

LineUp With Math™ Alignment
Mathematics Grade Expectations

Standard 7.6: Arithmetic, Number, and Operation Concepts

Grade Expectations	<i>LineUp With Math™</i> Activities
<p>M8: 1 Demonstrates conceptual understanding of rational numbers with respect to <u>percents as a way of describing change (percent increase and decrease)</u> using explanations, models, or other representations.</p>	<p>--Use percent relationships to resolve distance, rate, time conflicts in air traffic control.</p>
<p>M8: 4 Accurately solves problems involving proportional reasoning (<u>percent increase or decrease, interest rates, markups, or rates</u>); and <u>squares, cubes and taking square or cube roots.</u></p>	<p>--Use an interactive simulator plus calculation worksheets to apply proportional reasoning to identify and resolve distance, rate, time conflicts in air traffic control.</p> <p>--Use percent relationships to resolve distance, rate, time conflicts in air traffic control.</p>
<p>M8: 7 Estimates and evaluates the reasonableness of solutions appropriate to grade level.</p>	<p>--Predict and resolve aircraft conflicts and explain results of mathematical calculations and simulations.</p>

Standard 7.7: Geometry and Measurement Concepts

Grade Expectations	<i>LineUp With Math™</i> Activities
<p>M8: 13 Applies concepts of similarity <u>to determine the impact of scaling on the volume or surface area of three- dimensional figures when linear dimensions are multiplied by a constant factor</u>; to <u>determine the length of sides of similar triangles</u>, or to <u>solve problems involving growth and rate</u> and makes scale drawings.</p>	<p>--Use an interactive simulator plus calculation worksheets to apply proportional reasoning to identify and resolve distance, rate, time conflicts in air traffic control.</p>
<p>M8: 15 Measures and uses units of measures appropriately and consistently when solving problems across the content strands. Makes conversions within <u>or across</u> systems. (See Appendix B for benchmark units and equivalences for each grade.)</p>	<p>--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p>

Standard 7.8: Functions and Algebra Concepts

Grade Expectations

M8: 20 Demonstrates conceptual understanding of linear relationships ($y = kx$; $y = mx + b$) as a constant rate of change by solving problems involving the relationship between slope and rate of change; informally and formally determining slopes and intercepts represented in graphs, tables, or problem situations; or describing the meaning of slope and intercept in context; and distinguishes between linear relationships (constant rates of change) and nonlinear relationships (varying rates of change) represented in tables, graphs, equations, or problem situations; or describes how change in the value of one variable relates to change in the value of a second variable in problem situations with constant and varying rates of change.

LineUp With Math™ Activities

--Use an interactive simulator to identify distance, rate, time conflicts in air traffic control problems and resolve the conflicts by varying plane speeds or changing plane routes.

Standard 2.5: Mathematical dimensions, Standard 7.10: Mathematical Problem Solving and Reasoning - Applications

Grade Expectations

M8: 30 Demonstrate understanding of mathematical problem solving and communication through:

- **Approach & Reasoning**—The reasoning, strategies, and skills used to solve the problem;
- **Connections**—Demonstration of observations, applications, extensions, and generalizations;
- **Solution**—All of the work that was done to solve the problem, including the answer;
- **Mathematical Language**—The use of mathematical language in communicating the solution;
- **Mathematical Representation**—The use of mathematical representation to communicate the solution; and
- **Documentation**—Presentation of the solution.

LineUp With Math™ Activities

--Explore and apply a variety of strategies to optimize the solution of air traffic control conflicts.

--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

--Use an interactive simulator plus calculation worksheets to model and resolve air traffic control conflicts.