Unit 2: Expressions & Equations

Content Area:	**Template**
Course(s):	
Time Period:	**Full Year**
Length:	**Full Year**
Status:	**Published**

UNIT RATIONALE

The purpose of teaching the unit Expressions and Equations is to allow students to model real-world situations through algebraic expressions, equations, and inequalities in order to solve problems and predict unknowns.

ESSENTIAL QUESTIONS

- What are the methods we can use to simplify an expression?

- How can properties of equality isolate the variable when solving a one- or two-step equation or inequality?

- Why is the order in which we solve an equation or inequality important when determining the solution?

- How is an inequality different from an equation in terms of solving, solutions, and graphing?

- How can we represent unknowns in real-world situations that involve a constant rate of change and initial value by use of an equation or inequality?

STANDARDS

NEW JERSEY STUDENT LEARNING STANDARDS: CONTENT AREA

New Jersey (NJSLS) - Grade 7 - Mathematics (2020)

MA.7.EE	Expressions and Equations
MA.7.EE.A	Use properties of operations to generate equivalent expressions.
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

MA.7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
MA.7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
MA.7.EE.B.4b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

New Jersey (NJSLS) - K-12 - Math Practice Standards (2020)

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.K-12.8	Look for and express regularity in repeated reasoning.

NEW JERSEY STUDENT LEARNING STANDARDS: CAREER READINESS, LIFE LITERACIES AND KEY SKILLS

TECH.9.4.8.TL.1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
TECH.9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.TL.5	Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.
TECH.9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.
TECH.9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

NEW JERSEY STUDENT LEARNING STANDARDS: COMPUTER SCIENCE AND DESIGN THINKING

CS.6-8.8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.

PRE-ASSESSMENTS

None given for this unit.

INSTRUCTIONAL PLAN

MODULE 1

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to apply the distributive property so that we can simplify algebraic expressions involving parentheses and also so that we can make mental math calculations easier.
Student Learning Strategies	-Peardeck Lesson on Distributive Property -IXL Lessons R.13 and R.14
Success Criteria	I can simplify an expression using the distributive property. I can perform mental math calculations using the distributive property.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Distributive Property](#)

MODULE 2

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to simplify algebraic expressions so that we can solve problems that involve the collection of like terms.
Student Learning Strategies	-Peardeck Lesson on Simplifying Expressions. -IXL Lessons R.8 through R.12; R.15 through R.17
Success Criteria	I can identify parts of an expression (terms, coefficient, etc.) I can simplify an expression by combining like terms
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

Simplifying Algebraic Expressions

MODULE 3

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to add and subtract linear expressions so that we can simplify expressions and develop skills that will be used for solving equations
Student Learning Strategies	-Peardeck Lesson on Adding & Subtracting Linear Expressions. -IXL Lessons R.15 through R.17; R.20 through R.23
Success Criteria	I can add and subtract linear expressions by combining like terms and using rules for integers.
Formative Assessment (drives instructional	-Peardeck lesson interaction & feedback.

decisions)	-Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

Adding & Subtracting Linear Expressions

MODULE 4

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve one step equations using addition and subtraction so that we can solve real-world problems that involve unknown quantities
Student Learning Strategies	-Peardeck Lesson on Solving One Step Equations with Addition and Subtraction. -IXL Lessons S.1 through S.6
Success Criteria	I can solve a one step equation involving addition or subtraction by applying inverse operations. I can check the solution to an equation that I have solved by substitution into the original equation. I can write an equation for a word problem and use that equation to solve that problem.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

MODULE 5

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve one step equations using multiplication and division so that we can s... real-world problems that involve unknown quantit...
Student Learning Strategies	-Peardeck Lesson on Solving One Step Equation... using Multiplication & Division. -IXL Lessons S.1 through S.6
Success Criteria	I can solve a one step equation involving multiplication or division by applying inverse operations. I can check the solution to an equation that I have solved by substitution into the original equation. I can write an equation for a word problem and u... that equation to solve that problem.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students

MODULE 6

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve one step equations with fractional coefficients so that we can solve re... world problems involving unknown quantities.
Student Learning Strategies	-Peardeck Lesson on Solving Reciprocal Equatio...

