Unit 03: Decimals and Inequalities

Content Area: **Mathematics**
Course(s): **Mathematics**
Time Period: **Week 7**
Length: **3 Weeks**
Status: **Published**

Unit Overview

Students will begin this chapter by comparing and ordering decimals. Students will then review how to perform mathematical operations involving decimals. Students will also begin writing, translating and graphing inequalities. They will use their knowledge of equations to solve the inequalities. Finally, students will use their knowledge of decimals to simplify equations and inequalities.

Standards

MA.6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.6.NS.C.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
MA.6.NS.C.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts.
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.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.6.EE.B.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
MA.6.EE.B.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real- world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Essential Questions

- Why are equations and inequalities useful?
- Why are there different types of numbers?
- How does comparing quantities describe the relationship between them?

Application of Knowledge and Skills...

Students will know that...

- An inequality is a statement formed by placing an inequality symbol between two expressions.
- Decimals relate to place value.
- Inequalities are written using the < and > symbols.
- The solution of an inequality with a variable is the set of all numbers that produce a true statement when substituted for the variable.
- When using the multiplication and division properties of inequalities, one must reverse the direction of the inequality symbol when multiplying or dividing each side of an inequality by a negative number.

Students will be able to:

- Compare and order decimals utilizing the place value system.
- Graph inequalities on a number line.
- Round decimals to the nearest place value given.
- Simplify expression involving decimals utlizing all operations.
- Solve algebraic equations involving decimals.
- Solve inequalities utilizing inverse operations.
- Translate inequalities into verbal phrases.
- Write inequalities using variables, numbers, and operations.

Assessments

Digits Readiness Assessments:

The readiness assessment screens students on their understanding of the prerequisite content of a unit. Students are then assigned invidualized intervention lessons to address specific needs.

- Daily Formative Assessments Formative: Instructional/Assessment Focus Formative assessments, such as: Do Now Assignments, Homework Assignments, Tickets to Leave, and Communicators, will provide daily data for teachers.
- Quiz Formative: Written Test A teacher-constructed assessment in which students will compare, order, round and solve expressions involving decimals.
- School Play Project Summative: Personal Project Chapter 3 Textbook Project: Students will use all concepts from chapters 1-3 to complete this project. The students are graded using a rubric.

- Test Summative: Written Test A teacher-constructed test in which students will demonstrate all the concepts learned in the Inequalities and Decimals Unit.

Activities

- **School Play Project:** Using a real-life situation, students will analyze the financial aspects of a school play. They will pretend they are the supervisor of a school play committee, and there will be three nights of performances. The income depends on the number of people who attend the play, and the expenses are refreshments, costumes and lighting. Students will use all concepts from chapter 1-3 to complete this project.
- **Digits cd grade 7:**

Launch Activities

Decimals and percents r6 Summer Olympics: In this activity students will solve problems related to the summer olympics to review long division, oeprations with decimals, and to solve percent problems.

Inequalities r9: Taking Public Transportation: In this activity students will solve problems related to taking public transporttion to solve one stip addition, subtraction, multiplication and division inequalities.

Activities to Differentiate Instruction

- **Decimals:** Studentswill participate in an interactive Smartboard presentation dealing with comparing and ordering decimals. Students will work at the Smartboard at various times to line up the decimal points and to insert zeros utilizing a vertical format. For advanced students, have them create a number line and place various decimals on it.

- **Matching Game (tactile and visual):** provide real-life examples of inequalities. Students will match the verbal phrase to the graph to the expression. For advanced students, have them create their own verbal inequality to match a graph and vice versa.

- Digits Supported Materials:

    - Math XL Printables
    - Leveled Homework G and K
    - Help Me Solve This: This function scaffolds math problems by asking prompting question at each individual step.
    - View An Example: This function provides a fully worked out step-by-step solution of a similar problem.
    - Readiness Assessment: After a student completes the readiness assessment intervention lessons are individually assigned to address prerequisite skills .
    - Tools: On line manipulatives

Integrated/Cross-Disciplinary Instruction

- **Social Studies:** Using their understanding of inequalities in mathematics, how can this apply to the real world? Discuss inequalities that arise in America such as social or racial inequality.

Resources

Digits teacher materials and support: www.pearsonrealize.com

SMART Exchange - SMART Exchange

Digits student access and support: www.MyMathUniverse.com

Smart Board

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.