12 Topic: Systems of Linear Equations & Matrices

Content Area: **Mathematics**
Course(s): **Algebra 2**
Time Period: **Semester 2**
Length: **2-3 weeks**
Status: **Published**

Standards

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.N-VM.C.6	Use matrices to represent and manipulate data, e.g., to represent payoffs or incidence relationships in a network.
MA.A-REI.C.6	Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.
MA.A-REI.C.8	Represent a system of linear equations as a single matrix equation in a vector variable.
MA.A-REI.C.9	Find the inverse of a matrix if it exists and use it to solve systems of linear equations (using technology for matrices of dimension 3 × 3 or greater).

Enduring Understandings

1. Mathematics is a language consisting of symbols and rules.
2. The same mathematical ideas can be represented concretely or symbolically.
3. There can be different strategies to solve a problem, but some are more effective and efficient than others.

Essential Questions

1. Which operations and equivalences will simplify and help me solve the problem?
2. How is thinking algebraically different from thinking arithmetically?
3. How does explaining my process help me to understand a problem's solution better?
4. What is meant by equality?

Knowledge and Skills

Solve a system of equations by graphing

Solve a system of equations by Substitution Method

Solve a system of equations by Elimination Method

Solve a system of Linear equations using Cramer's Rule

Solve a system of equations using the Inverse Matrix

Find the determinant of a matrix by the definition

Find the determinant of a matrix by minors

Find the determinant of a matrix using the TI-83 calculator

Find the inverse of a square matrix with and without a calculator

Add, Subtract, and Multiply Matrices

Solve word problems by systems of equations

Transfer Goals

Using mathematical reasoning and strategic thinking can allow for practical solutions ot many problems.

Often unique vocabulary and implementation methods are needed to solve problems.

Resources

1. McDougal/Littell - Algebra & Trigonometry Structure & Method Book 2

2. Aufmann/Barker/Lockwood - Intermediate Algebra with Applications Sixth Edition

3. Houghton/Mifflin/Harcourt - On Core Mathematics Algebra 2

4. Holt - Algebra 2 with Trigonometry

5. Larson/Boswell - Big Ideas Math: Algebra 2 Texas Edition

6. Khan Academy

7. PurpleMath

8. KutaSoftware

9. CK-12

10. Quizlet

11. Albert I/O

12. Desmos

13. Problem Attic