



CHARLES RIVER SCHOOL

DEEPER UNDERSTANDING, HIGHER ACHIEVEMENT.

SEVENTH AND EIGHTH GRADE CURRICULUM

The seventh and eighth grade program maintains the school's commitment to hands-on, experiential education and the acquisition of important skills through genuinely interesting and relevant topics. As we say in our CRS mission statement, "Our graduates know themselves, understand others, and shape the future of our diverse world with confidence and compassion."

MATHEMATICS

Mathematics is the language of numbers, and by the end of their time at CRS, graduates should become increasingly fluent in this language. Our focus in 7/8 is to shift from arithmetical thinking to algebraic thinking, and we encourage this transition through hands-on, interactive lessons that make the learning both tangible and relevant.

PRE-ALGEBRA

Pre-Algebra prepares seventh grade students to transition smoothly into Algebra I in eighth grade. Students continue to expand the breadth and depth of their mathematical knowledge base and generalize previously learned arithmetic skills using algebra. Class often begins with a Problem of the Day, which strengthens students' critical thinking and reviews computational and conceptual skills. Calculators and Chromebooks are routinely incorporated into lessons, allowing students to become comfortable with the technology used in future math courses and in the workforce. Emphasis is placed on thorough understanding of the patterns and logical progressions in math, through open-ended projects and other exploratory tasks. Students regularly communicate their thinking in solution write-ups, oral explanations of problems, and collaborative group activities.

ALGEBRA I

Algebra I is a standard course that explores the topics below and also teaches students the study habits necessary for success in higher mathematics. We use a problem solving approach that emphasizes the continuing development of mathematical thinking and reasoning skills. Computer software, calculators, and a variety of manipulatives are used to help students master algebraic concepts and their applications. Students who complete Algebra I at CRS are well prepared to launch into high-school level Algebra I, Geometry, or Algebra II in secondary school, depending on their own level of understanding as well as the program they are enrolling in after graduation.

Skills over the 7th-8th grade progression include topics such as:

Algebra

- Introduce and develop the concept of a variable
- Define and graph functions
- Recognize dependent and independent variables in a function
- Simplify and evaluate variable expressions
- Apply the distributive property
- Solve equations in one variable
- Solve word problems in one variable
- Apply exponents to algebraic expressions
- Introduce simple operations with monomials
- Solve and graph linear equations
- Translate real life situations to linear equations
- Recognize that slope is synonymous with rate of change

Numeration

- Study concept and properties of integers
- Master all four operations with integers
- Review prime and composite numbers
- Apply prime factorization, greatest common factor, least common multiple to algebraic expressions
- Learn scientific notation
- Compute numerical expressions with exponents
- Master order of operations
- Explore concept of negative exponents
- Compute absolute value

Decimals

- Review place value and ordering of decimals
- Review all operations with decimals
- Discover properties and patterns using calculator
- Estimate sums, differences, products, quotients
- Solve word problems

Fractions

- Simplify fractions, both numerical and algebraic
- Review all operations and extend to algebraic fractions

Ratio, Proportion, Percent

- Review concepts of ratio and proportion
- Solve word problems involving proportion
- Master fraction, decimal, and percent equivalents
- Understand percent as proportion

- Solve problems using percent

Graphs and Displays of Data

- Create broken line and circle graphs, histograms, stem and leaf plots, and scatter plots
- Interpret broken line and circle graphs, histograms, stem and leaf plots, and scatter plots
- Recognize the origin, axes, and four quadrants of the coordinate plane
- Graph points on a coordinate plane
- Define and master concept of functions
- Analyze functions as they relate to change (slope = rate of change, intercept = starting point)
- Introduce slope intercept form of linear equations
- Graph linear equations on a coordinate plane
- Collect data and create spreadsheets using Microsoft Excel

Probability and Statistics

- Find simple probability of an event
- Find probability of independent events both occurring
- Find probability of dependent events both occurring
- Create frequency tables
- Use Counting Principle and permutations formulas
- Learn to calculate combinations
- Find range, mode, mean, and median of data

Geometry

- Review types angle classification and measurement
- Identify all angle relationships resulting from parallel and perpendicular lines
- Review area, perimeter, circumference of two dimensional figures
- Study and apply concept of similarity
- Learn surface area and volume of regular prisms and pyramids
- Learn and apply the Pythagorean Theorem

Problem Solving

- Create a model
- Guess and check
- Make a table
- Work with a simplified case
- Find a pattern
- Use simpler numbers

