Linear Programing

Instructional Focus: Geometric Linear Programing

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Solving systems of equations and inequalities (A.REI.6) **Graphing systems of equations and inequalities** (A.REI.6, A.REI.12) **Creating equations** (A.CED.1*) **Representing constraints and interpreting solutions** (A.CED.3*)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	Graph the feasible region based on constraints Find each vertex of the feasible region by solving a system of equations State the feasible region as being bounded or unbounded Represent constraints with equations, inequalities and in a system of equations and/or inequalities in contextual situations Create the objective function with two or more variables from context and use it in a linear programming problem to find the optimal solution Interpret test points as viable or nonviable in context of the situation	Graph the feasible region based on constraints. Find each vertex of the feasible region by solving a system of equations State the feasible region as being bounded or unbounded Represent constraints with equations, inequalities and in a system of equations and/or inequalities in contextual situations Create the objective function with two or more variables from context Interpret test points in context of the situation	Identify the feasible region given a graph Identify each vertex of the feasible region given a graph State the feasible region as being bounded or unbounded Identify the objective function with two or more variables for a given context	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1

A.REI.6 **Solve** systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

A.CED.1* **Create** equations and inequalities in one variable and **use** them to solve problems

A.CED.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.

Linear Programing

Instructional Focus: Algebraic Linear Programing

CCSS	4 – Mastery	3 – Proficient	2 - Basic	1 – Below Basic	0 – No Evidence
Solving linear programming problems using matrices (A.REI.8, A.REI.9)	Can extend thinking beyond the standard, including tasks that may involve one of the following: • Designing • Connecting • Synthesizing • Applying • Justifying • Critiquing • Analyzing • Creating • Proving	Represent a system of given constraints using a matrix • Identify an optimized problem • Identify the pivot • Find the solution (more than 1 pivot required) • Interpret the tableau in context of the situation Create a system of optimized constraints from a context	Represent a system of given constraints using a 2x2 or 3x3 matrix • Identify an optimized problem • Identify the pivot • Find the solution using the simplex method (1 pivot required) • Interpret the tableau in context of the situation	Represent a system of given constraints using a 2x2 matrix • Identify an optimized problem • Identify the pivot • Find solution using the simplex method (1 pivot required) • Interpret the parts of the tableau	Little evidence of reasoning or application to solve the problem Does not meet the criteria in a level 1

A.REI.8 Represent a system of linear equations as a single matrix equation in a vector variable

A.REI.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).