	-IXL Lessons S.1 through S.6
Success Criteria	I can solve a one step equation with a fractional coefficient by multiplying by the reciprocal. I can check the solution to an equation with fracti coefficients by substitution into the original equati and by drawing a bar diagram to check reasonableness.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

Solving Reciprocal Equations

MODULE 7

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve two step equations that we can solve real-world problems that involv unknown quantities.
Student Learning Strategies	-Peardeck Lesson on Solving Two Step Equatior -IXL Lessons S.7 through S.13
Success Criteria	I can solve a two step equation by applying invers operations. I can check the solution to two step equation that have solved by using substitution into the origina equation. I can write a two step equation for a real-world problem and use that equation to solve that probl
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.

Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Solving Two-Step Equations](#)

MODULE 8

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to write and graph inequaliti so that we can represent real-world situations for unequal quantities and to represent their solution visually.
Student Learning Strategies	-Peardeck Lesson on Writing and Graphing Inequalities. -IXL Lessons T.2 and T.3
Success Criteria	I can write an inequality for a real-world situation. I can write an inequality given its graph on a num line. I can graph an inequality on a number line.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Writing and Graphing Inequalities](#)

MODULE 9

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve one-step inequaliti using addition and subtraction so that we can sol real-world problems that involve unknown quantit

Student Learning Strategies	-Peardeck Lesson on Solving Inequalities Using Addition & Subtraction. -IXL Lessons T.1 and T.4
Success Criteria	I can solve an inequality involving addition and subtraction by using inverse operations. I can check the solution to an inequality that I hav[e] solved by substitution into the original inequality a[nd] by graphing the solution on a number line.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Solving Inequalities Using Addition & Subtraction](#)

MODULE 10

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve one step inequalitie[s] using multiplication and division so that we can s[olve] real-world problems that involve unknown quantit[ies.]
Student Learning Strategies	-Peardeck Lesson on Solving Inequalities Using Multiplication & Division. -IXL Lessons T.1 and T.4
Success Criteria	I can solve an inequality involving multiplication o[r] division by using inverse operations. I can check the solution to an inequality that I hav[e] solved by substitution into the original inequality a[nd] by graphing the solution on a number line.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.

Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Solving Inequalities Using Multiplication and Division](#)

MODULE 11

Student Learning Intentions (SLI) WALT: (We are learning to…)	We are learning how to solve two step inequalitie so that we can solve real world problems that involve unknown quantities.
Student Learning Strategies	-Peardeck Lesson on Solving Two Step Inequalit -IXL Lessons T.6 through T.8
Success Criteria	I can solve a two step inequality by applying inve operations. I can check the solution to an inequality that I hav solved by using substitution into the original inequality and by graphing the solution on a num line.
Formative Assessment (drives instructional decisions)	-Peardeck lesson interaction & feedback. -Quizizz, Kahoot!, or Blooket results. -Whiteboard practice problems. -Exit ticket.
Activities and Resources	Interactive notebooks.
Suggested Modifications	Students can work in groups.

[Solving Two-Step Inequalities](#)

REFLECTIONS

This unit was very successful. It is best to emphasize early on with the one step equations that solving equations requires working on both sides. Treat it like a double-sided scale. Also a great idea to emphasize the check step as well, as it will ensure that the equations are solve correctly.

INTERDISCIPLINARY CONNECTIONS: NEW JERSEY STUDENT LEARNING STANDARDS FOR ELA, SOCIAL STUDIES, SCIENCE AND/OR MATHEMATICS

LA.K-12.NJSLSA.W1	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
LA.RI.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.
LA.K-12.NJSLSA.W2	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
LA.W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
LA.W.7.2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.