Unit 3: Solving Linear Inequalities

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Week 10**
Length: **4 Weeks**
Status: **Published**

Unit Overview

In this unit, students will use properties of equality and the distributive property to solve one, two, and multi-step linear inequalities in one variable. These will include equations with variables on both sides and absolute value equations and compound inequalities using *and* or *or*. Students will also solve absolute value equations and inequalities in one variable.

Standards

MA.A-CED.A.1	Create equations and inequalities in one variable and use them to solve problems.
MA.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.
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.
MA.A-REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Essential Questions

- How can mathematical models be used to clarify mathematical relationships?
- How can mathematical models be used to describe physical relationships?

Application of Knowledge and Skills...

Students will know that...

- 1. linear inequalities can be solved by using the same steps used to solve linear equations
- 2. linear inequalities are solved by using the properties of equality
- 3. linear inequalities have an infinite number of solutions
- 4. absolute value equations have two solutions

Students will be able to...

- a. solve single and multi-step inequalities
- b. solve compound inequalities
- c. solve absolute value equations
- d. solve absolute value inequalities

Assessments

- Absolute Value Equations Quiz Formative: Written Test
- Communicator Practice Diagnostic: Other written assessments Students will solve practice problems on communicators to receive immediate feedback
- Daily Warm-Up Problems Diagnostic: Other written assessments Students will complete daily warm-up problems to assess readiness
- Inequalities Quiz Formative: Written Test Students will solve one, two, and multistep inequalities including compound inequalities
- Ticket to Leave Problems Formative: Other written assessments Students will complete one or two problems to assess knowledge and skills learned during the class period
- Unit Test Summative: Written Test Students will complete a test on all topics covered in the unit

Activities

Matching Inequalities Game

Students will match inequalities with their correct solutions.

Investigating Statements Using *And* or *Or*

Students will use Venn diagrams to compare inequalities using *and* or *or*.

Solve Compound Inequalities

Students will solve compound inequalities and use the graphing calculator to display the solutions.

Modeling Graphs of Absolute Value Inequalities

Students will be given number cards and will determine if their number is a solution to the graph of an inequality.

Compound Inequalities Notes
Solving Multistep Inequalities Notes

Activities to Differentiate Instruction

Differentiation for special education:

- General modifications may include:
  - Modifications & accommodations as listed in the student's IEP
  - Assign a peer to help keep student on task
  - Modified or reduced assignments
  - Reduce length of assignment for different mode of delivery
  - Increase one-to-one time
  - Working contract between you and student at risk
  - Position student near helping peer or have quick access to teacher
  - Break tests down in smaller increments

- **Content specific modifications may include:**
  - Provide personal handout for integer rules
  - Provide graphic organizer for remembering angle relationships
  - Provide completed examples for practice work and homework.
  - Provide calculator to assist with calculations.
  - Provide students with a formula sheet with one type of problem for each formula worked out for them already.

Differentiation for ELL's:

- General modifications may include:
  - Strategy groups
  - Teacher conferences
  - Graphic organizers
  - Modification plan

- **Content specific vocabulary important for ELL students to understand include:** linear inequality, linear equation, infinite, compound, absolute value

Differentiation to extend learning for gifted students may include:

- Challenge and enrichment homework, worksheets, and activity
- Optional weekly challenge problems

Integrated/Cross-Disciplinary Instruction

Resources

McDougal Littell Algebra 1 textbook and resource materials

Website: www.classzone.com (see link)

Kuta Software

Algebra with Pizzazz

Punchline Algebra

Smart Exchange Website (see link)

NJ Ask Review Workbook Grade 7

- McDougal Littel website
- Smart Exchange Website

21st Century Skills

CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
CRP.K-12.CRP4.1	Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

CRP.K-12.CRP8.1	Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.
CRP.K-12.CRP11.1	Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring new technology. They are proficient with ubiquitous technology applications. They understand the inherent risks-personal and organizational-of technology applications, and they take actions to prevent or mitigate these risks.
CRP.K-12.CRP12.1	Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.