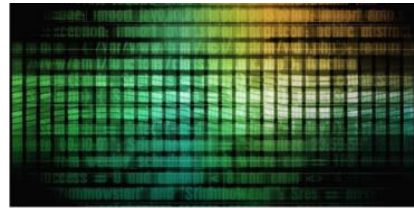




Advanced Algebra Concepts and Connections Unit 5: Investigating Linear Algebra and Matrices



Overview:

In this unit, students will represent real-world data into matrices and perform calculations within a real-world context. Students will have the opportunity to use technology for matrix calculations involving matrices greater than 2×2 in dimension. Students will organize systems of linear equations into a coefficient matrix multiplied by a variable matrix, equal to a constant matrix, and will calculate and use inverse matrices to solve these systems. Students will use linear programming to solve real-world optimization problems.

Learning Targets:

In Unit 5, students will:

- Use matrices to represent data.
- Carry out mathematical operations with matrices and scalars.
- Rewrite a system of linear equations using a matrix representation.
- Use the inverse of an invertible matrix to solve systems of linear equations.
- Use linear programming to represent constraints by systems of equations and/or inequalities.
- Use linear programming to interpret data points as solutions or nonsolutions to real-world problems.

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Adjacency Matrix	Diagonal of a Matrix	Invertible Matrix	Objective Function	Transpose
Associative	Extreme Point	Graph Theory	Plane	Vector
Commutative	Feasible Region	Line	Reduced Row Echelon Form	Vector Space
Column	Identity	Linear Function	Row	Vertex or Node
Consistent System	Identity Matrix	Linear Programming	Scalar	Zero Matrix
Constraint	Inconsistent System	Mapping	System of Equations	
Decision Variable	Inverse	Matrix	Scalar Multiplication	
Determinant ($ A $)	Inverse of a Matrix	Matrix Dimensions		

Supporting Resources:

<http://ctlslearn.cobbk12.org/>

[Intro to matrices](#)

[Solving Systems of Linear Equations Using Matrices](#)

<https://gavirtual.instructure.com/courses/34342>

[How Do You Find the Inverse of a \$2 \times 2\$ Matrix](#)