Polynomials and Quadratics

- Working with Real Numbers
- Solving equations and Word Problems

- Polynomials
- Factoring Polynomials
- Algebraic Fractions and their Applications
- Functions
- Systems of Linear Equations
- Inequalities
- Rational and Irrational Numbers
- Quadratic Functions

SOCIAL STUDIES: PERSPECTIVES ON JUSTICE

This course prepares students to think, listen, write, and speak critically on justice issues of historical and current importance. It is a two-year curriculum that examines selected events in American and world history as well as topical issues like political campaigns, marketing, and education. Curriculum is frequently adjusted to address breaking news. Data analysis and geography are incorporated throughout. In the spring of both seventh and eighth grade, all students complete an extensive research project that culminates in a written paper and a presentation. Public speaking, visual presentations, and facility with various writing styles are important aspects of this course. The discipline of independent work is balanced by collaborative projects.

The United States espouses the ideals of freedom, equality, and democracy, yet the country's history and present is rife with restrictions, injustices, and disenfranchisement. Our work begins with an examination of America pre-European contact, as well as the effects of European history on the colonial experience. Specific attention is paid to the social, physical, and economic impact of inequality on individuals and society. We then root our study of the United States in critical readings of its founding documents, the Declaration of Independence, Articles of Confederation, Constitution, and the Bill of Rights. This forms a base of knowledge that enables students to critically investigate challenges these documents have faced throughout the United States' history, as well as contemporary implications. Additionally, we study America's place in the globalizing world. Throughout seventh and eighth grade, we also investigate various efforts to eradicate inequality. Often connections are made to the particular historical and contemporary local experience of Massachusetts. Throughout the year we pay attention to current events.

Skills

- Analyze and evaluate information
- Read content texts actively and critically
- Determine cause and effect
- Make sense of primary sources
- Detect bias and seek different points of view

- Build cohesive arguments using compelling evidence
- Write concisely and persuasively using similar writing skills to those emphasized in English
- Forming an argument to utilize in mock trials and debates
- Note taking
- Research using print and Internet
- Evaluate print and Internet sources for usefulness and reliability
- Research writing: thesis arguments, outlining, footnotes, bibliographies
- Read and interpret maps, charts, and graphs
- Public speaking and debating skills
- Create effective multimedia presentations
- Study for and take tests

Materials May Include:

Creating America

1493: From Columbus Voyage to Globalization

An Indigenous Peoples' History of the United States

Eyes on the Prize (film)

A Young People's History of the United States

Never Caught, the Story of Ona Judge

The Rebellious Life of Mrs. Rosa Parks

A Different Mirror: A History of Multicultural America

Becoming American: The Chinese Experience (film)

Give Me Liberty: An American History We the People

Internet and Radio

Music and literature

News sources (eg *Boston Globe*, *New York Times*, *Al Jazeera*, *New Yorker*, *Washington Post*)

Primary source documents

America's founding documents

SCIENCE

The science program in Grades 7 and 8 is a comprehensive, hands-on curriculum designed to focus on science skills while utilizing students' curiosity about the world around them. Students engage in laboratory work and activities (both in the classroom and in our on-campus Wetlands Laboratory) that rigorously prepare them for high school lab sciences, yet still allow ample opportunity to explore their own interests. Topics in Earth science, physics, chemistry and biology deepen students' understanding about their world and provide a medium in which to teach transferable skills such as data collection and analysis. Collaborative learning is a key aspect to CRS science where students learn to rely on each other to collect and make sense of data, draw conclusions and support their claims with evidence. The material is presented in such a way as to allow students to derive scientific concepts from the data that they gather, and think about sources of error inherent in any lab work. In addition, seventh graders perform a cross-curricular project through social studies and science classes where they consider the causes and impact of

climate change on countries across the world in a class-wide Model United Nations simulation.

Topics include:

- General: Scientific method, laboratory skills and techniques,
- Earth Science: Layers of the Earth; rocks, minerals and soil; climate change
- Physics: Motion, force, work; Newton's laws; work, power and machines; energy
- Chemistry: Measurement, mass, volume; conservation of matter; characteristic properties (density, freezing/melting point, boiling point, solubility); separation of materials (such as fractional distillation); atomic theory, periodic table, bonding; water - properties, etc.
- Biology: Importance of water to life; characteristics of living things; cells (history of cells, different types, etc.) and cell processes; genetics and genetic engineering; microscopy - including exploration of invertebrates in campus wetlands

Skills:

- Measurement
- Data collection and organization (qualitative and quantitative)
- Analysis of data (calculations, graphing, interpreting graphs, etc.)
- Drawing conclusions from gathered facts
- Supporting conclusions with evidence
- Scientific writing (such as formal lab reports)
- Microscopy
- Collaboration
- Design thinking and engineering processes

ENGLISH

The 7th and 8th English curriculum emphasizes principles of communication: listening, writing, reading, and speaking.

