Stamford Public Schools

Middle School Reference Guide

Grades 6, 7, and 8

2016–2017

Stamford Public Schools
EXCELLENCE IS THE POINT.

Stamford Public Schools
Middle School Reference Guide
Grades 6, 7, and 8

Stamford Public Schools

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Contents

Mathematics Curriculum

INTRODUCTION

According to the Common Core State Standards, the National Council of Teachers of Mathematics, and data from international assessments, students need to become problem-solvers, learn to reason and communicate mathematically, value mathematics, and become confident in their ability to do mathematics in order to be prepared for higher education and the global workforce. The Stamford Public Schools' middle school mathematics curriculum provides students the opportunity to do this by developing their skills and helping them make meaning of the mathematics they learn. Students learn more than just mathematical procedures; they learn the "why" and "how" of mathematics.

Textbook, Grades 6 and 7 Mathematics

Connected Mathematics 3
Fey, J., Fitzgerald, W., Friel, S., Lappan, G., Phillips, E.
Published by Pearson Prentice Hall., Boston, MA (2006)

Textbooks, Grade 8 CP and Algebra 1 Mathematics

Connected Mathematics 3
Fey, J., Fitzgerald, W., Friel, S., Lappan, G., Phillips, E.
Published by Pearson Prentice Hall., Boston, MA (2006)

Algebra 1
Larson, R., et al.
Published by McDougal Littell., Boston, MA (2007)

GRADE 6 MATHEMATICS CURRICULUM

CP AND HONORS CLASSES COVER:

The Number System

- Interpret/compute quotients of fractions, and solve word problems involving division of fractions by fractions.
- Understand positive and negative; use positive and negative numbers to represent quantities in real-world contexts.
- Understand rational numbers.
- Interpret statements of inequality.
- Understand the absolute.
- Distinguish comparisons of absolute value from statements about order.
- Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane.

Statistics

- Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- Understand that a set of data can be described by its center, spread, and overall shape.
- Display numerical data.
- Summarize numerical data sets in relation to their context.

Geometry

- Find the area of right triangles, other triangles, special quadrilaterals, and polygons.
- Find the volume of a right rectangular prism. Apply the formulas $V = l * w * h$ and $V = b * h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
- Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

Ratio and Proportional Reasoning

- Understand the concept of the ratio/use ratio language to describe a ratio relationship between two quantities.
- Understand the concept of a unit rate p.
- Use ratio and rate reasoning to solve real-world and mathematical problems.

Expressions and Equations

- Write/evaluate numerical expressions involving whole-number exponents.
- Write, read, and evaluate expressions in which letters stand for numbers.
- Apply the properties of operations to generate equivalent expressions.
- Identify when two expressions are equivalent.
- Understand solving an equation or inequality.
- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.
- Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.
- Write an inequality for the form $x > c$ or $x < c$.
- Use variables to represent two quantities in a real-world problem.

STEM

- Convert commonly used customary and metric units to other units within the same system.
- Identify the appropriate unit of measure (length, capacity, mass) for a given situation.
- Gather and organize data.
- Create graphs to display data.
- Analyze graphs.
- Convert from fraction to decimal to percent and vice versa.

HONORS CLASSES ALSO INCLUDE:

- Different pacing of units
- Classroom time dedicated to connection and extension of concepts
- More activities that focus on extension of concepts
- An expectation of work to be completed independently rather than with the whole class

GRADE 7 MATHEMATICS CURRICULUM

CP AND HONORS CLASSES COVER:

Ratio and Proportional Relationships

- Analyze proportional relationships and use them to solve real-world and mathematical problems.
- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.
- Recognize and represent proportional relationships between quantities.
- Use proportional relationships to solve multistep ratio and percent problems.

The Number System

- Apply/extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
- Apply/extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
- Apply/extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- Solve real-world and mathematical problems involving the four operations with rational numbers.

Expressions and Equations

- Use properties of operations to generate equivalent expressions.
- Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
- Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically.
- Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
- Use variables to represent quantities in a real-world or mathematical problem, construct simple equations and inequalities to solve problems by reasoning about the quantities.
- Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers.
- Graph the solution set of the inequality and interpret it in the context of the problem.

Statistics and Probability

- Use random sampling to draw inferences about a population.
- Understand that statistics can be used to gain information about a population.
- Use data from a random sample to draw inferences about a population with an unknown characteristic of interest.
- Draw informal comparative inferences about two populations.
- Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.
- Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.
- Investigate chance processes and develop, use, and evaluate probability models.
- Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.
- Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
- Develop a probability model and use it to find probabilities of events.
- Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

GRADE 7 MATHEMATICS CURRICULUM (continued)

CP AND HONORS CLASSES COVER:

Geometry

- Draw, construct, and describe geometrical figures and describe the relationships between them.

- Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

- Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions.

- Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

- Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

- Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

- Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

- Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

HONORS CLASSES ALSO INCLUDE:

- Different pacing of units
- Classroom time dedicated to connection and extension of concepts
- More activities that focus on extension of concepts
- An expectation of work to be completed independently rather than with the whole class

GRADE 8 MATHEMATICS CURRICULUM

CP CLASSES COVER:

Statistics and Probability
- Construct and interpret scatter plots and patterns of association between two quantities.
- Informally fit a line of best fit.
- Determine relationships among attributes in data sets.

The Number System
- Understanding irrational numbers.
- Approximate the location of irrational numbers on a number line and diagram.
- Estimate the value of expressions.

Expressions and Equations
- Apply the properties of integer exponents.
- Recognize and understand square roots and cube root symbols.
- Perform operations with numbers expressed in scientific notation.
- Understand the connections between proportional relationships, lines and linear equations.
- Analyze and solve linear equations and pair of simultaneous linear equations.

Functions
- Introduction to functions and modeling.
- Evaluate and compare functions.
- Use functions to model relationships between quantities.

