infer restrictions on the domain and range from an (exponential) graph.	➔ **L3#?** Graph an (exponential) function by hand and using technology, identifying intercepts & asymptotes. ➔ **L3#4** Attend to precision when illustrating intercepts, maxima, and minima and determine the domain and range of the (exponential) function.	➔ **L4#1** Explain the relationship that exists between a contextual problem and the key features of a graph for exponential functions. ➔ **L4#2** Critique (exponential) graphs drawn by others to ensure key features are shown efficiently and appropriately. ➔ **L4#3** Given an (exponential) graph, write the corresponding function algebraically. ➔ **L4#4** Explain restrictions on domain and range (of an exponential function) in context.
6.2 6.3	A1.F.IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the	➔ **L1#1** Identify intercepts, maximums and minimums when provided a graphical representation of the (exponential) function. ➔ **L1#2** Identify intervals where a given function is increasing, decreasing, positive or negative when provided a	➔ **L3#1** Identify all evident intercepts, maximums and minimums when provided a table of values representing an exponential function with integer exponents.	➔ **L4#3** Create a real-world context that would generate an (exponential) function with the provided attributes, given key features of an exponential function.

	relationship. ★ ***S&C*** *| Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *Tasks are limited to* ~~***linear*** *functions,* ***absolute value*** *functions,* ~~***quadratic***~~ *functions, and* ***exponential*** *functions with integer exponents.* *(also included in Units 3 & 8)*	graphical representation of the (exponential) function.	➔ **L3#2** Identify all evident key features when provided a table of values representing an exponential function. ➔ **L3#5** Identify key features of the graph or table and interpret the meaning of the key features in relationship to the context of the problem, given a graph or table of values of an exponential function with domain in the integers embedded in a real-world context. ➔ **L3#6** Sketch a graph of the function, given a verbal description of the key features of an exponential function with integer exponents.	
Include with 6.3	**A1.F.IF.B.6** Calculate and interpret the average rate of change of a function (presented algebraically or as a table) over a specified interval. Estimate and interpret the rate of change from a graph. ★ ***S&C*** *| Tasks are limited to* ~~***linear*** *functions,* ***piecewise*** *functions (including* ***step*** *and* ***absolute value*** *functions),* ~~***quadratic***~~ *functions, and* ~~***exponential***~~ *functions with integer exponents.* *(also included in Units 4 & 8)*	N/A	➔ **L3#1** Calculate the average rate of change when given an equation or table of an exponential function, where exponential functions are limited to domains in the integers. ➔ **L3#2** Interpret the average rate of change of an exponential function, where exponential functions are limited to domains in the integers. ➔ **L3#3** Estimate the average rate of change for a specific interval of an exponential function when given a graph, where exponential functions are limited to domains in the integers.	➔ **L4#1** Identify the average rate of change for specific intervals of a function as being greater or less than other intervals of the same (exponential) function. ➔ **L4#2** Compare the average rate of change of multiple intervals of the same (exponential) function and make connections to the real-world situation. ➔ **L4#3** Create a contextual situation and identify and interpret the average rate of change with a specific interval.
Include with 6.2 6.3	**A1.F.IF.B.5** Relate the domain of a function to its graph and, where applicable, to the context of the function it models. ★ ***S&C*** *| For example, if the function h(n) gives the number*	➔ **L1#2-5** Identify the domain and range (of an exponential function) from a: ◆ Table of values ◆ Discrete graph ◆ Mapping ◆ Set of ordered pairs	➔ **L3#1** Explain how the domain relates to the graph of an (exponential) function. ➔ **L3#2** Explain why an (exponential) function is	➔ **L4#1** Determine an appropriate domain and range, given an (exponential) function in context. ➔ **L4#2** Create a contextual

