

Unit 2: Solving Equations

Algebra Prep

11 meetings

Revised January 2026

Essential Questions

- How can number properties help solve real-world equations?
- When do algebraic equations solve mathematical situations?

Enduring Understandings with Unit Goals

EU 1: Properties of real numbers, properties of equality, and inverse operations can be used to solve equations in one variable

- Apply the distributive property to evaluate expressions
- Evaluate and simplify expressions by combining like terms
- Utilize inverse operations to solve one- and two-step equations

EU 2: There is a precise order to solving multi-step equations

- Apply the five steps to solving multi-step equations to isolate a variable
- Isolate a variable by moving the variable to one side of an equation

EU 3: Equations can have one solution, no solution, or infinitely many solutions

- Simplify expressions and move the variable to one side of the equation to solve a multi-step equation
- Apply the five steps to solving multi-step equations to isolate a variable and determine how many solutions exist

Standards

Common Core State Standards:

- **8.EE.C.7:** Solve linear equations in one variable.
- **8.EE.C.7. A:** Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
- **8.EE.C.7. B:** Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Unit 2: Solving Equations

Algebra Prep

11 meetings

Revised January 2026

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Solving Multi-Step Equations

- Solve a two-step equation
- Simplify expressions by combining like terms to solve equations
- Apply the distributive property when solving equations
- Solve an equation that contains fractions
- Solve an equation that contains decimals
- Vocabulary: additive inverse property, addition equality property, coefficient, constant, cross-multiplication, distributive property, division equality property, isolate the variable, leading coefficient, leading term, like terms, multiplicative identity property, multiplicative inverse property, multiplication equality property, one solution, place value, proportion, subtraction equality property, symmetric property, term, variable

2. Solving Multi-Step Equations with Variables on Both Sides

- Solve an equation with variables on both sides
- Solve an equation that requires distributing and/or combining like terms with variables on both sides
- Vocabulary: additive inverse property, additive identity property, addition equality property, coefficient, constant, cross-multiplication, descending order, distributive property, division equality property, isolate the variable, leading coefficient, leading term, like terms, multiplicative identity property, multiplicative inverse property, multiplication equality property, one solution, place value, proportion, rational number, simplest form, substitution property, subtraction equality property, symmetric property, term, variable

3. Solving Equations with Special Cases

- Determine if an equation has one solution, no solution, or infinitely many solutions
- Vocabulary: additive inverse property, additive identity property, addition equality property, coefficient, constant, distributive property, division equality property, isolate the variable, leading coefficient, leading term, like terms, multiplicative identity property, multiplicative inverse property, multiplication equality property, one solution, no solution, infinitely many solutions, place value, simplest form, subtraction equality property, symmetric property, term, variable

Unit 2: Solving Equations

Algebra Prep

11 meetings

Revised January 2026

Interdisciplinary Connection:

- Language Arts - Word Problems, Think-Write-Pair-Share (TWPS) and Claim-Evidence Reasoning (CER)
- Science – Word Problems

Daily Learning Objectives with *TWPS Activities*

Students will be able to...

- Solve and explain two - step equations in one variable
 - *TWPS – What is the error in the student’s work?*
- Apply the distributive property to simplify expressions and solve equations
 - *TWPS – What does the term “distribute” mean? How would you distribute the term in this equation?*
- Combine like terms to simplify expressions and solve equations.*
 - *TWPS – Which of the equations does not belong with the rest? Explain.*
- Apply inverse operations in the correct order to solve multi-step equations in one variable
 - *TWPS – Which of the three statements about solving equations is a lie?*
- Solve and justify equations with a variable on both sides of the equal sign
 - *TWPS - What is the error in the student’s work in solving this equation?*
- Apply inverse operations in the correct order to solve multi-step equations with variables on both sides of the equal sign.
 - *TWPS – How can you explain the steps needed to solve this equation? What math vocabulary did you use?*
- Solve and justify equations that have one solution, no solution, or infinitely many solutions.
 - *TWPS – Describe the difference between an equation with one solution, no solution, and infinitely many solutions.*

Instructional Strategies/Differentiated Instruction

- Whole-group instruction
- Creating authentic connections for students
- Rephrasing and restatement of information and concepts
- Guided notes
- Student-led instruction
- Independent problem-solving
- Collaborative problem-solving
- Cross-curricular problem solving (independent and collaborative)
- Accountable Talk
- Manipulatives
- Cumulative Homework
- Visuals to support instruction
- Math Stations (Rotations)

Unit 2: Solving Equations

Algebra Prep

11 meetings

Revised January 2026

- Pre-teaching and reteaching
- Multiplication charts
- Number lines
- Explicit instruction
- Color-coding
- Small group check in
- Differentiated homework assignments
- Differentiated assessments

EL DIFFERENTIATED INSTRUCTION:

- Word Walls with visuals
- TWPS (Think-Write-Pair-Share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit Modeling
- Key Vocabulary
- Graphic Organizers
- Strategic Grouping
- Non-verbal Assessments

Assessments

FORMATIVE ASSESSMENTS:

- Accountable Talk Discussions
- Daily Think-Write-Pair Share (TWPS)
- Claim-Evidence Reasoning (CER)
- Daily Do Now: Spiral Review
- Whiteboards
- Mid-class check-ins
- Exit Slips
- Cumulative Homework
- Performance Task – Minecraft
 - Summative Performance Task Assessment Rubric

SUMMATIVE ASSESSMENTS:

- Pear Assessment Quiz 1 – EU 1
- Pear Assessment Unit 2 Test – EU 1 and EU 2
- Performance Task – Minecraft
 - Summative Performance Task Assessment Rubric

Unit 2: Solving Equations

Algebra Prep

11 meetings

Revised January 2026

Unit Task

Unit Task Name: Minecraft

Description: Students will use information learned in this unit about how there are properties that can be used to simplify mathematical expressions (EU 1), how inverse operations can be used to solve linear equations (EU 2), and how there is a precise order to solving multi-step equations (EU 3) in order to complete a set of tasks specific to coding a Minecraft game. Students will be investigating features of the video game and how two characters' performances compare. They will be asked to write and solve a series of problems as well as review and apply the algebraic terms and concepts learned in this unit.

Evaluation: Summative Performance Task Assessment Rubric

Unit Resources

- Worksheets
- Calculator
- Laptops
- SBAC Prep Online
- Pear Assessment
- Interactive Notebooks
- Khan Academy
- Blooket
- Prodigy
- Quizizz
- Individual Whiteboards
- Online Resources: Math Stations
- Task Cards
- Partner/Group Games