Geometry
- Understand congruence and similarities using physical models and transparencies.
- Use geometry software to construct geometric figures.
- Understand and apply the Pythagorean theorem.
- Solve real-world and mathematical problems.
- Volume of spheres, cylinders, and cones.
- Angle properties.

ALGEBRA 1 CLASSES COVER:

Number Properties and Expressions
- Number properties
- Rational numbers and absolute value
- Order of operations
- Translating and evaluating expressions and equations
- Distributive property
- Combining like terms

Linear Equations and Inequalities
- One-and two-step equations
- Multi-step equations
- Like terms
- Distributive property
- Variables both sides
- Solving for a given variable in a formula
- Substitution using a formula
- Solving and graphing inequalities in one variable
- One-and two-step inequalities
- Compound inequalities
- Absolute value equations and inequalities

Functions
- Relationships
- Relations
- Functions
- Evaluating functions
- Domain and range
- Vertical line test

Rate of Change and Slope
- Physically investigating slope
- Rate of change and $d = rt$
- Interpreting rate of change from graphs
- Visual approach of slope
- Finding slope
- Classification of slope
- Slope using a graph
- Slope formula
- Identifying slopes as parallel and perpendicular
- Applications

GRADE 8 MATHEMATICS CURRICULUM (continued)

ALGEBRA 1 CLASSES COVER:

Graphing lines
- Using x and y intercepts
- Given point and slope
- Slope-intercept form
- Parallel and perpendicular slopes from an equation
- Graphing linear inequalities (with two variables)

Writing equations of lines
- Given a graph
- Given a slope and the intercept
- Given a point and slope
- Given two points
- Applications
- Horizontal and vertical lines
- Parallel and perpendicular given a point and equation in slope-intercept form
- Point-slope form
- Standard form
- Inequalities given a graph
- Applications

System of equations
- Verifying solutions
- By graphing
- By substitution
- By linear combination - adding and subtraction only
- By linear combination - by multiplying first
- Types of solutions
- Applications
- Systems of linear inequalities

Linear regression
- Scatter plot
- Line of best fit
- Prediction
- Extrapolation
- Interpolation
- Correlation
- Causation
- Applications

Piecewise functions
- Introduction to piecewise and function notation
- Writing piecewise functions
- Graphing piecewise functions

Laws of exponents
- Multiplying
- Dividing
- Power of a power
- Zero and negative exponents
- Scientific notation
- Applications

Some students may qualify to be enrolled in Algebra I for high school credit. This course is identical to the Algebra I course taught at the high school.

Mathematics Academic Enrichment (AE)

INTRODUCTION

The Academic Enrichment Support and Academic Enrichment Extension courses provide students time beyond the regular mathematics class period.

GRADE 6

WHILE THE GRADE 6 CP/HONORS MATHEMATICS CLASS IS WORKING ON:	AE SUPPORT CLASSES WILL USE THE FOLLOWING RESOURCES:	AE EXTENSION CLASSES WILL USE THE FOLLOWING RESOURCES:
• The number system • Statistics • Ratio and proportional reasoning • Expressions and equations • STEM	• Intervention program • Resources/activities provided listed in the Math Handbook developed by the MS Math Committee	• STEM (Science, Technology, Engineering, Mathematics) performance tasks developed by MS Math Committee using references from NASA, NSTA, NCTM. • CMP, Common Core Investigations, and projects not covered in the core math class.

GRADE 7

WHILE THE GRADE 7 CP MATHEMATICS CLASS IS WORKING ON:	AE SUPPORT CLASSES WILL USE THE FOLLOWING RESOURCES:	AE EXTENSION CLASSES WILL USE THE FOLLOWING RESOURCES:
• Ratio and proportional reasoning • The number system • Expressions and equations • Statistics and probability • Geometry	• Intervention program • Resources/activities provided listed in the Math Handbook developed by the MS Math Committee	• World Language or the Advancement Via Individual Determination (AVID) college readiness program.

GRADE 8

WHILE THE GRADE 8 CP MATHEMATICS CLASS IS WORKING ON:	AE SUPPORT CLASSES WILL USE THE FOLLOWING RESOURCES:	AE EXTENSION CLASSES WILL USE THE FOLLOWING RESOURCES:
• Statistics and probability • The number system • Expressions and equations • Functions • Geometry	• Intervention program • Resources/activities provided listed in the Math Handbook developed by the MS Math Committee	• World Language or the Advancement Via Individual Determination (AVID) college readiness program.

English Language Arts Curriculum

INTRODUCTION

The English Language Arts (ELA) curriculum is a standards-based curriculum for all students. The curriculum is designed to increase the amount of reading and writing done in the ELA classroom while meeting the demands of the Common Core State Standards. The curriculum consists of the teaching of core texts using strategies that engage students in reading, writing, listening, speaking, thinking, and communicating. Motivation to extend student reading is provided through Middle School Literacy Book Clubs. The Book Club model offers a choice of interesting texts at various levels of challenge while still extending students' literacy skills and providing rigor. The writing in the ELA classroom includes both formal writing such as informative/explanatory, narrative and argument, and informal writing such as personal responses. The formal writing takes place during Writer's Workshop whereas the informal writing occurs daily inside the classroom during Reader's Workshop and as homework. The purpose of the informal writing is to deepen students' understanding of the text and genre.

