Single-Variable Inequalities

Students who study single-variable inequalities are learning to answer the questions

How is solving an inequality different than solving an equation?

Under what circumstances is a range of values an appropriate solution?

How does a small word like 'AND' or 'OR' have a large impact on a compound inequality?

This unit of study addresses Indiana College & Career Ready Standards as follows:

8.AF.1: Solve linear equations with rational number coefficients fluently, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. Represent real-world problems using linear equations and inequalities in one variable and solve such problems.

AI.L.1: Understand that the steps taken when solving linear equations create new equations that have the same solution as the original. Solve fluently linear equations and inequalities in one variable with integers, fractions, and decimals as coefficients. Explain and justify each step in solving an equation, starting from the assumption that the original equation has a solution. Justify the choice of a solution method.

AI.L.2: Represent real-world problems using linear equations and inequalities in one variable and solve such problems. Interpret the solution and determine whether it is reasonable.

AI.L.8: Solve compound linear inequalities in one variable, and represent and interpret the solution on a number line. Write a compound linear inequality given its number line representation.

Gaining skills in this unit will enable students to do everyday tasks like loading an elevator, feeding a large group, or staying on schedule. The specific skills in this unit of study include

- graphing one-dimensional inequalities
- solving one-step inequalities involving addition and subtraction
- solving one-step inequalities involving multiplication and division
- solving two-step inequalities
- solving multi-step inequalities
- solving compound inequalities
- solving absolute value inequalities
- using sets and set notation
- identifying unions and intersections of sets