Unit 2c-Analyze and Solve Systems of Linear Equations

Content Area: **Mathematics**
Course(s): **Math 8 Gen Ed**
Time Period: **Marking Period 2**
Length: **weeks 8-10**
Status: **Published**

Essential Questions

What does it mean to solve a system of linear equations?

Big Ideas

Analyze and solve linear equations and pairs of simultaneous linear equations.

CSDT Technology Integration

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose

8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

8.1.8.AP.6: Refine a solution that meets users' needs by incorporating feedback from team members and users.

Activity: To enhance and deepen understanding of linear systems, students play a game of Polygraph Linear Systems. Students are given the opportunity to work with classmates virtually, exploring communication through the computer to describe and answer questions regarding linear systems. Students must use algebraic terms and knowledge to successfully get their partner to select the correct graph based on questions that have been asked.

Cross Curricular Integration

Integration Area: Language Arts

LA.8.W.8.2.A Introduce a topic and organize ideas, concepts, and information, using text structures (e.g., definition, classification, comparison/contrast, cause/effect, etc.) and text features (e.g., headings, graphics, and multimedia).

LA.8.W.8.2.B Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.

LA.8.W.8.2.C Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.

LA.8.W.8.2.D Use precise language and domain-specific vocabulary to inform about or explain the topic.

LA.8.W.8.2.E Establish and maintain a formal style/academic style, approach, and form.

LA.8.W.8.2.F Provide a concluding statement or section that follows from and supports the information or explanation presented.

LA.8.W.8.4 Produce clear and coherent writing in which the development, organization, voice and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)

LA.8.W.8.5 With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well the purpose and audience have been addressed.

LA.8.W.8.6 Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas efficiently as well as to interact and collaborate with others.

LA.8.W.8.7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

LA.8.W.8.8 Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

LA.8.W.8.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

LA.8.W.8.10 Write routinely over extended time frames (time for research, reflection, metacognition/self-correction, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline specific tasks, purposes, and audiences.

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.

Activity: Slope/College/Savings project. Students will research various colleges and their tuition costs. Students will search for a job that will be able to assist in paying for a portion of the college tuition. Students will create tables and linear representations of the collected data and then discuss the data in an explanatory essay.

Technology Connection

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose

Enduring Understandings

Expressions and Equations

8.EE.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

8.EE.8b Solve systems of two linear equations in two variables using substitution method, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.

8.EE.8c Solve real-world and mathematical problems leading to two linear equations in two variables. For

example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.