

FlyBy Math™ Alignment
Illinois Learning Standards
Stage I, Grades 8, 9 & 10 - Mathematics

State Goal 7: Estimate, make and use measurements of objects, quantities and relationships and determine acceptable levels of accuracy.

A. Measure and compare quantities using appropriate units, instruments, and methods (Performance and conversion of measurements)

7.A.4a Apply units and scales to describe and compare numerical data and physical objects.

Descriptor	FlyBy Math™ Activities
1. Select units and scales that are appropriate for problem situations involving measurement.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

7.A.4b Apply formulas in a wide variety of theoretical and practical real-world measurement applications involving perimeter, area, volume, angle, time, temperature, mass, speed, distance, density and monetary values.

Descriptor	FlyBy Math™ Activities
1. Select units and scales that are appropriate for problem situations involving measurement.	--Use the distance-rate-time formula to predict and analyze aircraft conflicts.

B. Estimate measurements and determine acceptable levels of accuracy. (Estimation)

7.B.4 Estimate and measure the magnitude and directions of physical quantities (e.g., velocity, force, slope) using rulers, protractors and other scientific instruments including timers, calculators and computers.

Descriptor	FlyBy Math™ Activities
1. Estimate the magnitude and directions of physical quantities (e.g. velocity, force, slope)	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Conduct simulation and measurement for several aircraft conflict problems.

C. Select and use appropriate technology, instruments, and formulas to solve problems, interpret results, and communicate findings. (Progression from selection of appropriate tools and methods to application of measurements to solve problems)

7.C.4b Interpret scale drawings and models using maps and blueprints.

Descriptor	FlyBy Math™ Activities
4. Determine linear measures, perimeters, areas, surface areas, and volumes of similar figures using the ratio of similitude.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.

7.C.4c Convert within and between measurement systems and monetary systems using technology where appropriate.

Descriptor	FlyBy Math™ Activities
7. Solve simple problems involving multiple rates, measures and conversions.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

State Goal 8: Use algebraic and analytical methods to identify and describe patterns and relationships in data, solve problems and predict results

A. Describe numerical relationships using variables and patterns. (Representations and algebraic manipulations)

8.A.4b Represent mathematical patterns and describe their properties using variables and mathematical symbols.

Descriptor	FlyBy Math™ Activities
3. Model and describe slope as a constant rate of change.	--Interpret the slope of a line in the context of a distance-rate-time problem.

B. Interpret and describe numerical relationships using tables, graphs, and symbols. (Connections of representations including the rate of change)

8.B.4a Represent algebraic concepts with physical materials, words, diagrams, tables, graphs, equations and inequalities and use appropriate technology.

Descriptor	FlyBy Math™ Activities
4. Create and connect representations that are tabular, graphical, numeric, and algebraic from a set of data.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

C. Solve problems using systems of numbers and their properties. (Problem Solving)

8.C.4a Analyze and report the effects of changing coefficients, exponents and other parameters on functions and their graphs.

Descriptor	FlyBy Math™ Activities
2. Solve problems by recognizing how an equation changes when parameters change.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

STATE GOAL 10: Collect, organize and analyze data using statistical methods; predict results; and interpret uncertainty using concepts of probability.

A. Organize, describe and make predictions from existing data. (*Data Analysis*)

10.A.4a Represent and organize data by creating lists, charts, tables, frequency distributions, graphs, scatterplots and box-plots.

Descriptor

5. Make decisions based on data, including the relationships of correlation and causation.

***FlyBy Math™* Activities**

--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.