

# 12 Topic: Systems of Linear Equations & Matrices

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

## Standards

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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-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.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 $3 \times 3$ or greater).

## Enduring Understandings

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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

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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**

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- 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**

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- Using mathematical reasoning and strategic thinking can allow for practical solutions of many problems.
- Often unique vocabulary and implementation methods are needed to solve problems.

## **Resources**

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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](#)