GRADE 6, 7, AND 8 ENGLISH LANGUAGE ARTS CURRICULUM

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
Reading Requirements: Students read widely in literary texts. A minimum of six books will be read: three core texts, one assured core text, and two book club texts from the grade level book list. Additionally, students read supplemental texts that provide background knowledge or present differing perspectives about the ideas that the core text offers or the questions it addresses. **Writing Requirements:** Students write in various genres. A minimum of three formal pieces of writing is required, at least 1 extended response, and informal writing in various genres and timed district common writing assessments.	The level of sophistication and complexity of the discussions, strategies, assignments, and writing increase in an honors-level class: • Faster pacing • More independent practice of strategies/concepts • More classroom time for extension activities • More time outside the classroom for strategies practice

English Language Arts Academic Enrichment (AE)

INTRODUCTION

The Academic Enrichment Support and Academic Enrichment Extension courses provide students time beyond the regular language arts class period of literacy instruction.

GRADE 6, 7, AND 8 ACADEMIC ENRICHMENT

While the core English Language Arts class is working on the curriculum:

GRADE 6, 7, AND 8 ACADEMIC ENRICHMENT SUPPORT CLASSES WILL USE THE FOLLOWING RESOURCES:	GRADE 6 ACADEMIC ENRICHMENT EXTENSION CLASSES WILL USE THE FOLLOWING RESOURCES:
AE Support is structured to accelerate students using the following: • A scientific research-based intensive reading program for students. This program confronts the problem of low reading achievement on multiple fronts (reading passages with a quick check after reading, systematic instruction in decoding and word recognition, the practice of spelling vocabulary and receiving immediate corrective feedback) using adaptive technology and high-interest print. • A program that provides direct reading and foundational literacy skills instruction while reading high-interest print materials in order to practice and strengthen their reading, writing, and spelling skills.	AE Extension is structured to advance students using the following: • Shared Inquiry Discussion. Shared Inquiry is a method of learning in which students search for answers to questions raised by a text. During research writing, students will demonstrate essential knowledge, skills, and mastery of information in a variety of ways. • Research writing skills.

Science Curriculum

INTRODUCTION

The science program provides all students with rich, rigorous, engaging, and relevant student-centered experiences. The science program takes an integrated modular approach, with units of instruction on physical science, earth science, and life science in every grade. Differentiated instruction is built into every unit so that all students' learning needs are addressed. A key feature of the program is an emphasis on an issue-oriented approach. Each unit begins by presenting a real-world problem or challenge designed to engage and motivate students. As the unit continues, students experience activities that broaden their knowledge of concepts and ask them to collect evidence that relates to the initial problem or challenge. By the end of the unit, students have had many opportunities to improve their inquiry skills by engaging in scientific questions, weighing evidence and making informed decisions about the problem or challenge. New for this year, in each grade, there will be one STEM project designed to address Next Generation Science Standards (NGSS). This inquiry-based approach simultaneously nurtures students' curiosity about the world around them and fosters rigorous scientific habits of mind.

Textbooks, Grade 6 Science

Issues and Physical Science
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2007)

Issues and Earth Science: Weather and Atmosphere
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2006)

Issues and Physical Science: Ecology
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2008)

Online textbooks are accessible for all students through the following link:
http://www.lab-aids.com/ebooks/ebooks.php
(User names and passwords are provided by classroom teachers.)

GRADE 6 SCIENCE CURRICULUM

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
General Information • Students participate in required activities with time allocated for support/scaffolding of science, mathematics, reading, writing, speaking, and listening skills • Students progress from guided inquiry to open inquiry in every unit • Analysis questions and "Thinking it Over" questions are done in class	• Students spend fewer days on required activities leaving more time for activities that delve deeper into the same topics • Students progress from guided inquiry to open inquiry more quickly • Analysis questions and "Thinking it Over" questions are assigned as independent work and homework
Weather and Atmosphere – Required activities on: • Water cycle • Heating earth's surfaces • Atmosphere: structure and properties • Influences on climate • Global and local weather patterns	Extension activity on: • Weather history • Water as a solvent • Wind and forecasting
Studying Materials Scientifically – Required activities on: • Laboratory safety • Physical and chemical properties of substances • Identifying unknown substances • Separating mixtures • Mass, volume, and density	Extension activities on: • Hazardous materials found in the home
The Chemistry of Materials – Required activities on: • Physical and chemical properties of substances • Elements, compounds, and molecules • Periodic table of elements • Chemical reactions and conservation of mass • Waste disposal and reclamation • Environmental impacts of computers	
Water – Required activities on: • Water quality and town planning decisions • Mixtures, solutions, and precipitates • Solubility and concentration • Particle theory of matter • STEM project: SoundWaters water testing field trip to Cove Beach • Acids and bases	Extension activities on: • Water quality and epidemiology
Ecology – Required activities on: • Introduced species • Animal behavior and classification • Ecosystems: producers, consumers, and decomposers	• Population dynamics • Food webs and energy levels • Habitats and carrying capacity
Bridges – Required activity on: • Building bridges and analyzing design factors: types of bridges, physical forces, function, materials, safety, cost, and appearance	

Textbooks, Grade 7 Science

Issues and Life Science
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2008)

Issues and Earth Science: Plate Tectonics
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2006)

Issues and Earth Science: Erosion and Deposition
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2006)

Online textbooks are accessible for all students through the following link:
http://ebooks.lab-aids.com/student-resources
(User names and passwords are provided by classroom teachers.)