	of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. *Tasks are limited to* ~~***linear** functions, **piecewise** functions (including **step** and **absolute value** functions), **quadratic** functions, and*~~ ***exponential** functions with integer exponents.* *(also included in Unit 3, 4, & 8)*	◆ Continuous graph **L2#2** ➔ **L2#3** Explain why an (exponential) function is continuous or discrete given its graph.	continuous or discrete given an equation. ➔ **L3#3** Describe how an (exponential) function's domain is affected when situated within a context. ➔ **L3#4** Explain if an (exponential) function is continuous or discrete, given a context.	situation to describe an (exponential) function with a given domain and range.
6.2 6.3 6.4 6.5	A1.F.BF.A.1 Build a function that describes a relationship between two quantities. ★ A1.F.BF.A.1a Determine steps for calculation, a recursive process, or an explicit expression from a context. ★ ***S&C**	Tasks are limited to* ~~***linear** and*~~ ***exponential** relationships. For example, create a function from a visual pattern and describe how each component of their function relates to characteristics of figures in the pattern.* *(also included in Unit 4)*	➔ **L1#2** Identify the independent and dependent variable in a real-world (exponential) context. ➔ **L1#4** Identify the first term and common ratio of an exponential function, given a real-world context. ➔ **L2#1** Determine whether a real-world context would be represented by a linear or non-linear function. ➔ **L2#3** Write a function defined by a recursive process or steps for calculation to model an exponential relationship, given a real-world context.	➔ **L3#2** Write a function defined by an expression to model an exponential relationship with domain in the integers, given a real-world context. ➔ **L3#3** Compare key characteristics of real-world contexts that can be described by various types of functions.	➔ **L4#1** Create a real-world context that would generate the given function, given an (exponential) function defined by an expression, a recursive process, or steps for calculation. ➔ **L4#2** Explain the various ways a function can be defined and in what real-world contexts they would be appropriate. ➔ **L4#3** Justify why a specific type of function should be used to describe a given real-world context.
6.2 6.3	A1.F.LE.A.1 Distinguish between situations that can be modeled with linear functions and with exponential functions. ★ A1.F.LE.A.1a Know ~~that linear functions grow by equal differences over equal intervals and~~ that exponential functions grow by equal factors over equal intervals. ★ A1.F.LE.A.1c Recognize situations in which a quantity grows or decays by a constant factor per	➔ **L1#2** Recognize a function as exponential from a graph, a table, and an equation. ➔ **L2#2** Recognize that a line has a constant rate of change, while an exponential function does not.	➔ **L3#1** Know that exponential functions do not have a constant rate of change. ➔ **L3#3** Show informally or explain that exponential functions grow by multiplying by the same factor per unit. ➔ **L3#5** Determine if a given real-world situation has a constant factor per unit interval and can be modeled by an exponential function. ➔ **L3#6** Determine if a given	➔ **L4#2** Create a real-world example of a situation that can be modeled by an exponential function and explain why it is exponential, including why it is growth or decay.

	unit interval relative to another. ★ ***S&C*** *| There are no assessment limits for this standard. The entire standard is assessed in this course.* *(1a also included in Unit 3)*		real-world situation that can be modeled by an exponential function represents growth or decay.	
6.2 6.3 6.4 6.5	A1.F.LE.A.2 Construct ~~linear and~~ exponential functions, including ~~arithmetic and~~ geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs. ★ ***S&C*** *| Tasks are limited to constructing* ***~~linear and~~ exponential*** *functions in simple context (not multi-step).* *(also included in Unit 4)*	➔ **L1#2** Recognize a graph of a function as exponential. ➔ **L2#2** Recognize a function as exponential from a table, a description, or a set of ordered pairs and justify it using rates of change.	➔ **L3#5** Construct an exponential function given a graph. ➔ **L3#6** Construct an exponential function given a table of values. ➔ **L3#7** Construct an exponential function given a description of a simple real-world relationship. ➔ **L3#8** Construct an exponential function given a set of input-output pairs (ordered pairs). ➔ **L3#9** Construct a function given a geometric sequence or a description of one.	➔ **L4#1** Analyze (exponential) functions created by others to determine accuracy and explain and correct any errors. ➔ **L4#3** Create a real-world situation that may be modeled by an exponential function and write the function. ➔ **L4#4** Collect data for a real-world situation that can be represented by an exponential function and write the function that models it. Define the variables and explain in context why the function models the situation.
6.2	A1.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. ★ ***S&C*** *| Fitted functions are limited to* ***~~linear~~, exponential,*** *~~and quadratic~~ functions.* *(also included in Units 4 & 9)*	➔ **L1#2** Informally decide if a given scatter plot is best represented by a linear or non-linear function. ➔ **L2#1** Represent data from two quantitative variables on a scatter plot. ➔ **L2#2** Choose which function type (linear or exponential) is suggested by the shape of the data.	➔ **L3#1** Represent data from two quantitative variables (that suggest an exponential relationship) on a scatter plot and describe how the variables are related. ➔ **L3#2** Fit a function (exponential) to a given set of data. ➔ **L3#3** Use an exponential function fitted to data to solve problems in the context of the data. ➔ **L3#4** Recognize that extrapolation may be unreliable for making predictions.	➔ **L4#1** Create a contextual situation with an embedded data set derived from a given (exponential) function. Explain the relationship between the function, data set, and the contextual situation using precise mathematical language and justifications. ➔ **L4#2** Use a given (exponential) function or function type to explain the relationship between two quantities in context. ➔ **L4#3** Explain why extrapolation may be unreliable for making predictions.

UNIT 7 | Polynomials & Factoring

Approximately 16 Days | January 24 - February 15, 2024

The focus of this unit is performing operations with polynomials and factoring polynomials to solve equations and reveal roots of polynomials.