LITERATURE

Over the course of two years, students study poetry, short stories, and fiction and nonfiction novels. They learn to interpret and analyze literature with an emphasis on close reading and literary interpretation including character development, and symbolic and figurative language, point of view and literary conflict. Novels read in seventh grade may include *A Little Piece of Ground*, *American Born Chinese*, *Milkweed*, *The Rock and The River*, and *Animal Farm*. Eighth novels may include *The House on Mango Street*, *Of Mice and Men*, *Shakespeare's Julius Caesar*, *The Absolutely True Diary of a Part-Time Indian*, and *The Odyssey* (a graphic novel). The curriculum is frequently adjusted to address breaking news. Class is discussion based and students are asked to practice small group discussion skills as well as present ideas in a variety of modalities such as Socratic seminars, debates, and visual presentations,

Skills

- Reading comprehension
 - Literal comprehension:
 - Find the main idea
 - Read for detail and sequence
 - Inferential comprehension:
 - Understand character development
 - Recognizing symbolic references
 - Identify the literary conflict
 - Articulate theme
 - Improve reading fluency
 - Use evidence to support conclusions
 - Distinguish fact from opinion
 - Identify and use literary devices
 - point of view, tone, style, foreshadowing, imagery, metaphor, simile, personification, point of view
- Parse out multiple layers of meaning in figurative/metaphorical language

WRITING

Over the course of two years, students write in a variety of formats including analytical, fiction, nonfiction, poetry, and expository. Emphasis is placed on using specific structures to organize and clarify ideas appropriate for each style of writing. Students will practice the skills of generating ideas, organizing material, revising, and presenting their writing.

Skills

- Demonstrate proficiency in persuasive, narrative, expository, descriptive, and poetic writing
- Increase fluency: Draft, revise, edit
- Construct a original thesis statement, introduce and support thesis with correctly formatted evidence,
- Formulate compound, complex, and compound-complex sentences
- Use precise words and phrases, including transitions, both inter- and intra-paragraph

GRAMMAR

Grammar rules are introduced in mini-lessons and reinforced in writing assignments. Students are accountable for incorporating grammar rules into all of their writing.

PARTS OF A SENTENCE:

Participles, direct objects, indirect objects, complements, transitive and intransitive verbs, predicate nominatives, and predicate adjectives

MECHANICS

Skills

- Punctuation: comma, semi-colon, ellipsis, dialogue, apostrophes
- Chicago Citation Style
- Appositives, verb tense agreement, subjective and object case, dangling and misplaced modifiers, pronoun agreement.

VOCABULARY

Seventh and eighth grade study Greek and Latin word roots, suffixes, and prefixes.

WORLD LANGUAGES

We recognize that the grammar of Romance Languages uses a binary gender system. While we strive to maintain the integrity of the history and culture of these languages, we also seek to create inclusive learning environments for all students.

FRENCH 7

French class in 7th grade follows the same style and structure as 6th grade, providing continuity for the first year in the 7/8 program. By now, instruction is almost exclusively in French. Students refine their language skills through paired speaking and writing activities in class and through individual work on their Chromebooks. The goal is for students to feel confident about taking risks while placing appropriate emphasis on correct usage, pronunciation, good content, and improved fluency in their communications. This is a year of mastering essential grammar and continuing to learn new vocabulary and culture through themes. Students continue to take quizzes and oral and written chapter tests and complete projects relating to each theme presented in *Bien Dit!*, the level one textbook that students began in grade six. A cultural unit on Haiti is the focus in the spring, with a culminating project and oral presentation based on Danticat's *Beyond the Mountains*. This unit is conducted primarily in French and emphasizes geography, culture, and history in the target language.

