

**Christa
McAuliffe**

ACADEMY



**Middle School
Course Catalog
2009/2010**

Mathematics

Mathematics 6

Semesters: 2

Grade(s): 6

Prerequisite(s): none

Students master the four arithmetic operations with whole numbers, positive fractions, positive decimals, and positive and negative integers; they accurately compute and solve problems. They apply their knowledge to statistics and probability. Students understand the concepts of mean, median, and mode of data sets and how to calculate the range. They analyze data and sampling processes for possible bias and misleading conclusions; they use addition and multiplication of fractions routinely to calculate the probabilities for compound events. Students conceptually understand and work with ratios and proportions; they compute percentages (e.g., tax, tips, interest). Students learn about pi and the formulas for the circumference and area of a circle. They use letters for numbers in formulas involving geometric shapes and in ratios to represent an unknown part of an expression. They solve one-step linear equations.

Mathematics Fundamentals

Semesters: 2

Grade(s): 6-8

Prerequisite(s): none

Provides continued learning and practice for students not ready for pre-algebra. Greatest emphasis is placed on number theory, addition, subtraction, multiplication, division, fractions, decimals, and percents. Students work towards mastery of each concept, with modifications made to instructional approaches and allowing students to revisit lessons. The goal is to give the student a solid foundation and understanding of basic math, providing the prerequisite for future success in pre-algebra and beyond.

Pre-Algebra

Semesters: 2

Grade(s): 7-8

Prerequisite(s): Mathematics 6 or skills placement

Students become adept at manipulating numbers and equations and understand the general principles at work. Students learn and use factoring of numerators and denominators and properties of exponents. They learn the Pythagorean theorem and solve problems in which they compute the length of an unknown side. Students learn how to compute the surface area and volume of basic three-dimensional objects and understand how area and volume change with a change in scale. Students make conversions between different units of measurement. They learn and use different representations of fractional numbers (fractions, decimals, and percents) and are proficient at changing from one to another. They increase their facility with ratio and proportion, compute percents of increase and decrease, and compute simple and compound interest. They graph linear functions and understand the idea of slope and its relation to ratio.

Algebra

Semesters: 2

Grade(s): 8

Prerequisite(s): Pre-Algebra or skills placement

Students develop an understanding of the symbolic language of mathematics and the sciences, and algebraic skills and concepts are developed and used in a wide variety of problem-solving situations. Topics include, but are not limited to, arithmetic properties, understanding various operations and rules (i.e. reciprocal, exponents), solving equations and inequalities, absolute values, linear equations, multistep problems, word problems, graphing equations and quadratic functions, parallel and perpendicular lines, slopes, graphical interpretation of multiple equations, monomials, polynomials, and additional algebraic concepts. Students develop the ability to use and know simple aspects of a logical argument, and they will be able to use the properties of the number system to judge the validity of results, justify each step of a procedure, and to prove or disprove statements.

Language Arts

Language Arts 6

Semesters: 2

Grade(s): 6

Prerequisite(s): none

Students develop skills in word analysis, fluency, and vocabulary. Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose. They practice responding to what they read through narrative and expository critique. They read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They also clarify ideas and connect them to other literary works. Students write clear, coherent, and focused essays. The writing exhibits students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed. They write narrative, expository, persuasive, and descriptive texts of at least 500 to 700 words in each genre; these include narratives, research reports, responses to literature, persuasive compositions, and various expository patterns of development (compare & contrast, problem and solution, etc). Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies. Students write and speak with a command of standard English conventions appropriate to this grade level. Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication, and they deliver well-organized formal presentations employing traditional rhetorical strategies.

Language Arts 7

Semesters: 2

Grade(s): 7

Prerequisite(s): Language Arts 6 or skills placement

Students develop skills in word analysis, fluency, and vocabulary. Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose. They practice responding to what they read through narrative and expository critique. They read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They also clarify ideas and connect them to other literary works. Students write clear, coherent, and focused essays. The writing exhibits students' awareness of the audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed. They write narrative, expository, persuasive, and descriptive texts of at least 500 to 700 words in each genre; these include responses to literature, research reports, persuasive compositions, and summaries of reading materials. . Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies. Students write and speak with a command of standard English conventions appropriate to this grade level. Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication, and they deliver well-organized formal presentations employing traditional rhetorical strategies; these include narrative presentations, oral summaries of articles and books, research presentations, and persuasive presentations.

Language Arts 8**Semesters:** 2**Grade(s):** 8**Prerequisite(s):** Language Arts 7 or skills placement

Students use their knowledge of word origins and word relationships, as well as historical and literary context clues, to determine the meaning of specialized vocabulary and to understand the precise meaning of grade-level-appropriate words. Students read and understand grade-level-appropriate material. They describe and connect the essential ideas, arguments, and perspectives of the text by using their knowledge of text structure, organization, and purpose. In addition, students read one million words annually on their own, including a good representation of narrative and expository text. Students read and respond to historically or culturally significant works of literature that reflect and enhance their studies of history and social science. They clarify the ideas and connect them to other literary works. Students write clear, coherent, and focused essays. The writing exhibits students' awareness of audience and purpose. Essays contain formal introductions, supporting evidence, and conclusions. Students progress through the stages of the writing process as needed. Students write narrative, expository, persuasive, and descriptive essays of at least 500 to 700 words in each genre. Student writing demonstrates a command of standard American English and the research, organizational, and drafting strategies; these include biographies, autobiographies, short stories, narratives, responses to literature, research reports, persuasive compositions, technical documents, and documents related to career development. The standards for written and oral English language conventions have been placed between those for writing and for listening and speaking because these conventions are essential to both sets of skills. Students deliver focused, coherent presentations that convey ideas clearly and relate to the background and interests of the audience. They evaluate the content of oral communication. Students deliver well-organized formal presentations employing traditional rhetorical strategies (e.g., narration, exposition, persuasion, description).

