

**FlyBy Math™ Alignment
California Mathematics Content Standards**

Number Sense

1.0 Students compare and order positive and negative fractions, decimals, and mixed numbers. Students solve problems involving fractions, ratios, proportions, and percentages:

Mathematics Content Standard	FlyBy Math™ Activities
1.2 Interpret and use ratios in different contexts (e.g. batting averages, miles per hour) to show the relative sizes of two quantities, using appropriate notations (a/b , a to b , $a:b$).	--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Algebra and Functions

2.0 Students analyze and use tables, graphs, and rules to solve problems involving rates and proportions:

Mathematics Content Standard	FlyBy Math™ Activities
2.2 Demonstrate an understanding that <i>rate</i> is a measure of one quantity per unit value of another quantity.	--Represent distance, rate, and time data using line plots, bar graphs, and line graphs. -- Use the distance-rate-time formula to predict and analyze aircraft conflicts.
2.3 Solve problems involving rates, average speed, distance, and time.	-- Use the distance-rate-time formula to predict and analyze aircraft conflicts.

Mathematical Reasoning

1.0 Students make decisions about how to approach problems:

Mathematics Content Standard	FlyBy Math™ Activities
1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.	--Predict the relative motion of two airplanes on given paths --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

2.0 Students use strategies, skills, and concepts in finding solutions:

Mathematics Content Standard	FlyBy Math™ Activities
2.1 Use estimation to verify the reasonableness of calculated results.	--Predict outcomes and explain results of mathematical models and experiments.

2.2 Apply strategies and results from simpler problems to more complex problems.	--Compare airspace scenarios for both the same and different starting conditions and the same and different rates.
2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
2.4 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Predict outcomes and explain results of mathematical models and experiments.
2.5 Express the solution clearly and logically using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Predict outcomes and explain results of mathematical models and experiments.
2.7 Make precise calculations and check the validity of the results from the context of the problem.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
3.0 Students move beyond a particular problem by generalizing to other situations:	
Mathematics Content Standard	<i>FlyBy Math™</i> Activities
3.1 Evaluate the reasonableness of the solution in the context of the original situation.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.	--Predict outcomes and explain results of mathematical models and experiments.
3.3 Develop generalizations of the results obtained and apply them in other circumstances.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.