

**Pennsylvania Governor's Institute
for Mathematics Educators
2004**

Names of Group Members: Barb Waddy, Ido Jamar, Don Warren, Jim Blanchard

Topic/Theme: Systems of Linear Equations

Level: 8 - 10

Time Element: 2 days (regular schedule); 1 day (block)

NCTM Standards Addressed: Algebra, Data Analysis

PA Math Standards Addressed: 2.8 Algebra and Functions

Math Assessment Anchors Addressed:

M11.A.3: Compute accurately and fluently and make reasonable estimates.

M11.D.1: Demonstrate an understanding of patterns, relations and functions.

M11.D.2: Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs.

M11.D.3: Analyze change in various contexts.

M11.E.1: Formulate or answer questions that can be addressed with data and/or organize, display, interpret or analyze data.

M11.E.2: Select and/or use appropriate statistical methods to analyze data.

M11.E.4: Develop and/or evaluate inferences and predictions or draw conclusions based on data or data displays.

Reading Assessment Anchors Addressed:

R11.A.2: Demonstrate the ability to understand and interpret nonfiction text, including informational, e.g., textbooks, print media (magazines, brochures, etc.), editorials, public documents; autobiography; biography; and essay appropriate to grade level.

Objectives: Students will be introduced to systems of equations through data collection and plotting points. They will interpret graphs in order to choose a cell phone plan.

Instructional Strategies and Plan (include strategies used to help different types of learners, i.e. auditory, visual, etc.):

1. Pre-read “Cell Phone Dilemma” and distribute phone log. Review calculating elapsed time (two weeks prior).
2. Review concepts (mean, converting cents to dollars).
3. Model the procedure for completing the phone log.
4. Provide a guided worksheet.
5. Plot points and analyze results.

Materials/Resources:

Overhead projector, pens
Worksheets
Graph paper
Rulers
Colored pencils
Graphing calculators

Interdisciplinary Connections:

- **Reading:** Students review cell phone plans from print media.
- **Technology:** Use of graphing calculator (STAT, Y=, GRAPH, TRACE features).
- **Other**

Assessment Strategies:

- **Formative Evaluation (checking student understanding during the lesson):**
 - Teacher will observe cooperative learning and check individual worksheets.
- **Summative Evaluation (how will it be determined that the objectives were achieved?):**
 - Teacher will evaluate students’ graphs and written responses to questions #5 – 10.
 - Teacher will guide a post experiment discussion.

Correctives/Remediation:

- Additional practice plotting points, finding points of intersection
- Additional practice interpreting graphs of systems of equations

Extensions/Enrichment:

- Add a third plan to the system and compare the new results.
- Compare two or more plans from print media.

- Using the graphing calculator, enter the equations and the data points for your group.

Special Accommodations (special needs students)

- **Description of the Special Needs Student Selected: Thomas**
 1. Receives Emotional Support Services in part-time learning and emotional support classroom.
 2. Needs to build reading fluency and comprehension.
 3. Two grade levels below in district math curriculum.
 4. Noncompliant behaviors: arguing, talking out, destruction of learning materials.
 5. Asks for help when others are not present.
- **Accommodations to Use with this Student:**
 1. Contact home to arrange for help with phone log.
 2. Meet with student prior to lesson to introduce the lesson.
 - Review vocabulary and method for calculating average.
 3. Work with assigned partner.
 4. Place group in quietest part of room.
 5. Teacher remains in close proximity.