Big Ideas Lessons - 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8

LESSON	STANDARD	UNIT 7 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
7.1 7.3	A1.A.SSE.A.1a Interpret parts of an expression, such as terms, factors, and coefficients. ★ ***S&C**	For example, interpret $P(1 + r)^n$ as the product of P and a factor not depending on P. There are no assessment limits for this standard. The entire standard is assessed in this course.* *(also included in Units 2 & 3)*	➔ **L1#1** Identify parts of an expression (i.e., factor, coefficient, term). ➔ **L1#4** Label the single entities in an expression. ➔ **L2#1** Recognize arithmetic operations in an expression in order to see the structure of the expression. ➔ **L2#2** Understand and use the definitions of terms, factors, coefficients, and like terms in order to describe the structure of the individual parts of the expression. ➔ **L2#3** Identify parts of an expression as a single entity. ➔ **L2#4** Recognize that individual parts of an expression affect the whole expression. ➔ **L2#5** State arithmetic operations performed within an expression.	➔ **L3#1** Interpret parts of an expression (i.e., term, factor, coefficient) embedded in a real-world situation and explain each part in terms of the context. ➔ **L3#2** Interpret parts of an expression (i.e., term, factor, and coefficient) and explain each part in terms of the function the expression defines. ➔ **L3#3** Explain the structure of an expression and how each term is related to the other terms by interpreting the arithmetic meaning of each term in the expression and recognizing when combining like terms is appropriate. ➔ **L3#4** Interpret an expression by describing each individual term as a single entity and the relationship to the expression.	➔ **L4#1** Interpret expressions in a variety of forms by explaining the relationship between the terms and the structure of the expression. ➔ **L4#2** Interpret parts of complex expressions with varying combinations of arithmetic operations and exponents by viewing one or more of their parts as a single entity. ➔ **L4#3** Write and interpret expressions that represent a real-world context and use the expressions to solve contextual problems. ➔ **L4#4** Write expressions in a wide variety of formats and then for each, describe the effects each term has considering them first individually and then considering them as a part of the expression.
7.1 7.2	A1.A.APR.A.1 Add, subtract, and multiply polynomials.	➔ **L1#1** Add and subtract linear expressions with rational coefficients.	➔ **L3#1** Add polynomial	➔ **L4#1** Add, subtract, and multiply multiple polynomial expressions, including

7.3	Use these operations to demonstrate that polynomials form a closed system that adhere to the same properties of operations as the integers. ***S&C***	*There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L2#1** Add two polynomial expressions where both expressions are comprised of the same degree monomials (i.e., $(x^2+x+3) + (2x^2-3x-4)$). ➔ **L2#2** Multiply two binomial expressions. ➔ **L2#3** Subtract two polynomial expressions where both expressions are comprised of the same degree monomials (i.e. $(x^2+x+3) - (2x^2-3x-4)$).	expressions. ➔ **L3#2** Subtract two polynomial expressions. ➔ **L3#3** Multiply polynomial expressions. ➔ **L3#4** Explain what it means for polynomials to be closed under the operations of addition, subtraction, and multiplication.	situations involving more than one operation. ➔ **L4#2** Explain the similarities that exist between adding, subtracting, and multiplying integers and adding, subtracting, and multiplying polynomials.
7.4	A1.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. ***S&C***	*Tasks are limited to ~~**linear, quadratic, and absolute value**~~ equations.* *(also included in Units 1 & 9)*	➔ **L1#2** Choose a possible next step to solve the equation, given a quadratic equation and a partial list of steps representing the solution path. ➔ **L1#3** Arrange steps in the order they should be applied to solve an equation, given a quadratic equation and a list of unordered steps representing the solution path. ➔ **L2#2** Explain the reasoning for each step, given a quadratic equation and a list of steps representing the solution path.	➔ **L3#1** Solve quadratic equations and explain the solution path. ➔ **L3#2** Construct a viable argument to justify a chosen solution path used to solve a quadratic equation. ➔ **L3#3** Determine an efficient solution path, given a quadratic equation with multiple solution paths.	➔ **L4#1** Solve the problem and justify the solution path chosen, given a real-world problem and a (quadratic) equation that represents the contextual situation. ➔ **L4#3** Correct the mistakes in the solution path and provide an explanation of the misconception using precise mathematical vocabulary, given a solution for a quadratic equation.
7.4 **7.5** **7.6** **7.7** **7.8**	A1.A.REI.B.3 Solve quadratic equations ~~and inequalities~~ in one variable. A1.A.REI.B.3a Solve quadratic equations by ~~inspection (e.g., for $x^2=49$), taking square roots, knowing and applying the quadratic formula, and~~ factoring, as appropriate to the initial form of the equation. Recognize when a quadratic equation has nonreal solutions. ***S&C***	*Tasks may or may not have a real-world context.* *(also included in Unit 9)*	➔ **L2#1** Factor a quadratic expression to generate an equivalent expression. ➔ **L2#2** Identify equivalent forms of quadratic expressions.	➔ **L3#3** Use factoring to solve a quadratic equation in one variable. ➔ **L3#6** Solve quadratic equations (by factoring) within a real-world context.	➔ **L4#1** Solve one-variable quadratic equations and explain why the chosen strategy (factoring) best suits the initial form of the quadratic equation. ➔ **L4#3** Create an example of when a quadratic equation would be used in a real-world context.

