



DeKalb County
School District
Fernbank Science Center

Title: FLY BY MATH (4566)
Level: 5th Grade
Location: Local School

Type: Outreach
Length: 60 minutes
Limit: class/period

Program Description

Fun way of using hands-on experiments in applying math strategies to real world aviation situations. This program utilizes a fresh way of approaching traditional distance-rate-time problems. The concepts may be used as a one-time experiment or part of an ongoing investigation as their math skills develop. Your students transform into Air Traffic Controllers. You may have a future ATC Champion in your classroom!

Please Note:

We will need access to a large area such as a gym floor or long hallway, where we can simulate flight paths of aircraft approaching an airport.

Standards

M5A(c) Determine that a formula will be reliable regardless of the type of number (whole numbers or decimal fractions) substituted for the variable.

M5DI(a) Analyze data presented in a graph.

M5DI(b) Compare and contrast multiple graphic representations (circle graphs, line graphs, bar graphs, etc.) for a single set of data and discuss the advantages/disadvantages of each.

M5D2 Students will collect, organize, and display data using the most appropriate graph.

Vocabulary

constant speed intersection merging equation
Cartesian Coordinate
System

Pre-Visit Activities

Review some typical Distance-Rate-Time problems with the students. Have them write a problem that will be solved by a different student. Talk about the importance of being able to understand D-R-T in the real world. Brainstorm examples with the class.

Post-Visit Activity

Refer to Course 4566 Activities

Supporting Standards:

M5N5. Students will understand the meaning of percentage.

M5PIa. Solve non-routine word problems using the strategy of make it simpler as well as all strategies learned in previous grades.

Title: Fly by Math (4566 Post-Visit Activity)

Objectives

The students will be able to:

- 1) use an Air Traffic Control simulation to determine distance-rate-time problems that will allow multiple airplanes to land at the same airport safely;
- 2) M5P apply mathematical concepts and skills in the context of authentic problems and will understand concepts rather than merely following a sequence of procedures. Students will use the process standards as a way of acquiring and using content knowledge;
- 3) S5CS2 use computation and estimation to analyze data;
- 4) M5P1 use the appropriate technology, to solve problems that arise in mathematics and in other contexts.

Post-Visit Activities

The students will be introduced to the environment of real air traffic control through the NASA Smart Skies “LineUp With Math” web site at www.quest.nasa.gov. They will access the interactive, on-line Air Traffic Control Simulator to line up multiple planes for a safe approach to an airport. Various simulations will address problems such as two-plane and three-plane conflicts resolved with route, speed or a combination of route and speed changes.

Resources:

www.quest.nasa.gov

The site includes an Educator Guide that provides a detailed introduction to “LineUp With Math.” Each problem set is accompanied by a teacher guide with a full set of solutions to the featured problems.

