Gold Seal Lesson:

Copernicus Education Gateway

Author(s): **Ben Lindeman**			*Lesson Title:* **Logo Design**			
Grade Span			***ICLE Application Model***			
K-4	***5-8***	***9-12*** ***XX***	***A***	***B***	***C***	***D*** ***X***

Instructional Focus:

Geometry
Students apply geometric concepts, properties, and relationships in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Algebraic Concepts and Relationships
Students use algebraic methods to investigate, model, and interpret patterns and functions involving numbers, shapes, data, and graphs in a problem-solving situation. Students evaluate and communicate the reasoning used in solving these problems.

Tools and Technology
Students use appropriate tools and technologies to model, measure, and apply the results in a problem-solving situation. Students communicate the reasoning used in solving these problems.

Performance Task

Many corporations use mathematical figures in their logos. One of the most famous and well known of these is the "Golden Arches" of McDonald's®. McDonald's is the largest and best-known global food service retailer with more than 28,000 restaurants in 120 countries. The "Golden Arches" are parabolic in design. Your task is to design a logo for a fictitious corporation. The design must contain at least two conic sections and a straight line. Make you design on a sheet of graph paper with coordinate labeling. Describe the conic sections and straight line(s) with an algebraic equation. You may use a graphing calculator to assist you in designing your logo. Be NEAT, ACCURATE, and CREATIVE.

ICLE Essential Skills

Know the components and properties of the ***rectangular coordinate system***, (i.e., x - y axis, origin, quadrants, abscissa (x-coordinate) and ordinate (y-coordinate), and the general representation of a point (x,y)). (m23)

Know the ***equation of a line*** and interpret graphically using the slope-intercept form (i.e., y = mx+b), and the point-slope form (i.e., y-b = m(x-a)). (m45)

Know how to graphically sketch ***basic conic sections*** (e.g., circles and parabolas) using their equations, and graphically solve systems of equations. (m86)

Scoring Guide:

4	The student makes a neat, accurate, and creative logo. The logo is well described, using correct algebraic equations for the conic sections and straight lines(s) used in the logo. At least two conic sections and one straight line are used in the logo. The student demonstrates a thorough understanding of straight lines, conic sections, and algebraic modeling.
3	The student's logo lacks one of the basic criteria (neat, accurate, creative). He/she needs some minimal assistance in describing the conic sections and straight line(s) used in the logo. At least two conic sections and one straight line are used in the logo. The student demonstrates a good understanding of straight lines, conic sections, and algebraic modeling.
2	The student's logo minimally meets at least two of the stated criteria (neat, accurate, creative). He/she needs considerable assistance in describing the conic sections and straight line(s) used in the logo. The student's logo either contains just two conic sections or one conic section and one straight line. The student demonstrates only minimal understanding of straight lines, conic sections, and algebraic modeling.
1	The student's logo does not meet the three stated criteria (neat, accurate, creative). It is incomplete, containing at most one conic section or straight line. He/she is unable to describe the conic section or straight line used in the logo. The student demonstrates little, if any, understanding of straight lines, conic sections, and algebraic modeling.

Keywords

English Language Arts	Mathematics	Science
Reading	**Algebra** Computation Coordinates Equations Functions Graphing Calculators Graphs Hyperbolas Math in Daily Life Parabola Quadratics Slope	**Earth Science**
Writing	**Geometry** Algebra Circles Technology	**Life Science**
Communications	**Statistics**	**Chemistry**
Literature	**Calculus**	**Physics**
Other	**Trigonometry**	**Other**
	Other	