

Solving Systems of Linear Equations Review/Project Intro

Grade Level and Subject:

Grades 10/11 Algebra 2 (40 minute class period)

Instructional Objectives:

1. Students will be able to solve linear systems of equations by the graphing, substitution, and elimination methods.
2. Students will understand the system of equations project assignment.

Concepts Addressed/Related Content Standards or Framework:

Concepts

Solving systems of linear equations by substitution, analyzing, applying, and explaining systems of linear equations, using technology

PDE Standards

- 2.8.11.D Formulate expressions, equations, inequalities, systems of equations, systems of inequalities and matrices to model routine and non-routine problem situations.
- 2.8.11.F Identify whether systems of equations and inequalities are consistent or inconsistent.
- 2.8.11.G Analyze and explain systems of equations, systems of inequalities, and matrices.

NCTM Standards

1. Write equivalent forms of equations, inequalities, and systems of equations and solve them with fluency—mentally or with paper and pencil in simple cases and using technology in all cases.
2. Interpret representations of functions of two variables.
3. Recognize and apply mathematics in contexts outside of mathematics.

Materials Required:

1. Pencils and paper
2. Textbook – *Algebra 2* Prentice Hall 2004 Edition
3. Graphing calculators and graph paper
4. Overhead projector, blackboard, or Smartboard
5. Mac Laptop cart (with Internet access, iLife, iWork, MS Office)

Engagement:

Discuss in groups the homework from section 3.2. Put problems on the blackboard. First come, first serve. Put your name next to the problem.

Procedure:

1. Students put problems on the blackboard. First come, first serve. Discuss any issues. Students should be checking their work. (10 minutes)
2. Introduce project. Read and discuss in groups. (5 minutes)
3. As a class, answer any immediate **clarification** questions. Explain that students will have 2 additional class periods to work on the project. Note library and resource room. (5 minutes)

4. Introduce students to activity center. (3 minutes)
5. Class uses the rest of the time begin their project assignments or study for quiz.
6. Closure. (2 minutes)

Key Discussion Questions:

1. Are there any questions on solving linear systems of equations?
2. Are there any questions on the project or activity center?

Closure:

1. How do systems of linear equations relate to our project assignment?
2. Confirm quiz on 3.1 and 3.2 tomorrow and direct students to extension activity and other resources (activity center, resource room) should they need additional help.

Assessment:

See Procedure sections #1, 3 for in class assessment. Also, check for questions on the project.
Quiz tomorrow. Project due 10/25/2010

Extension Activities:

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Systems of Equations Project

You and your partner are brilliant entrepreneurs convinced that you are primed to make millions. You are starting a new company that will need to compete with existing companies in one of the following areas:

- Cell phone providers
- Membership (ex: Gym or fitness center, bulk stores, online music company)
- Truck rental company
- Online radio (or other service) subscriptions
- Topic of your own choosing with approval from instructor

You and your partner will need to do the following:

1. Choose your start-up company based on the areas above.
2. Research existing companies in the business that you choose and develop a **system of equations that models the data of an existing company (i.e. a competitor) and your new company**. Your equations must be created from real data and must be written in the form of a system of equations with 2 different variables. Solve this system of equations and develop your company based on it (e.g. pricing, terms, etc.). (Think back to our car rental warm-up problem if you need to get a grasp on context.)
3. Create a convincing advertisement for your new company based on the results of your research and systems of equations. For example, this can be a short commercial, a well-developed flyer, or a Self-playing PowerPoint Presentation to convince investors to invest money in your company. Get creative.

What you will need to submit in a nice, neat, organized fashion:

1. A printout of the data you used for your equations (from a website).
2. Work cited sources (MLA Formatting).
3. Your system of equations with variables defined.
4. All the work for finding the solution to your system and thus determining the parameters and pricing for your company. **Graphically and Algebraically. Explain how and why you chose your pricing scheme.**
5. Your advertisement.

Help center:

There is an online activity center for this unit on systems of equations and inequalities located at www.lehigh.edu/~trw205/activityctr/home.html. There you can find help with the following

- Tutorials and practice problems on solving systems of equations and inequalities
- Homework solutions
- A section dedicated to this project (including a skeleton sample)
- A blog for this unit

How this project will be graded(rubric):

	Data and Sources	Systems of Equations	Graphic Solution	Algebraic Solution and explanation	Advertisement
Criteria	-data included (2 pts) -sources documented (2pts)	- all variables are defined (2 pts) - both equations are accurate (6 pts)	- each line correctly graphed (4 pts) - labels and title (2 pts) - point of intersection (2 pts)	- correct solving (4 pts) - explain your work and how you came up with the parameters and pricing for your new company (7 pts) -check (2 pts)	- creativity (4 pts) - contains the results of your research and equations (4 pts) - final product presents information in a clear manner (6 pts) - demonstrate your company is the best (3 pts) - professional product (5 pts)
Points Earned	/4	/8	/8	/13	/22
				Total:	/55