UNIT 8 | Graphing Quadratic Functions

Approximately 12 Days | February 16 - March 12, 2024

The focus of this unit is graphing quadratic functions. Students will analyze different forms of quadratic functions to identify characteristics. Standard form and vertex form are developed by transforming the parent function $f(x) = x^2$. Intercept form is developed from identifying the x-intercepts of the graph.

Big Ideas Lessons - 8.1, 8.2, 8.3, 8.4, 8.5, 8.6

LESSON	STANDARD	UNIT 8 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
8.1 8.2 8.3 8.4 8.5	A1.A.CED.A.2 ~~Create equations and inequalities in two variables to represent relationships between quantities and use them to solve problems in a real-world context~~. Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions. ★ ***S&C***	*Tasks are limited to* ***~~linear~~, quadratic, ~~and absolute value~~*** *equations & inequalities~~.~~* *(also included in Units 3, 4, & 9)*	➔ **L1#3** Identify appropriate units of measure within a given real-world context. ➔ **L2#3** Choose a two-variable quadratic equation or inequality to represent a real-world situation. ➔ **L2#5** Create a graph with appropriate scales and labels for a given real-world (quadratic) context.	➔ **L3#2** Graph a two-variable quadratic equation or inequality that represents a real-world context. ➔ **L3#3** Make predictions using the graph of a two-variable quadratic equation or inequality that represents a real-world context.	➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.
8.1 8.3 8.4	A1.F.IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. ★ ***S&C***	*Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and end behavior.* *Tasks are limited to* ***~~linear functions~~, ~~absolute value~~***	➔ **L1#1** Identify intercepts, maximums and minimums when provided a graphical representation of the (quadratic) function. ➔ **L1#2** Identify intervals where a given function is increasing, decreasing, positive or negative when provided a graphical representation of the (quadratic) function. ➔ **L2#2** Identify evident intercepts, maximums and minimums when provided a table of values representing	➔ **L3#2** Identify all evident key features when provided a table of values representing a quadratic function. ➔ **L3#3** Identify key features of the graph or table and interpret the meaning of the key features in relationship to the context of the problem, given a graph or table of values representing a quadratic function embedded in a real-world context.	➔ **L4#1** Identify key features of the graph and interpret the meaning of the key features in relationship to the context of the problem, given a quadratic function embedded in a real-world context, graph the function. ➔ **L4#3** Create a real-world context that would generate a (quadratic) function with the provided attributes, given key

	~~*functions,*~~ ***quadratic*** *functions,* ~~*and* ***exponential*** *functions with integer exponents.*~~ *(also included in Units 3 & 6)*	a quadratic function.	➔ **L3#6** Sketch a graph of the function, given a verbal description of the key features of a quadratic function.	features..
Include with **8.1** **8.4**	**A1.F.IF.B.5** Relate the domain of a function to its graph and, where applicable, to the context of the function it models. ★ ***S&C*** *| For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.* *Tasks are limited to* ~~***linear*** *functions,* ***piecewise*** *functions (including* ***step*** *and* ***absolute value*** *functions),* ***quadratic*** *functions,* ***and exponential*** *functions with integer exponents.*~~ *(also included in Unit 3, 4, & 6)*	➔ **L1#2-5** Identify the domain and range (of a quadratic function) from a: ◆ Table of values ◆ Discrete graph ◆ Mapping ◆ Set of ordered pairs ◆ Continuous graph **L2#2** ➔ **L2#3** Explain why a (quadratic) function is continuous or discrete given its graph.	➔ **L3#1** Explain how the domain relates to the graph of a (quadratic) function. ➔ **L3#2** Explain why a (quadratic) function is continuous or discrete given an equation. ➔ **L3#3** Describe how a (quadratic) function's domain is affected when situated within a context. ➔ **L3#4** Explain if a (quadratic) function is continuous or discrete, given a context.	➔ **L4#1** Determine an appropriate domain and range, given a (quadratic) function in context. ➔ **L4#2** Create a contextual situation to describe a (quadratic) function with a given domain and range.
8.1 **8.2** **8.3** **8.4** **8.5**	**A1.F.IF.C.7** Graph functions expressed algebraically and show key features of the graph by hand and using technology. ★ ***S&C*** *| Function types are limited to* ~~***linear*** *functions,*~~ ***quadratic*** *functions,* ~~***absolute value*** *functions, and* ***exponential*** *functions with integer exponents.*~~ *(also included in Units 3 & 6)*	➔ **L1#2** Use characteristics of the algebraic representation of a function to determine the function type and behavior of the graph. ➔ **L2#2** Sketch the graph of a quadratic function given intercepts and extrema. ➔ **L2#5** Infer restrictions on the domain and range from a (quadratic) graph. ➔ **L2#6** Identify key features, such as intercepts and extrema, from a graph of a quadratic function.	➔ **L3#2** Graph a quadratic function by hand and using technology identifying intercepts, maxima, and minima. ➔ **L3#4** Attend to precision when illustrating intercepts, maxima, and minima and determine the domain and range of the (quadratic) function.	➔ **L4#1** Explain the relationship that exists between a contextual problem and the key features of a graph for quadratic functions. ➔ **L4#2** Critique (quadratic) graphs drawn by others to ensure key features are shown efficiently and appropriately. ➔ **L4#3** Given a (quadratic) graph, write the corresponding function algebraically. ➔ **L4#4** Explain restrictions on domain and range (of a quadratic function) in context.
8.1 **8.2** **8.4**	**A1.F.BF.B.2** Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both	➔ **L1#1** Describe transformations that would map a geometric figure to its image using precise mathematical vocabulary.	➔ **L3#1** Describe the effect on the graph for specific values of *k*, given two (quadratic) functions, *f(x)* and *f(x) + k*.	➔ **L4#1** Given a graph of a (quadratic) function, write the equation by identifying the transformation(s) to the parent