GRADE 7 SCIENCE CURRICULUM

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
General Information • Students participate in required activities with time allocated for support/scaffolding of science, mathematics, reading writing, speaking and listening skills • Students' progress from guided inquiry to open inquiry in every unit • Analysis questions and "Thinking it Over" questions are done in class	• Students spend fewer days on required activities leaving more time for activities that delve deeper into the same topics • Students' progress from guided inquiry to open inquiry more quickly • Analysis questions and "Thinking it Over" questions are assigned as independent work and homework
Studying People Scientifically – Required activities on: • Experimental design • Human nervous system • Qualitative and quantitative data analysis	Extension activities on: • Using placebos in clinical trials, and therapeutic and side-effects of medications
Body Works – Required activities on: • Alcohol's effects on the human body • Identification of human organs and organ systems • Structure and function of the following human organ systems: digestive, skeletal-muscular, respiratory, circulatory • Heart rate and physical fitness • Risk factors and causes of circulatory system diseases	Extension activities on: • Heart rate and physical fitness • Risk factors and causes of circulatory system diseases • Wise use of public health funding, heart surgery, listening for abnormal heart sounds, effects of high blood pressure on the circulatory system
State Embedded Task: Feel the Beat	

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
Cell Biology and Disease – Required activities on: • Disease prevention, transmission and treatment • Examining microscopic organisms • Germ theory • Comparing the structure and function of protists, yeast, bacteria, plants, humans and other animals • Viruses	Extension activities on: • The history of an infectious disease • Why cells are small • Blood cells • Antibacterial agents • Antibiotic resistance
Genetics – Required activities on: • Variation in human traits • Growing plants to predict the passing of traits • Genetic diseases • Sexual and asexual reproduction • Inheritance of traits/Mendelian genetics • Punnett squares • Role of chromosomes and DNA during sexual reproduction	Extension activities on: • Examining the effect of environment on seedling color • Analyzing patterns of inheritance using Punnett squares and pedigrees • Discussing the trade-offs of genetic testing • Simulating DNA fingerprinting
Erosion and Deposition – Required activities on: • Weathering, erosion, and deposition • Land use planning • Human impacts on the land • Boomtown erosion STEM project	Extension activities on: • Erosion resistance • Cliff erosion
Studying Soil Scientifically – Required activities on: • Scientific process skills: observation and classification • Soil composition and identification • Soil as a growing medium for plants	Extension activity on: • Mapping soil
State Embedded Task: Dig In!	
Plate Tectonics – Required activities on: • Earth's internal layers • Geologic time • Plate Tectonics • Site risks for nuclear waste storage	Extension activities on: • Volcanic landforms • Piecing together continents • Earthquake measurement • Convection currents
Food Safety – Eight required activities on: • Food-borne illnesses and their prevention • Food preservation and food additives • Growth and inhibition of microorganisms • Food preservation research project	

Textbooks, Grade 8 Science

Issues and Earth Science
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2006)

Issues and Life Science: Bioengineering
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2008)

Issues and Life Science: Evolution
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2008)

Issues and Physical Science: Energy
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2007)

Issues and Physical Science: Force
Lawrence Hall of Science, University of California at Berkeley
Published by Lab-Aids®, Inc., Ronkonkoma, NY SEPUP. (2007)

Online textbooks are accessible for all students through the following link:
http://ebooks.lab-aids.com/student-resources
(User names and passwords are provided by classroom teachers.)

GRADE 8 SCIENCE CURRICULUM

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
General Information • Students participate in required activities with time allocated for support/scaffolding of science, mathematics, reading writing, speaking, and listening skills • Students progress from guided inquiry to open inquiry in every unit • Analysis questions and "Thinking it Over" questions are done in class	• Students spend fewer days on required activities leaving more time for activities that delve deeper into the same topics • Students progress from guided inquiry to open inquiry more quickly • Analysis questions and "Thinking it Over" questions are assigned as independent work and homework
Energy – Required activities on: • Energy use and energy efficiency in the home • Transfer and transformation of energy • Types of energy: kinetic, potential, chemical, thermal • Conservation of energy • Heat transfer • Solar energy • Sikorsky Helicopter Challenge STEM project	Extension activities on: • Home Energy Audit • Enter the 4th Annual Sikorsky Helicopter 2050 Challenge

GRADE 8 SCIENCE CURRICULUM (continued)

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
Force and Motion – Required activities on: • Vehicular safety and braking distance in light of forces and motion • Measuring movement over distance and time to calculate speed • Interpreting motion graphs • Net force, mass, and acceleration • Center of mass • Analyzing accident data	Extension activities on: • Circular movement and inertia • Newton's Laws and friction • STEM integration lessons
State Embedded Task: Shipping and Sliding	
Simple Machines - Required Activities on: • What are the 6 simple machines • Calculating work • Calculating mechanical advantage and efficiency • Rube Goldberg machines	Extension Activities on: • STEM building a compound machine
The Earth in Space – Required activities on: • Observing shadows to estimate elapsed time • Relationship between day length, the position of the sun , and the seasons • Rotation and revolution of the earth and other space objects • Simulating phases of the moon	Extension activities on: • Tides and lunar calendar • Lunar vs. solar calendar
Exploring the Solar System – Required activities on: • History of space exploration • Observing and classifying space objects • Making a scale drawing of the solar system • Characteristics of our sun • Effect of gravity on the motion of objects • Space missions	Extension activities on: • Development of modern telescopes • Planetary characteristics • Remote sensing • STEM scaling Stamford and the Solar System
Evolution – Required activities on: • Extinction, fossils • Geologic time • Theories of evolution • Simulating natural selection • Mutation and genetic variability • Anatomical and DNA evidence for evolution • Relationship between extinction and evolution	Extension activities on: • Interpreting fossilized footprints • Modeling natural selection process • Graphing changes in the number of fossil families over geologic time

CP AND HONORS CLASSES COVER:	HONORS CLASSES ALSO INCLUDE:
Bioengineering- Required activities on: • What are bioengineers? • Case studies • Technology and the life sciences • Building artificial bones	Extension activities on: • Designing an energy bar • Boning up on design STEM project

Social Studies Curriculum

INTRODUCTION

The social studies curriculum provides the opportunity for responsible student engagement with real problems in the school, community, and the world around them. According to the Connecticut Social Studies Curriculum Framework, the National Council of Teachers of Social Studies, and the Common Core State Standards, students must be able to analyze, evaluate, and differentiate primary and secondary sources. Students must be able to read complex informational text because the vast majority of reading in college and workforce training programs will be nonfiction. Students will share this information through reading, writing, listening, speaking, viewing, and presenting.

