

Subject: Mathematics - Algebra I

Grade: Tenth

Standard: #6 Pairs of Linear Equations and Inequalities

Key Concept: Students apply algebra skills to solve real-world problems.

Generalization: Students use linear equations to solve real-world problems.

Background:

This lesson is adapted from the book Mission Mathematics Grades 9-12, ISBN # 0-87353-436-0 and is available from NCTM. The lesson is named “Finding Our Way” and deals with navigation using the Global Positioning System (GPS). This lesson should be presented at the end of the year.

Background information on navigation and GPS receivers can be found in the reference. An introduction to the lesson would include sharing this information with the students. It would be nice to borrow a GPS receiver to show to the class. Hand-held units, used by boaters and pilots, are available for under \$200.

The whole class is introduced to the method of triangulation using student page 52. Depending of the ability levels of your students some problems of determining position in one dimension should be discussed and illustrated. All students complete pages 53 and 54 either in their tiers or as a whole class.

Students should work in pairs or triads to complete this lesson. Only two tiers are presented here, you may want to have below grade level learners work on problems which involve only one dimension.

This lesson is tiered in *content and product* according to *readiness*.

Tier I: *Grade Level Learners*

Students in this tier are given the student pages for determining position in two dimensions, i.e. pages 55 and 56. They should complete all of the questions on those pages. Select one of the GPS applications from pages 61 and 62 for students in this tier to complete.

Tier II: *Advanced Learners*

Students in this tier are given the student pages for determining position in two dimensions, i.e. pages 55-58. Students should submit written solutions for questions 5-9. Depending on the ability level of the students, have students complete student pages 59 and 60 on determining position in three deminsions or select one of the GPS applications from pages 61 and 62 for them to complete.

Assessment:

Solutions should be graded for accuracy. Solutions to all problems are provided in the reference.

Other extensions are given in the reference and might be used for homework.