	positive and negative); find the value of *k* given graphs. ***S&C**	Experiment with cases and illustrate an explanation of the effects on the graph using technology. Tasks are limited to ~~**absolute value and**~~ **quadratic functions**.* *(also included in Unit 3)*	➔ **L1#2** Write the function defined by *f(x)+k*, *kf(x)*, *f(x+k)*, and *f(kx)* given the (quadratic) parent function and a positive value of *k*. ➔ **L1#3** Graph the parent function $y = x^2$ using technology. ➔ **L2#1** Know and graph the parent function for quadratic functions. ➔ **L2#2** Use function notation to identify the difference between *f(x) + k* and *f(x+k)* and the difference between *kf(x)* and *f(kx)*.	➔ **L3#2** Describe the effect on the graph for specific values of *k*, given two (quadratic) functions, *f(x)* and *f(x + k)*. ➔ **L3#3** Describe the effect on the graph for specific values of *k*, given two (quadratic) functions, *f(x)* and *f(kx)*. ➔ **L3#4** Describe the effect on the graph for specific values of *k*, given two (quadratic) functions, *f(x)* and *kf(x)*. ➔ **L3#5** Describe the effects on a graph for more than one transformation using specific values of *a*, *h*, and *k* given two (quadratic) functions, *f(x)* and *af(x + h) + k*. ➔ **L3#6** Determine the value of *k* for vertical and horizontal translations, stretches, and compressions, given the graphs of the image and preimage (of quadratic functions).	function. ➔ **L4#2** Apply transformations to a (quadratic) function that has already been transformed. ➔ **L4#3** Explain why changes to the argument of *f(x)* affect the input values and changes outside the function affect the output values.
8.3 **8.6**	A1.F.IF.C.9 Compare properties of functions represented algebraically, graphically, numerically in tables, or by verbal descriptions. ★ A1.F.IF.C.9a Compare properties of two different functions. Functions may be of different types and/or represented in different ways. ★ A1.F.IF.C.9b Compare properties of the same function on two different intervals or represented		➔ **L1#1** Identify the y-intercept of a function from multiple representations. ➔ **L2#1** Identify the zeros of a function from multiple representations. ➔ **L2#2** Identify the vertex of a quadratic function from multiple representations. ➔ **L2#4** Describe connections among multiple representations of a quadratic function. ➔ **L2#7** Move fluently among multiple representations of a function.	➔ **L3#3** Compare properties of two quadratic functions each represented in a different way. ➔ **L3#4** Compare properties of two functions from different function families each represented in a different way. ➔ **L3#5** Compare properties of the same function on two different intervals or represented in two different ways.	➔ **L4#1** Compare properties of two functions within a context. ➔ **L4#2** Use precise mathematical vocabulary to explain the relationships of the various representations of a function.