Textbooks, Grade 6 Social Studies

World History
Holt Social Studies (2006)

World Adventures in Time and Place
MacMillan/McGraw-Hill (1999, 2000)

Textbooks, Grade 7 Social Studies

World Cultures and Geography
McDougall–Littell (2005)

World Geography and Cultures
Globe–Fearon (2003)

Our World Today (2003)

National Geographic Reading Expeditions (2003)

World Regions–Adventures in Time and Place
MacMillan /McGraw-Hill (1998)

Textbook, Grade 8 Social Studies

Creating America–A History of the United States
Holt, MacDougall (2006)

GRADE 6 SOCIAL STUDIES CURRICULUM

CP AND HONORS CLASSES COVER*:	HONORS CLASSES ALSO INCLUDE:
• Unit 1: Basic Geography • Unit 2: Archaeology and Early Human • Unit 3: The Characteristics of Civilization • Unit 4: Imperial China • Unit 5: The Mongol Empire • Unit 6: Communist China • Unit 7: Greek and Roman Empire • Unit 8: Europe in the Middle Ages • Unit 9: The European Union	• Faster pacing of units • More activities that focus on extension of concepts • An expectation of work to be completed independently rather that whole class

GRADE 7 SOCIAL STUDIES CURRICULUM

CP AND HONORS CLASSES COVER*:	HONORS CLASSES ALSO INCLUDE:
• Latin America: Ancient Maya, Aztec and Inca • Latin America: Colonial Era • Latin America: Contemporary (Brazil Case Study) • Africa: Ancient Egypt, Mali and Ghana • Africa: Slave Trade and Imperialism • Africa: Contemporary (South Africa Case Study) • Middle East: Ancient Mesopotamia • Middle East: Rise of Islam and the Ottoman Empire • Middle East: Contemporary (Israel/Palestine Case Study)	• Faster pacing of units • More activities that focus on extension of concepts • An expectation of work to be completed independently rather than whole class

GRADE 8 SOCIAL STUDIES CURRICULUM

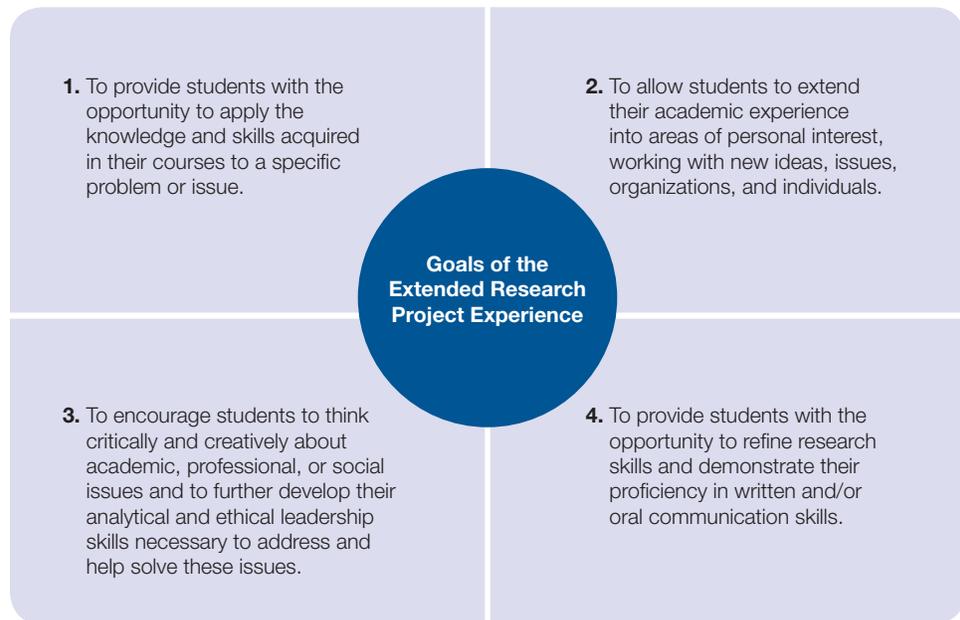| CP AND HONORS CLASSES COVER*:	HONORS CLASSES ALSO INCLUDE:
• Unit 1: Contributions of English Colonies to the American Republic • Unit 2: Creating the Constitution • Unit 3: Expansion of the Republic • Unit 4: Events Leading to Civil War • Unit 5: Results of Civil War and Reconstruction	• Faster pacing of units • More activities that focus on extension of concepts • An expectation of work to be completed independently rather than whole class

Social Studies instruction relies on a combination of reference materials including textbooks, articles both print and online, original source documents, and foundational documents.

* The units of study in Grades 6, 7, and 8 reflect the alignment to the Common Core State Standards and National Social Studies Framework. This work was completed in the summer of 2013.

8th Grade Extended Research Project

All eight graders are required to research, design and complete a project which represents the knowledge and skills developed through their years in Stamford Middle Schools, which will have grounding in the historical and textual curriculum studied in 6th, 7th and 8th grade. All students in grade 8 will be expected to complete a combined Social Studies and ELA extended research paper and presentation. Fifteen days has been allocated for Social Studies to complete the research and presentation while ELA will utilize 10 days for the writing of the paper. The allocated days may be consecutive or over a period of up to 8 weeks. Each teacher will create a compelling question for students to research focusing on one or more of the four C3 Social Studies domains: History, Civics, Economics and/or Geography. We hope that, by working on the project, students will be prepared to complete an independent extended research project (Capstone) in high school.