Themes: school, sports and activities, food, and, clothing

Vocabulary: team and individual sports, activities and instruments, places in town, weather and seasons, food items, expressions of quantity, meals, tableware and café fare, school subjects and supplies, days of the week, colors, articles of clothing and accessories

Grammar: irregular verbs *faire, aller, venir, prendre, mettre*, interrogative adverbs, immediate future and recent past, partitive article, regular -ir verbs, demonstrative and interrogative articles, the *passé composé* of regular and irregular verbs

FRENCH 8

In addition to completing the final chapters of the level one text, *Bien Dit!*, students read and write more frequently in 8th grade. Conducted entirely in French, the main cultural theme for the class is French-speaking Africa, particularly the West African country of Senegal. Students begin this unit in the fall, focusing on geography and important historic sites in the country. They gain understanding of daily life in the capital city of Dakar by reading excerpts from *Aujourd'hui au Sénégal: Bocar, Dakar*, Gallimard Jeunesse, 2005. With goals of increased oral comprehension, speaking skills, and new vocabulary acquisition, 8th graders complete this unit using the same format that was presented in the spring of 7th grade. Chapter tests and quizzes, both written and oral, remain part of the structure of class, and projects are designed around specific units. Much of the spring term is devoted to the final project: a written application, journal and oral presentation of a semester in an arrondissement of Paris. Students write about themselves, their host families and apartments, tourist sites, and a favorite restaurant in their neighborhoods. They incorporate many of the grammatical structures, verbs and vocabulary learned throughout their three years of French, and share their experiences with their classmates during an audio-visual presentation at the end of the year. Upon completion of the French 8, most students are ready for a second-level high school French course.

Themes: chores, house, city, travel

Vocabulary: house and household chores (relating to Europe and Africa), furniture, places in a city, transportation, travel items

Grammar: irregular verbs *pouvoir, devoir, partir, sortir, dormir, voir, savoir, connaître*, the passé composé with *avoir* and with *être*, prepositions with countries and cities

SPANISH 7

In the second year of a three-year program, seventh grade students expand their knowledge of Spanish grammar and vocabulary. 7th grade follows the same methods and structure as 6th grade, providing continuity for the first year in the 7/8 program. Instruction is almost entirely in Spanish. Students improve their language skills through group and paired speaking and writing activities during class and through individual work on their Chromebooks both in and outside of class. Over time students become comfortable speaking and writing in the target language. Pronunciation and oral proficiency remain a focus of language acquisition. Students continue to master essential grammar, new vocabulary and culture through themes. Quizzes and oral and written unit tests continue to be a part of 7th grade assessments, along with projects relating to each theme presented in chapters four and five in *¡Avancemos!*, the level one textbook that students began in grade six. Students broaden their familiarity with the Spanish-speaking cultures of the Caribbean and Central America, and have a culminating project at the end of the year.

Themes: Food, clothing, dining out.

Vocabulary: seasons, food items, meals, tableware and restaurant menus, articles of clothing and accessories.

Grammar: Irregular verbs and stem-changing verbs in the present tense, the imperative, prepositions of place, giving directions, the near future, expressions with the verb to have, expressions of quantity, and direct object pronouns.

SPANISH 8

This is the last year of the three-year program. The goals are for students to strengthen their knowledge of Spanish grammar and vocabulary as well as to study various Spanish-speaking countries in Central and South America. The class is conducted in Spanish and students speak in the target language. With goals of increased oral comprehension, speaking skills, and new vocabulary acquisition. Chapter tests and quizzes, both written and oral, remain part of the structure of class, and projects are designed around specific units. Much of the spring term is devoted to the capstone project: a written application, journal entries, and an oral presentation about their semester in a capital city in Central or South America. Students write about themselves, their host families and apartments, tourist sites, and a favorite cafe and restaurant in their neighborhoods. They incorporate many of the grammatical structures, verbs, and vocabulary learned throughout their three years of Spanish, and share their experiences with their classmates during an audio-visual presentation at the end of the year. At the completion of this year, most students are prepared to enter a second year high school level Spanish class.

Themes: sports, house, chores, city, travel

Vocabulary: sports and sports equipment, house and household chores, furniture, places in a city, transportation, travel items, giving directions.

Grammar: Regular and irregular preterite tense, indirect object pronouns, reflexive verbs, comparative, superlative, demonstrative adjectives, imperfect tense forms, future tense.

ART

The seventh and eighth grade Art program gives students the opportunity to develop an advanced foundational skill set across a variety of media. They begin their year with a progression of observational drawing assignments, developing new skills while experimenting with different techniques and approaches. The drawing sequence culminates with a significant final project that integrates aspects of everything they have learned throughout the term. In the latter half of the year, the focus shifts towards sculptural work. Whether working with cardboard construction, clay, or papier mache, students learn to translate two dimensional ideation into three dimensional form.