	in two different ways. ★ ***S&C*** *| Functions may or may not have a real-world context. Function types are limited to* ***linear*** *functions,* ***quadratic*** *functions,* ***absolute value*** *functions, and* ***exponential*** *functions with integer exponents~~:~~* *(also included in Unit 3)*			
8.5	**A1.F.IF.C.8** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. ★ **A1.F.IF.C.8a** Rewrite quadratic functions to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a real-world context.★ ***S&C*** *| There are no assessment limits for this standard. The entire standard is assessed in this course.* *(exclusively in this unit)*	➔ **L1#1** Understand that the zeros of a quadratic function are located on the *x*-axis (as the *x*-intercepts). ➔ **L1#2** Identify the zeros from a given graph of a quadratic function. ➔ **L1#3** Identify the vertex from a given graph of a quadratic function. ➔ **L1#4** Identify the axis of symmetry from a given graph of a quadratic function. ➔ **L2#1** Graph a quadratic function. ➔ **L2#2** Factor a quadratic expression. ➔ **L2#3** Identify the zeros, given a quadratic function in factored form. ➔ **L2#4** Identify an extreme value, given a quadratic in vertex form. ➔ **L2#5** Recognize the *y*-value of the vertex of the graph of a quadratic function as a minimum or maximum.	➔ **L3#1** Rewrite quadratic functions in different but equivalent forms. ➔ **L3#2** Interpret the meaning of zeros, extreme values, and symmetry of the graph in the context of a real-word problem. ➔ **L3#3** Recognize which form of a quadratic function is most appropriate for revealing certain properties, when given a real-world problem.	➔ **L4#1** Write a quadratic function from a real-world context given zeros or the extreme value, and one additional point. ➔ **L4#2** Create a real-world contextual problem that matches a given set of key features for a quadratic graph.
8.6	**A1.F.IF.B.6** Calculate and interpret the average rate of change of a function (presented algebraically or as a table) over a specified interval. Estimate and interpret the rate of change from a graph. ★ ***S&C*** *| Tasks are limited to* ~~***linear*** *functions,* ***piecewise*** *functions (including* ***step*** *and* ***absolute value*** *functions),~~	➔ **L2#5** Choose the estimated rate of change for a specific interval when given a quadratic function.	➔ **L3#1** Calculate the average rate of change when given an equation or table of a quadratic function. ➔ **L3#2** Interpret the average rate of change of a quadratic function. ➔ **L3#3** Estimate the average rate of change for a specific interval of a	➔ **L4#1** Identify the average rate of change for specific intervals of a function as being greater or less than other intervals of the same (quadratic) function. ➔ **L4#2** Compare the average rate of change of multiple intervals of the same (quadratic) function and make connections to the

	quadratic *functions,* ~~*and* **exponential** *functions with integer exponents.*~~ *(also included in Units 4 & 6)*		quadratic function when given a graph.	real-world situation. ➔ **L4#3** Create a contextual situation & interpret the average rate of change. with a specific interval.

UNIT 9 | Solving Quadratic Functions

Approximately 13 Days | March 13 - April 1, 2024

The focus of this unit is solving quadratic equations using a variety of methods: graphing, using square roots, and using the Quadratic Formula. Students will consider which method is most efficient as they learn new methods.

Big Ideas Lessons - 9.1*, 9.2, 9.3, 9.4, 9.5 **(*NOTE: Lesson 9.1 can be used at teacher discretion)**

LESSON	STANDARD	UNIT 9 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
9.1 9.3	A1.A.CED.A.4 Rearrange formulas to isolate a quantity of interest using algebraic reasoning. ★ ***S&C*** *| Tasks are limited to formulas involving* ~~***linear***~~***, quadratic***, ~~*and* ***absolute value***~~ *expressions. For example, rearrange the formula for the perimeter of a rectangle to isolate the length or width.* *(also included in Unit 1)*	➔ **L1#2** Solve equations that require finding the square root of a number. ➔ **L2#2** Solve quadratic equations and explain the solution path.	➔ **L3#1** Describe the properties that allow an equation to be written in an equivalent form. ➔ **L3#2** Rearrange real-world quadratic formulas to highlight a quantity of interest.	➔ **L4#1** Rearrange real-world quadratic formulas and explain the benefit of solving the formula for the various variables.
9.1 9.3 9.4 9.5	A1.A.REI.B.3 Solve quadratic equations and inequalities in one variable. A1.A.REI.B.3a Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, knowing and applying the quadratic formula, ~~and factoring~~, as appropriate to the initial form of the equation. Recognize when a quadratic equation has nonreal solutions. A1.A.REI.B.3b Solve quadratic inequalities using the	➔ **L1#1** Identify the relationship between squaring a number and taking the square root of a number as inverse operations. ➔ **L1#2** Understand that a square root generates two values (positive and negative). ➔ **L1#3** Solve equations that require finding the square root of a number in the form $x^2 = p$, where p is a positive rational perfect square number. ➔ **L1#4** Identify the square root of a non-perfect square is irrational. Determine if a number is rational or irrational.	➔ **L3#1** Solve a quadratic equation in one variable by inspection or taking square roots. ➔ **L3#2** Know and apply the quadratic formula to solve a quadratic equation in one variable. ➔ **L3#4** Recognize when a quadratic equation in one-variable has real solutions or nonreal solutions. ➔ **L3#5** Use the graph of the related quadratic equation to solve a simple quadratic inequality in one variable. ➔ **L3#6** Solve quadratic equations	➔ **L4#1** Solve one-variable quadratic equations, identify the strategy chosen, and explain why the chosen strategy best suits the initial form of quadratic equation. ➔ **L4#2** Explain why an infinite set of solutions bounded within an interval is the solution to a quadratic inequality. ➔ **L4#3** Create an example of when a quadratic equation or inequality would be used in a real-world context.