The purpose of the Extended Research Project is to give students a chance to put all that they have learned to good use. We all learn best when our experiences are "hands-on" and self-motivating. The project is designed to help students take their learning beyond the walls of the classroom to help make their work meaningful to them and also to demonstrate their ability to be independent, responsible and effective citizens. We are interested in their ability to research and solve problems, to apply skills from a variety of subjects, to communicate clearly with "the real world," to organize themselves to fulfill a long-range plan and to defend their decisions. The Extended Research Project will showcase everything students can do and that they are ready to move on to the high school.

1. To provide students with the opportunity to apply the knowledge and skills acquired in their courses to a specific problem or issue.

2. To allow students to extend their academic experience into areas of personal interest, working with new ideas, issues, organizations, and individuals.

Goals of the Extended Research Project Experience

3. To encourage students to think critically and creatively about academic, professional, or social issues and to further develop their analytical and ethical leadership skills necessary to address and help solve these issues.

4. To provide students with the opportunity to refine research skills and demonstrate their proficiency in written and/or oral communication skills.

Grade 6 Placement Criteria

Grade 6 students are placed into one of two instructional groups, College Prep or Honors, for mathematics/science and English language arts/social studies. All students engage in standards-based curricula that prepare them to be college-ready upon high school graduation. Notification of student placement is sent to Grade 6 families in August.

Grade 6 students are placed according to district-wide results from the following assessments: the Stanford Achievement Test, the Otis Lennon School Ability Test (OLSAT) and the Naglieri Nonverbal Ability Test (Naglieri). The Stanford Achievement Test, OLSAT and Naglieri are administered in March/April to Grade 5 students. Students' mathematics and reading assessment results will be evaluated separately to allow for different levels of support or acceleration for students in these content areas.

The criteria for placement into the College Prep and Honors groups for mathematics/science and English language arts/social studies are as follows:

MATHEMATICS/SCIENCE		
Instructional Group	**Mathematics Stanford Achievement Test Performance Level Criterion**	**OLSAT and Naglieri Criteria**
Honors	80th percentile or above	All OLSAT and Naglieri percentile ranks
	50th -79th percentile	Scoring at or above the 70th percentile on both OLSAT and Naglieri
College Prep	50th-79th percentile	Scoring below the 70th percentile on one or both OLSAT and Naglieri
	49th percentile or below	All OLSAT and Naglieri percentile ranks

ENGLISH LANGUAGE ARTS/SOCIAL STUDIES		
Instructional Group	**Reading Stanford Achievement Test Performance Level Criterion**	**OLSAT and Naglieri Criteria**
Honors	80th percentile or above	All OLSAT and Naglieri percentile ranks
	50th -79th percentile	Scoring at or above the 60th percentile on both OLSAT and Naglieri
College Prep	50th-79th percentile	Scoring below the 60th percentile on one or both OLSAT and Naglieri
	49th percentile or below	All OLSAT and Naglieri percentile ranks

In addition to the above criteria, grade 6 students may be placed in Honors using the following guidelines:

- A score of 4 on the grade 4 SBAC in ELA or math places a student in Honors in the respective academic area.

- A score of 4 with a confidence band on the grade 5 SBAC in ELA or math places a student in Honors in the respective academic area.

NOTE:
Grade 6 students who are new to the district will be placed on a case-by-case basis using available data.

Grade 6 Regrouping Process

Parent and/or school initiated requests to move a grade 6 student to Honors will be considered on a case-by-case basis and must be made by the end of the first quarter. First quarter grades and the teacher's recommendation in math or ELA will be considered in placing a student in Honors in the respective academic area. Families will be notified by the distribution of first quarter report cards if their child will move from College Prep to Honors.

Grade 7 Placement Criteria

Grade 7 students are placed into one of two instructional groups, College Prep or Honors, for mathematics/science and English language arts/social studies. All students engage in standards-based curricula that prepare them to be college ready upon high school graduation. Notification of student placement is sent to Grade 7 families in August.

STUDENTS WHO FINISHED GRADE 6 IN HONORS WILL REMAIN IN HONORS:

Grade 6 students who finish the school year in Honors mathematics/science will be placed in Honors mathematics/science in Grade 7; Grade 6 students who finish the school year in Honors English language arts/social studies will be placed in Honors English language arts/social studies in Grade 7.

STUDENTS WHO FINISHED GRADE 6 IN COLLEGE PREP WILL BE PLACED IN HONORS IF THEY MEET THE CRITERIA DESCRIBED BELOW:

MATHEMATICS/SCIENCE

Grade 6 students who finish the school year in College Prep mathematics/science will be placed in Honors in Grade 7 if they meet the following criteria:

MATHEMATICS/SCIENCE PLACEMENT CRITERIA INTO HONORS (for Grade 7 students who finished Grade 6 in College Prep Mathematics/Science)
• **Mathematics Common District Assessment**—Score of 90% or higher on the mathematics common district final assessment administered in June. The assessment is cumulative for Grade 6 content. AND • **Mathematics teacher grade of A <u>or</u> mathematics teacher recommendation**

STUDENTS ELIGIBLE FOR ALGEBRA IN GRADE 7

A small number of Grade 7 students will be eligible for Algebra I according to the following criterion:

MATHEMATICS PLACEMENT CRITERON FOR ALGEBRA I
• **Superior achievement on Orleans-Hanna Algebra Prognosis Test administered in spring of Grade 6**

ENGLISH LANGUAGE ARTS/SOCIAL STUDIES

Grade 6 students who finish the school year in College Prep English language arts/social studies will be placed in Honors in Grade 7 if they meet the following criteria:

> **ENGLISH LANGUAGE ARTS/SOCIAL STUDIES**
> **PLACEMENT CRITERIA INTO HONORS**
> (for Grade 7 students who finished Grade 6 in College Prep English Language Arts/Social Studies)
>
> - **English Language Arts Common District Assessment**—Score of 90% or higher on the end-of-semester district-wide assessment.
>
>   AND
>
> - **English Language Arts teacher grade of A <u>or</u> English Language Arts teacher recommendation**

NOTE:

Grade 7 students who are new to the district will be placed on a case-by-case basis using available data.

