

# Module 2 Topic 2

Content Area: **Math**  
Course(s):  
Time Period: **Full Year**  
Length: **8 Sessions**  
Status: **Published**

## Solving Linear Equations and Inequalities

---

### Standards

---

MATH.9-12.N.Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MATH.9-12.N.Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
MATH.9-12.A.CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
MATH.9-12.A.CED.A.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
MATH.9-12.A.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
MATH.9-12.A.REI.A.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
MATH.9-12.A.REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

### Learning Objectives

---

- Lesson 1: Students use the Properties of Equality, to investigate ways to change the, outcome of given number sentences, and reason that a mathematical, sentence that is always true is still, always true and that one that is false, is still false. They solve linear equations, and play Tic-Tac-Bingo, creating, equations with given solution types, from assigned expressions.
- Lesson 2: Students identify the slope and, intercepts of functions in general,, factored, and standard form. They, determine the same characteristics, for the equation  $Ax + By = C$ . They then, explain which form is more efficient, in determining the slope and the x and y-intercepts. Next, the term literal, equation is defined. Students rewrite, different literal equations to solve for, given variables.
- Lesson 3: Students use the graph of a function, modeling a scenario with a positive rate, of change to determine solutions to, linear inequalities. They write and solve, two-step inequalities algebraically,, Students solve linear inequalities, for a scenario with a negative rate, of change that affects the inequality, sign. They solve linear inequalities that, require more than two steps to solve.
- Lesson 4: Students determine the inequality, symbols that complete statements, about a scenario represented by, compound inequalities and express, them in compact form. Given a, scenario, they express the inequalities, using symbols, then solve and graph, the inequalities. Students solve and, graph

compound inequalities, including, those written in compact form.

## Essential Skills

---

- Lesson 1: A solution to an equation is any variable value that makes that equation true., • Solving equations requires the use of number properties and the Properties of Equality., • When applying the Properties of Equality to an equation, the transformed equation will, have the same solution as the original equation., • Equations have infinite solutions when the two expressions on either side of the equals, sign are equivalent., • Equations have no solution when the expressions on either side of the equals sign are, both in the form  $ax + b$  with the same value for  $a$  and different values for  $b$ .
- Lesson 2: The general form of a linear equation is  $y = ax + b$ , where  $a$  and  $b$  are real numbers,  $a$ , represents the slope, and  $b$  represents the  $y$ -intercept., • The factored form of a linear equation is  $y = a(x - c)$ , where  $a$  and  $c$  are real numbers,,  $a$  represents the slope, and  $c$  represents the  $x$ -intercept., • The standard form of a linear equation is  $Ax + By = C$ , where  $A$  is a positive integer,,  $B$  and  $C$  are integers, and both  $A$  and  $B \neq 0$ ., • The general form of a linear equation is the most useful form to identify the slope, and  $y$ -intercept., • The factored form of a linear equation is the most useful form to identify the slope, and  $x$ -intercept., • You can rewrite literal equations to highlight a specific variable.
- Lesson 3: You can model linear inequality situations with a table of values, graph on a coordinate, plane, graph on a number line, or an inequality statement., • You can determine solutions to linear inequalities either graphically and algebraically, and express them using a number line or inequality statement., • The steps to solve a linear inequality algebraically are the same as the steps to solve a, linear equation., • When solving a linear inequality with a negative rate of change, reverse the solution's, inequality to reflect the relationship accurately
- Lesson 4: A compound inequality is an inequality formed by the union or the intersection of two, simple inequalities., • It is possible to write some compound inequalities in compact form., • The solution of a compound inequality (conjunction) written in the form  $a < x < b$ , where,  $a$  and  $b$  are any real numbers, is the part or parts of the solutions that satisfy both of, the inequalities., • The solution of a compound inequality (disjunction) written in the form  $x < a$  or  $x > b$ ,, where  $a$  and  $b$  are any real numbers, is the part or parts of the solutions that satisfies, either of the inequalities.

## Instructional Tasks/Activities

---

- Arts inspired projects
- Exit Ticket
- Formative Assessments
- Graphic Organizers
- Ladder Activity
- Mathia
- Pie Activity
- Quizizz
- Review, makeup assignments, complete missing assignments, absent work
- Stations or rotational activities
- Workbook Pages
- Worksheets

## **Assessment Procedure**

---

- Exit Ticket/Entrance Ticket/Do Now
- Kahoot
- Problem Correction
- Project
- Quiz
- Review
- Rubric
- Teacher Collected Data
- Test
- Worksheet

## **Recommended Technology Activities**

---

- Appropriate Content Specific Online Resource
- Chromebook
- Diffit
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- MATHia
- Online assessments
- Power Point
- Quizizz
- Screencastify

## **Accommodations & Modifications & Differentiation**

---

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

## **Gifted and Talented**

---

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

## **Instruction/Materials**

---

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- large print
- modified quiz as needed
- modified test as needed
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

## **Environment**

---

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group

- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

## Resources

---

- Carnegie Learning MATHbook
- Diffit
- [www.KhanAcademy.com](http://www.KhanAcademy.com)

## State Mandated Topics in this Unit

<u>State Mandated Topics Addressed in this Unit</u>	
N/A	N/A