

# Unit 2: Systems & Matrices

Content Area: **Mathematics**  
Course(s): **Algebra 3CP**  
Time Period: **Semester 1**  
Length: **6 weeks**  
Status: **Published**

## Standards

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MA.N-VM.C.8	Add, subtract, and multiply matrices of appropriate dimensions.
MA.N-VM.C.9	Understand that, unlike multiplication of numbers, matrix multiplication for square matrices is not a commutative operation, but still satisfies the associative and distributive properties.
MA.N-VM.C.10	Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. The determinant of a square matrix is nonzero if and only if the matrix has a multiplicative inverse.
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.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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There are situations that require two or more equations to be satisfied simultaneously.  
There are several methods for solving systems of equations and the solutions can be interpreted algebraically, geometrically, and in terms of problem contexts.

Using mathematical skills in matrices including finding the determinant and inverse, can be used to solve a system of equations.

## Essential Questions

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What is a system of equations and how can it be used to model relationships?

What is a system of non-linear equations and how can it be used to model relationships?

What is the mathematics of matrices?

## Knowledge and Skills

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- solve systems of equations using a variety of methods (graphing, substitution, elimination, and Cramer's Rule).

- setup and solve systems of equations to model a scenario given by a word problem.
- evaluate the results of matrix operations (such as addition, multiplication, and scalar operations) when defined.
- find the inverse of a matrix.
- solve systems of equations using inverse matrices.

## **Transfer Goals**

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Apply the systematic thinking of matrices to the idea of a large problem being composed of several small ones.

## **Resources**

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Intermediate Algebra with Applications 5/6th ed by Aufmann/Barker/Lockwood

Online resources which include, but are not limited to: AP Classroom, Desmos, Class Kick, Delta Math, and Math XL.