Grade 7 Regrouping Process

Grade 7 students in College Prep have the opportunity to move to Honors at the end of the first semester. If a Grade 7 College Prep student meets the regrouping criteria below, she/he will be moved to Honors for the remainder of the school year.

MATHEMATICS/SCIENCE	ENGLISH LANGUAGE ARTS/ SOCIAL STUDIES

- Score of 90% or higher on end-of-semester district-wide mathematics assessment
 	
  AND
 	
- Quarter 1 mathematics teacher grade of A <u>or</u> mathematics teacher recommendation
	- Score of 90% or higher on the end-of-semester district-wide reading assessment
	
	  AND
	
	- Grade of A or English language arts teacher recommendation

Families will be notified at the end of the semester if their student will move from College Prep to Honors.

Grade 8 Placement Criteria

Grade 8 students are placed into one of two instructional groups, College Prep or Honors, for mathematics/science and English language arts/social studies. All students engage in standards-based curricula that prepare them to be college-ready upon high school graduation. Notification of student placement will be sent to Grade 8 families in August.

STUDENTS WHO FINISHED GRADE 7 IN HONORS WILL REMAIN IN HONORS:

Grade 7 students who finish the school year in Honors mathematics/science will be placed in Honors mathematics (Algebra I)/science in Grade 8; Grade 7 students who finished the school year in Honors English language arts/social studies will be placed in Honors English language arts/social studies in Grade 8.

STUDENTS WHO FINISHED GRADE 7 IN COLLEGE PREP WILL BE PLACED IN HONORS IF THEY MEET THE CRITERIA DESCRIBED BELOW:

MATHEMATICS/SCIENCE

Grade 7 students who finish the school year in College Prep mathematics/science will be placed in Honors (Algebra I) in Grade 8 if they score at/above the local 80th percentile on the Orleans-Hanna Algebra Prognosis Test administered in spring of Grade 7.

STUDENTS ELIGIBLE FOR GEOMETRY IN GRADE 8

A small number of Grade 8 students will be eligible for Geometry according to the following criterion:

MATHEMATICS PLACEMENT CRITERIA FOR GEOMETRY IN GRADE 8
• **Superior achievement in Algebra I in Grade 7 (received a final grade of A or B)**

ENGLISH LANGUAGE ARTS/SOCIAL STUDIES

Grade 7 students who finish the school year in College Prep English language arts/social studies will be placed in Honors in Grade 8 if they meet the following criteria:

ENGLISH LANGUAGE ARTS/SOCIAL STUDIES PLACEMENT CRITERIA INTO HONORS (for Grade 8 students who finished Grade 7 in College Prep English Language Arts/Social Studies)
• **English Language Arts Common District Assessment** — Score of 90% or higher on the end-of-semester district-wide assessment. AND • **English Language Arts teacher grade of A <u>or</u> English Language Arts teacher recommendation**

* Based on sum of two reviewers' scores using a standard rubric

NOTE:

Grade 8 students who are new to the district will be placed on a case-by-case basis using available data.

Grade 8 Regrouping Process

Grade 8 students in College Prep have the opportunity to move to Honors at the end of the first semester in English language arts/social studies only. Families will be notified at the end of the first semester if their student will move from College Prep to Honors.

Grade 8 students who begin the school year in College Prep mathematics will continue in College Prep for the year. Instruction in mathematics is highly cumulative. It is necessary for students to have a solid understanding of Algebra I topics taught at the beginning of the school year in order to be successful with topics taught later in the school year.

MATHEMATICS/SCIENCE	ENGLISH LANGUAGE ARTS/ SOCIAL STUDIES
• Regrouping assessments will not be administered because the first quarter instruction in Algebra I is foundational for the remainder of the year	• Score 90% or higher on the end-of-semester district-wide assessment. AND • Quarter 1 English language arts teacher grade of A <u>or</u> English language arts teacher recommendation

Advisories

Middle school is a time of rapid change for developing adolescents. Students do best when they can rely on one or more adults to help them learn from their experiences; comprehend physical changes and changing relations with family and peers; act on their behalf to marshal school and community resources; and fashion a promising vision of the future. Advisories give students a time and place where their non-academic needs can be met. Small-group advisories provide personalized guidance and the active monitoring that young adolescents need. When students make a lasting connection with at least one caring adult, academic and personal outcomes improve.

Some of the purposes of advisories are to:

· Ensure each student is well-known by at least one adult who is that student's advocate (advisor)

· Develop relationships to support learning

· Guarantee that every student belongs to a peer group

· Help each student find ways to be successful within the academic and social options the school provides

· Promote communication and coordination between home and school

Teachers serve as mentors and role models for students in their advisory group. Strong advisories help students gain emotional strength, self-knowledge, and social skills through peer interaction and the acceptance and personal affirmation of trusted adults. While models of advisories vary nationally, Stamford Public Schools provides advising time twice weekly dedicated to addressing the social/emotional needs of students. The Efficacy Institute has provided training in supporting academic achievement for all students, as well as the books, *Your Tools for Getting Smart*, and *Treasure Chest: A Teacher Advisory Source Book* to support the work of advisories.