	graph of the related quadratic equation. ***S&C***	*Tasks may or may not have a real-world context.* *(3a also included in Unit 7)*	➔ **L2#2** Identify equivalent forms of quadratic expressions. ➔ **L2#3** Use coefficients from the standard form of a quadratic equation appropriately in the quadratic formula. ➔ **L2#4** Choose the possible intervals that could be solutions given a graph to a quadratic inequality in one variable.	and inequalities within a real-world context.	
9.3 **9.4**	A1.A.REI.A.1 Understand solving equations as a process of reasoning and explain the reasoning. Construct a viable argument to justify a solution method. ***S&C***	*Tasks are limited to* ~~***linear***~~, ***quadratic***, ~~*and* ***absolute value***~~ *equations.* *(also included in Units 1 & 7)*	➔ **L1#1** Choose the inverse operations used in solving the equation, given a quadratic equation and a list of steps representing the solution path. ➔ **L1#2** Choose a possible next step to solve the equation, given a quadratic equation and a partial list of steps representing the solution path. ➔ **L1#3** Arrange steps in the order they should be applied to solve an equation, given a quadratic equation and a list of unordered steps representing the solution path. ➔ **L2#2** Explain the reasoning for each step, given a quadratic equation and a list of steps representing the solution path.	➔ **L3#1** Solve quadratic equations using multiple solution strategies and explain the solution path. ➔ **L3#2** Construct a viable argument to justify a chosen solution path used to solve a quadratic equation. ➔ **L3#3** Determine an efficient solution path, given a quadratic equation with multiple solution paths.	➔ **L4#1** Solve the problem and justify the solution path chosen, given a real-world problem and a (quadratic) equation that represents the contextual situation. ➔ **L4#2** Compare and contrast two given solution paths to a contextual problem and construct a viable argument on which method is most efficient. ➔ **L4#3** Correct the mistakes in the solution path and provide an explanation of the misconception using precise mathematical vocabulary, given a solution for a quadratic equation.
9.2	A1.S.ID.B.4 Represent data from two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. ★ ***S&C***	*Fitted functions are limited to* ~~***linear, exponential,***~~ ~~*and* ***quadratic***~~ *functions.* *(also included in Units 4 & 6)*	➔ **L1#2** Informally decide if a given scatter plot is best represented by a linear or non-linear function. ➔ **L2#1** Represent data from two quantitative variables on a scatter plot. ➔ **L2#2** Choose which function type (linear, quadratic, or exponential) is suggested by the shape of the data.	➔ **L3#1** Represent data from two quantitative variables (that suggest a quadratic relationship) on a scatter plot and describe how the variables are related. ➔ **L3#2** Fit a function (quadratic) to a given set of data. ➔ **L3#3** Use a quadratic function fitted to data to solve problems in the context of the data. ➔ **L3#4** Recognize that extrapolation may be unreliable	➔ **L4#1** Create a contextual situation with an embedded data set derived from a given (quadratic) function. Explain the relationship between the function, data set, and the contextual situation using precise mathematical language and justifications. ➔ **L4#2** Use a given (quadratic) function or function type to explain the relationship between two quantities in

			for making predictions.	context. ➔ **L4#3** Explain why extrapolation may be unreliable for making predictions.
9.3 **9.4** **9.5**	A1.A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems in a real-world context. ★ ***S&C***	*Tasks are limited to* ***~~linear, quadratic~~***, *and* ***~~absolute value~~*** *equations and inequalities.* *(also included in Units 1 & 2)*	➔ **L2#2** Choose a quadratic equation or inequality to represent a real-world situation. ➔ **L2#3** Solve a one-variable quadratic equation or inequality.	➔ **L3#1** Create and solve a one-variable quadratic equation that represents a real-world situation. ➔ **L3#3** Create and solve a one-variable quadratic inequality that represents a simple real-world situation.	➔ **L4#1** Create a real-world situational problem to represent a given quadratic equation or inequality. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.
Include with 9.3	A1.A.CED.A.2 Create equations and inequalities in two variables to represent relationships between quantities and use them to solve problems in a real-world context. ~~Graph equations with two variables on coordinate axes with labels and scales, and use the graphs to make predictions~~. ★ ***S&C***	*Tasks are limited to* ***~~linear~~***, ***quadratic***, ***~~and absolute value~~*** *equations & inequalities.* *(also included in Units 3, 4, & 8)*	➔ **L2#3** Choose a two-variable quadratic equation or inequality to represent a real-world situation. ➔ **L2#4** Solve a two-variable quadratic equation or inequality.	➔ **L3#1** Create & solve a two-variable quadratic equation or inequality that represents a real-world context.	➔ **L4#1** Create a real-world situational problem to represent a given quadratic equation or inequality. ➔ **L4#2** Interpret and validate results by comparing with the situation and improve upon when necessary.

