Systems of Equations and Inequalities

Students who study systems of equations and inequalities are learning to answer the questions

What solutions will fit multiple constraints?

What makes a system a better candidate for one solution path over another?

Under what circumstances would a solution be regarded as unreasonable?

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

8.AF.8: Understand that solutions to a system of two linear equations correspond to points of intersection of their graphs because points of intersection satisfy both equations simultaneously. Approximate the solution of a system of equations by graphing and interpreting the reasonableness of the approximation.

AI.SEI.1: Understand the relationship between a solution of a pair of linear equations in two variables and the graphs of the corresponding lines. Solve pairs of linear equations in two variables by graphing; approximate solutions when the coordinates of the solution are non-integer numbers.

AI.SEI.2: Understand that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. Solve pairs of linear equations in two variables using substitution and elimination.

AI.SEI.3: Write a system of two linear equations in two variables that represents a real-world problem and solve the problem with and without technology. Interpret the solution and determine whether the solution is reasonable.

AI.SEI.4: Represent real-world problems using a system of two linear inequalities in two variables and solve such problems; interpret the solution set and determine whether it is reasonable. Solve other pairs of linear inequalities by graphing with and without technology.

Gaining skills in this unit will enable students to do everyday tasks like planning a canoe trip, reconciling receipts, or pricing hand-made items for a craft sale. The specific skills in this unit of study include

- solving systems by graphing
- solving systems by substitution
- solving systems by elimination
- solving word problems involving systems
- solving systems of inequalities