ACTIVITIES

The range of advisory topics may include:

· Health-related questions
· Concerns about school work
· Interpersonal issues
· Stress management
· Personal development
· Social relationships
· Study skills
· Time management
· Organizational skills

· Team-building
· Strengths and weaknesses
· Interest inventories
· Resume writing
· Goal-setting
· Character traits
· Learning styles
· Life lessons
· Community service

Grade 6 Sample Schedule

	DAY 1	DAY 2	DAY 3	DAY 4
Period 1 **8:10-9:10**	Academic Extension, Academic Support	Academic Extension, Academic Support	Academic Extension, Academic Support	Academic Extension, Academic Support
Period 2 **9:10-10:10**	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education
Period 3 **10:10-11:10**	Mathematics	Science	Social Studies	English Language Arts
Period 4 **11:10-11:45**	Science	Social Studies	English Language Arts	Mathematics
Lunch **11:45-12:10**	LUNCH			
Period 4 (cont) **12:10-12:40**	Science (cont.) or Advisory*	Social Studies (cont.) or Advisory*	English Language Arts (cont.) or Advisory*	Mathematics (cont.) or Advisory*
Period 5 **12:40-1:40**	Social Studies	English Language Arts	Mathematics	Science
Period 6 **1:40-2:40**	English Language Arts	Mathematics	Science	Social Studies

* Advisory in Grades 6-8 may occur once or twice within the 4-day schedule

Grade 7 Sample Schedule

	DAY 1	DAY 2	DAY 3	DAY 4
Period 1 **8:10-9:10**	Mathematics	Science	Social Studies	English Language Arts
Period 2 **9:10-10:10**	Science	Social Studies	English Language Arts	Mathematics
Period 3 **10:10-11:10**	Social Studies	English Language Arts	Mathematics	Science
Period 4 **11:10-12:10**	English Language Arts or Advisory*	Mathematics or Advisory*	Science or Advisory*	Social Studies or Advisory*
Lunch **12:10-12:40**	LUNCH			
Period 5 **12:40-1:40**	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education
Period 6 **1:40-2:40**	Academic Support, World Language, AVID, Academic Extension	Academic Support, World Language, AVID, Academic Extension	Academic Support, World Language, AVID, Academic Extension	Academic Support, World Language, AVID, Academic Extension

* Advisory in Grades 6-8 may occur once or twice within the 4-day schedule

Grade 8 Sample Schedule

	DAY 1	DAY 2	DAY 3	DAY 4
Period 1 **8:10-9:10**	English Language Arts	Mathematics	Science	Social Studies
Period 2 **9:10-10:10**	Academic Extension, Academic Support	Academic Extension, Academic Support	Academic Extension, Academic Support	Academic Extension, Academic Support
Period 3 **10:10-11:10**	Mathematics	Science	Social Studies	English Language Arts
Lunch **11:10-11:40**	LUNCH			
Period 4 **11:40-12:40**	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education	Music, Art, Physical Education
Period 5 **12:40-1:40**	Science or Advisory*	Social Studies or Advisory*	English Language Arts or Advisory*	Mathematics or Advisory*
Period 6 **1:40-2:40**	Social Studies	English Language Arts	Mathematics	Science

* Advisory in Grades 6 - 8 may occur once or twice within the 4-day schedule

Glossary

Academic Enrichment	A course in which students participate in academic extension and academic support.
Advisories	Twice weekly class periods dedicated to addressing the social/emotional needs of students.
College Prep Group	One of two flexible groups of students for mathematics/science and English language arts/social studies. Criteria for placement into the College Prep group are based on student assessment results. Students in the College Prep and Honors groups cover the same components of the curriculum.
Common Core State Standards	The Common Core State Standards describe the knowledge and skills in English language arts and mathematics that students will need when they graduate, whatever their choice of college or career. The standards are based on the best national and international standards, giving students a competitive advantage in the global economy.
Connected Mathematics Project 3 (CMP2)	A standards-based mathematics curriculum implemented in Grade 6, Grade 7, and Grade 8.
Connecticut Mastery Test (CMT)	Annual, grade-level assessment administered statewide to students in Grades 3-8 designed to measure student performance in the areas of mathematics, reading, writing, and science. The assessment focuses on content that is reasonable to expect students at each grade to master.
Core Curriculum	The four major courses of study offered to all middle school students. They are mathematics, English language arts, science, and social studies.
Honors Group	One of two flexible groups of students for mathematics/science and English language arts/social studies. Although students in the Honors and College Prep groups cover the same components of the curriculum, those in the Honors group will progress more quickly through the introductory or standard components.

Naglieri Nonverbal Ability Test	A language-free assessment that is a reliable, culture-fair measure of ability that can be used to evaluate students of diverse cultural and linguistic backgrounds. The Naglieri is administered to grade 5 students in the Spring.
Next Generation Science Standards (NGSS)	Based upon the latest research of science teaching and learning, these national science standards are designed to deepen all students' understanding of science and engineering to meet the demands of daily living, college and career. School districts are transitioning to NGSS since Connecticut's adoption in fall of 2015. The standards have three dimensions that are integrated at all levels: core ideas, science and engineering practices, and cross-cutting concepts.
Orleans-Hanna Algebra Prognosis Test	An assessment that predicts student success in first-year Algebra by measuring aptitude and achievement.
Otis Lennon School Achievement Test (OLSAT)	An assessment that measures a student's cognitive abilities that relate to abilities to learn in school. The OLSAT assesses a student's abstract thinking and reasoning abilities. The OLSAT is administered to grade 5 students in the Spring.
Regrouping Assessment	An assessment offered to eligible students to measure readiness to move to an Honors class.
Science Education for Public Understanding Program (SEPUP)	An issue-oriented science program that engages students in a variety of learning activities, including scientific investigations, to build students' knowledge of science ideas and skills. At the end of every unit, students are asked to apply their new knowledge and skills by evaluating evidence and making informed decisions about an issue.
Workshop Model	An instructional technique used across content areas that maximizes student participation in learning through active participation with peers. The workshop model is generally comprised of a three-phase process: (1) introduction, when the teacher poses a question or relevant content; (2) student pair or group work on the question or content (with teacher guiding students); and (3) summary of the content by the teacher and/or student.

NOTES