Project examples:

- Observational drawing from nature
- Contour and blind contour still life drawings
- Figure drawing focused on gesture
- Monochromatic self-portrait painting
- Pencil and charcoal renderings of imaginary creatures
- Clay tiles and monuments
- Three dimensional “egg drop” vehicle using cardboard joinery and papier mache construction
- Mixed media collage
- Monoprint derived from landscape drawing

MULTI-ARTS PROGRAM

Students in Grades 7 and 8 participate in a multi-arts program that allows them to work directly with artists in a variety of disciplines. Classes may include: Drama Workshop, a combination improvisational activities and scene study; Handbell Ensemble and A Cappella Singing, in which students read music as they learn pieces for Winter Festival; Dance Workshop, in which students gain experience with several styles of dance; 8th grade Musical Production in which all 8th graders sing, act, and learn choreography; and Choral Music, which is featured at graduation.

TECHNOLOGY

The technology program at CRS starts with the why – why should we teach technology at all? The answer is we don’t teach “technology;” we teach self-reflection, empathy, and problem solving (know themselves, understand others, and shape the future). The medium we work within to accomplish this is digital tools, and we teach students both existing skills and how to learn new technology on their own. While the process of learning new tools is inherently valuable (growth mindset, exploration, logic, sequential thinking, curiosity), ultimately we teach technology because of the opportunities it can provide for students to improve themselves and make a positive impact on the world.

We approach this through focusing on four main curricular categories that spiral throughout all grades (PreK - 8):

- Engineering & Design Thinking
- Multimedia Production
- Programming & Robotics
- Publishing

In Grades 7 and 8, the focus shifts from discrete classes to using specific software applications embedded in content area curriculum. For example, students use spreadsheets to support data analysis in Social Studies, use multimedia presentations to enhance persuasive speeches on social justice topics in English class, manage online portfolios, and use online collaboration for project management. There is also an important focus in Growth Education on self-reflection, social media use, and learning to navigate an online social world in healthy ways. Seventh graders also complete a Design Thinking Project in which they choose a problem or issue to solve, rapid prototype solutions, and present the process at a Design Expo in March.

PHYSICAL EDUCATION

The Physical Education program is developmental and skill-based. The program includes cooperative games, standard games, such as capture the flag and ultimate Frisbee, and team sports including field hockey, soccer and basketball. Students practice motor and sports skills throughout these activities. Students develop sports skills through movement exploration, specific skill work and playing games.

LIBRARY

Seventh and eighth graders use the Library independently to locate books for research and for pleasure reading. Some software resources are available over the school network, for example the card catalog and electronic databases for research and can be accessed from the 7/8 classrooms.

GROWTH EDUCATION

Growth Education encompasses many of the issues about which young adolescents are concerned, and classes address such topics as peer relationships, building self-esteem, human sexuality, in-person and cyber group interaction skills, media literacy, body image, nutrition, substance abuse, and other relevant topics. In the spring eighth graders typically discuss leave-taking and the transition to high school, while seventh graders undertake leadership training. Growth Education classes also afford 7/8 students opportunities to hone their emotional intelligence and conflict resolution skills through RULER, CRS's social-emotional learning program. The PreKindergarten and Kindergarten buddy program is another integral part of Growth Education.

MIDDLE SCHOOL STUDENT GOVERNMENT

At the beginning of the year, students elect officers to run the Middle School Student Government. The leadership positions of Co-Moderators and Secretary are held by seventh or eighth graders. Also, multiple representatives are selected from sixth, seventh, and eighth grades to serve in the student government. Elected representatives meet

regularly to determine agenda, plan the monthly Town Meetings, and follow up on action items.

ELECTIVES PROGRAM

Seventh and eighth grade students, joined by sixth graders, choose an elective class. Electives are held each Friday afternoon and give students the opportunity to learn more about a particular area of interest. Offerings in the past have included MathCounts, Model United Nations, cooking, photography, ceramics, knitting, sewing, baking, card making, cinema and jewelry making. Each term a list of courses is presented to the sixth, seventh, and eighth grade students, who then choose a topic to explore.

SPORTS (Interscholastic Competition)

The school offers a program of interscholastic competition for students in Grades 6-8 for three seasons. Students are required to participate in at least two of the three seasons per year. Offerings include: fall (soccer, field hockey, cross country, and flag football); winter (basketball and fitness club); spring (lacrosse, tennis, track and field, and ultimate Frisbee). Children work with others in their age group under the supervision of a coach. They learn strategies, positions on the field, skills specific to the sport, and skills to develop effective teamwork. The Charles River School Sports Program encourages group cooperation in a competitive setting as each team plays games with neighboring teams of similar age and ability.