

Smart Skies™

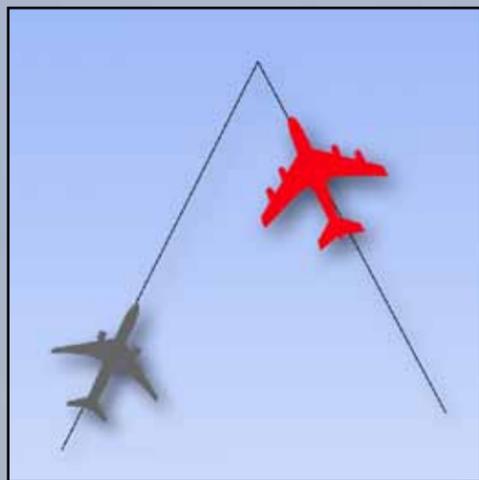
FlyBy Math™

Distance-Rate-Time Problems

Grades 5-9

FREE materials at:

www.smartskies.nasa.gov



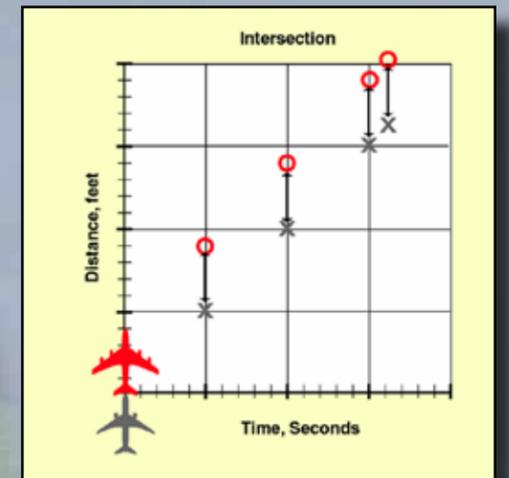
Real-World Air-Traffic Problems

www.nasa.gov

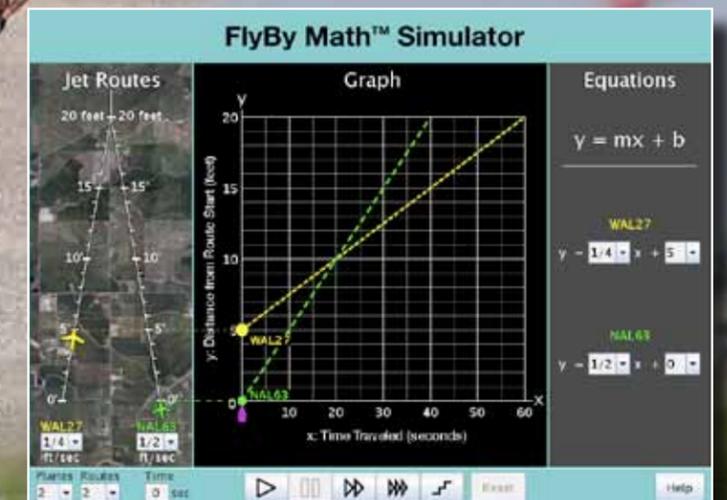


Hands-On Experiments

Multiple Mathematical Representations



Online Linked Visualization Tool



Smart Skies™ FlyBy Math™

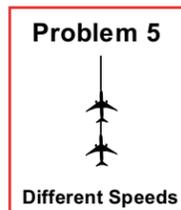
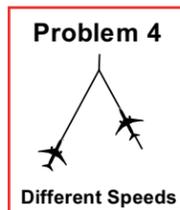
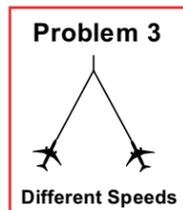
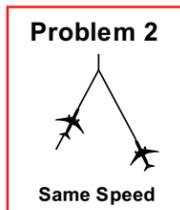
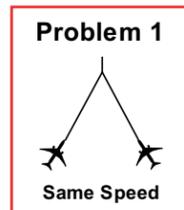
Distance-Rate-Time Problems in Air Traffic Control

Interactive & Hands-On Math Grades 5-9

Students investigate traditional **distance-rate-time problems** involving two planes on merging jet routes. First, students conduct an experiment to model the problem. Printed workbooks provide the underlying mathematics and strategies. Teachers can choose from **6 different mathematics methods** to customize a workbook and to provide differentiated instruction.

Five Distance-Rate-Time Problems

Each problem provides students with opportunities for teamwork and communication as they examine distance-rate-time scenarios in air traffic control.



An Experiment Plus Math Activities

Each problem addresses multiple learning styles as students:

- Assume the roles of pilots, air traffic controllers, and NASA scientists to conduct an experiment that simulates a two-plane scenario.
- Assume the role of a NASA engineer and use guided paper-and-pencil activities to determine the number of seconds it takes each plane to travel a given distance along a jet route.



Teachers can assign a variety of mathematics problem-solving methods including counting, plotting points, using a formula, and graphing a system of linear equations.

Classroom-Tested & Standards-Based

FlyBy Math™ reflects teacher feedback from national classroom tests with 2,000 students. The materials support many NCTM Standards and Expectations with particular emphasis on Algebra, Geometry, Measurement, and Data Analysis and Probability. The materials also support several NSES Standards with a focus on the “Motions and Forces” Physical Science content standard.

Real-life Applications

FlyBy Math™ was developed under Smart Skies™, a key part of the NASA Airspace System Program’s educational efforts. Smart Skies™ supports the Program’s goal to develop advanced research and technology to enable the nation’s air transportation system to operate with reduced flight delays and improved efficiency and access.

Comprehensive Materials

The instructional materials include:

- Student Workbooks—each containing the experiment, paper-and-pencil calculations to support the experiment, and a student analysis of the experiment and calculations
- Optional pre- and post-tests
- Video clips to introduce students to the nation’s air traffic control system.
- Online linked visualization tool

Each problem is accompanied by a Teacher Guide with a full set of answers and solutions, as well as suggestions for implementing the specific airspace scenario. A detailed overview of FlyBy Math™ is provided in the Educator Guide.

All Materials **FREE** Online

The comprehensive collection of instructional materials is available to download at:

www.smartskies.nasa.gov



Federal Aviation Administration

The FAA has entered into a partnership with NASA to support education outreach including Smart Skies™.

To find out about events, tours, or classroom visits, contact your Regional FAA Education Manager at:

www.faa.gov/education

(Click on: Aviation & Space Education Contact Us)