Unit 2b-Represent and Solve Equations and Inequalities

Content Area: **Math**
Course(s): **Math 6**
Time Period: **Marking Period 2**
Length: **Weeks 4-9 Envisions Topic 4**
Status: **Published**

Essential Questions

What procedures can be used to write and solve equations and inequalities?

Big Ideas

- Represent equations using a pan balance.
- Properties of equality
- Write and solve equations and inequalities.
- Inequalities and the number line.
- Identify independent and dependent variables.
- Represent and analyze relationships.
- Reason about and solve one-variable equations and inequalities.

Cross-Curricular Integration

Integration area: Science

Activity: The students design a bridge for their community from the task assigned in Topic 3. Students use engineering design processes to propose solutions.

MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS1-3 Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

MS-ETS1-4 Develop a model to generate data for iterative testing and modification of a proposed object, tool,

or process such that an optimal design can be achieved.

Diversity Integration

Objective: Students will be able to determine the amount of vehicles that can be on a bridge at one time using an inequality to solve.

Activity:

-Teacher will go over how engineers have to research how much weight a bridge can hold in order to know how many vehicles the bridge can support and the different types of bridges.

-Students will research a bridge from one of the countries their family is from.

- They will research about the type of bridge, the amount of weight this bridge can hold and if the bridge has been closed before due to mother nature.

-The students will then determine how they can make the bridge safer. Using equations and inequalities the students will determine if the type of bridge they chose is the best, but looking up information on two other types of bridges.

CSDT Technology Connection

• 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

Enduring Understandings

Expressions and Equations

6.EE.4 [M] Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are

equivalent because they name the same number regardless of which number y stands for.

6.EE.5 [M] 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.

6.EE.6 [M] Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.7 [M] Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

6.EE.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.

6.EE.9 Use variables to represent two quantities in a real world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. Students analyze climate change computational models and propose refinements. These models would require students to analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lesson 4,5,9, and page 231

2. Reason abstractly and quantitatively. Lesson 1,2,3,6,7,8,8,10, and page 231

3. Construct viable arguments and critique the reasoning of others. Lesson 1,2,4,5,8,10, and page 231

4. Model with mathematics. Lesson 1,2,3,4,5,6,7,8,10, and page 231

5. Use appropriate tools strategically. Lesson 3,7, and page 231

6. Attend to precision. Lesson 6,7, and page 231

7. Look for and make use of structure. Lesson 1,2,5,9,10, and page 231

8. Look for and express regularity in repeated reasoning. Lesson 4,5,6,7, and page 231