UNIT 10 | Data Analysis & Displays

Approximately 9 Days | April 2 - April 12, 2024

The focus of this unit is interpreting qualitative and quantitative data. This includes summarizing, representing, interpreting, and analyzing data, noting any patterns or deviations from patterns. The center and spread of a data set are important, along with knowing which statistics to compare, which data display to use, and what the results of a comparison might mean.

Big Ideas Lessons - 10.1, 10.2, 10.3, 10.4

LESSON	STANDARD	UNIT 10 INSTRUCTIONAL FOCUS		
		APPROACHING UNDERSTANDING (L1-2)	GRADE-LEVEL UNDERSTANDING (L3)	EXTENSIVE UNDERSTANDING (L4)
10.1	A1.S.ID.A.1 Use measures of center to solve real-world and mathematical problems. ★ ***S&C**	*Measures of center should include mean (including weighted averages), median, and mode. For example, a course has 6 tests during the semester. If your average after the first 5 tests is 85, what must you score on the 6th test to have at least an 87 semester average?* *(exclusively in this unit)*	➔ **L1#1** Find the mean, median, and mode given a list of data. ➔ **L2#1** Choose the measure of center most appropriate to the context. ➔ **L2#2** Find the weighted average of a data set.	➔ **L3#1** Use mean, median, and mode to solve real-world and mathematical problems, including weighted averages.	➔ **L4#1** Create an example of a real-world problem that requires a specified measure of center to solve and explain the best solution method.
10.1 10.2 10.3	A1.S.ID.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points. ★ ***S&C**	*Students may be given a numerical data set or a visual and/or verbal depiction of the data set.* *(exclusively in this unit)*	➔ **L1#1** Determine the mean, median, mode, range, and interquartile range of a single set of data from a table. ➔ **L1#2** Identify unusual or extreme data points in a data set. ➔ **L2#1** Recognize and describe different distribution shapes and their appropriate measures of center and spread. ➔ **L2#2** Interpret data displayed in dot plots, box plots, stem plots, and histograms.	➔ **L3#1** Interpret differences in shape, center, and spread of the data sets in context given a numerical data set or a visual and/or verbal description of the data. ➔ **L3#2** Describe the effect of an extreme value on the shape, center, and spread of a data set.	➔ **L4#1** Use justifications about appropriate measures of center and spread to interpret differences between data sets in context. ➔ **L4#2** Explain advantages and disadvantages of using each measure of center and spread. ➔ **L4#3** Explain and relate in context how extreme values affect the mean and median differently.

10.3	A1.S.ID.A.2 Use statistics appropriate to the shape of the data distribution to compare center mean, median, and/or mode) and spread (range, interquartile range) of two or more different data sets. ★ ***S&C**	Students may be given a numerical data set or a visual and/or verbal depiction of a data set. Shapes of distribution are limited to: uniform, symmetric, right skewed, and left skewed.* *(exclusively in this unit)*	➔ **L1#1** Determine the mean, median, and mode of a single set of data from a table. ➔ **L1#2** Determine the range and interquartile range of a single set of data from a table. ➔ **L1#3** Define center and spread, when related to a data set. ➔ **L2#1** Recognize and describe different distribution shapes using the appropriate mathematical terms: uniform, symmetric, right skewed, and left skewed. ➔ **L2#2** Calculate the mean, median, mode, range, and interquartile range of a data set using technology.	➔ **L3#1** Explain similarities and differences using the mean, median, and/or mode and range and/or interquartile range of two or more data sets and describe how they relate to the shape of the data distribution. ➔ **L3#2** Given a numerical data set or a visual and/or verbal depiction of a data set, choose which measure of center and measure of spread are most appropriate to the shape of the data distribution.	➔ **L4#1** Compare and contrast the shape and measures of center and spread of multiple data sets. ➔ **L4#2** Relate the shape and the measures of center and spread in a real-world context and write a conclusion using appropriate mathematical vocabulary.
10.4	A1.N.Q.A.1a Choose and interpret the scale and the origin in ~~graphs and~~ data displays. ★ ***S&C**	Apply this standard to any real-world problems studied within the scope of this course.* *(include in all units when appropriate)*	➔ **L1#2** Choose a data display, with appropriate scale and/or units, to represent a real-world problem. ➔ **L1#3** Identify individual quantities in context, label them with appropriate units, and connect the units to the values in the real-world problem. ➔ **L2#2** Choose an interpretation of a data display, with appropriate scale and/or units, that represents a real-world problem.	➔ **L3#1** Choose and interpret units, scale, and the origin in data displays that represent a real-world problem, including problems that contain real-world formulas. ➔ **L3#2** Determine the most appropriate data display based on the units given in a problem.	➔ **L4#2** Explain the interpretation of the units, scale, and origin with respect to the contextual situation using precise mathematical vocabulary. ➔ **L4#3** Create a real-world problem involving data, represented either in a table or graph, in which the data must be analyzed for appropriate units and scale. ➔ **L4#4** Flexibly represent quantities in modeling situations with data displays, numerically, algebraically, and graphically and explain relationships among representations.