Science

Earth & Space Science

Semesters: 2

Grade(s): 6

Prerequisite(s): none

Students explore Earth and space science through the following topics: plate tectonics and Earth's structure, shaping Earth's surface, heat (thermal energy), energy in the Earth system, ecology, and resources. Students learn how to go through the scientific process by asking meaningful questions and conducting careful investigations.

Life Science

Semesters: 2

Grade(s): 7

Prerequisite(s): none

Students gain understanding of life science topics, including cell biology, genetics, evolution, Earth and life history, the structure and function in living systems, and the physical principles in living systems. Students learn how to go through the scientific process by asking meaningful questions and conducting careful investigations.

Physical Science

Semesters: 2

Grade(s): 8

Prerequisite(s): none

Students survey and gain understanding in the realm of physical science, and topics include motion, forces, the structure of matter, Earth in the social system, reactions, chemistry of living systems, the periodic table, and density and buoyancy. Students learn how to go through the scientific process by asking meaningful questions and conducting careful investigations.

Social Studies

Ancient History & Geography

Semesters: 2

Grade(s): 6

Prerequisite(s): none

Students in expand their understanding of history by studying the people and events that ushered in the dawn of the major Western and non-Western ancient civilizations. Geography is of special significance in the development of the human story. Continued emphasis is placed on the everyday lives, problems, and accomplishments of people, their role in developing social, economic, and political structures, as well as in establishing and spreading ideas that helped transform the world forever. Students develop higher levels of critical thinking by considering why civilizations developed where and when they did, why they became dominant, and why they declined. Students analyze the interactions among the various cultures, emphasizing their enduring contributions and the link, despite time, between the contemporary and ancient worlds.

Modern World History & Geography

Semesters: 2

Grade(s): 7

Prerequisite(s): none

Students study the social, cultural, and technological changes that occurred in Europe, Africa, and Asia in the years A. D. 500–1789. After reviewing the ancient world and the ways in which archaeologists and historians uncover the past, students study the history and geography of great civilizations that were developing concurrently throughout the world during medieval and early modern times. They examine the growing economic interaction among civilizations as well as the exchange of ideas, beliefs, technologies, and commodities. They learn about the resulting growth of Enlightenment philosophy and the new examination of the concepts of reason and authority, the natural rights of human beings and the divine right of kings, experimentalism in science, and the dogma of belief. Finally, students assess the political forces let loose by the Enlightenment, particularly the rise of democratic ideas, and they learn about the continuing influence of these ideas in the world today.

U.S. History & Geography

Semesters: 2

Grade(s): 8

Prerequisite(s): none

Students study the ideas, issues, and events from the framing of the Constitution up to World War I, with an emphasis on America's role in the war. After reviewing the development of America's democratic institutions founded on the Judeo-Christian heritage and English parliamentary traditions, particularly the shaping of the Constitution, students trace the development of American politics, society, culture, and economy and relate them to the emergence of major regional differences. They learn about the challenges facing the new nation, with an emphasis on the causes, course, and consequences of the Civil War. They make connections between the rise of industrialization and contemporary social and economic conditions.

Health & Physical Education

Health & PE 6

Semesters: 2

Grade(s): 6-8

Prerequisite(s): none

Students demonstrate the motor skills and movement patterns needed to perform a variety of physical activities. They demonstrate knowledge of movement concepts, principles, and strategies that apply to the learning and performance of physical activities. Students assess and maintain a level of physical fitness to improve health and performance. Students demonstrate knowledge of physical fitness concepts, principles, and strategies to improve health and performance. Finally, students demonstrate and utilize knowledge of psychological and sociological concepts, principles, and strategies that apply to the learning and performance of physical activity.

Health & PE 7

Semesters: 2

Grade(s): 6-8

Prerequisite(s): none

Students demonstrate the motor skills and movement patterns needed to perform a variety of physical activities. They demonstrate knowledge of movement concepts, principles, and strategies that apply to the learning and performance of physical activities. Students assess and maintain a level of physical fitness to improve health and performance. Students demonstrate knowledge of physical fitness concepts, principles, and strategies to improve health and performance. Finally, students demonstrate and utilize knowledge of psychological and sociological concepts, principles, and strategies that apply to the learning and performance of physical activity.

Health & PE 8

Semesters: 2

Grade(s): 6-8

Prerequisite(s): none

Students demonstrate the motor skills and movement patterns needed to perform a variety of physical activities. They demonstrate knowledge of movement concepts, principles, and strategies that apply to the learning and performance of physical activities. Students assess and maintain a level of physical fitness to improve health and performance. Students demonstrate knowledge of physical fitness concepts, principles, and strategies to improve health and performance. Finally, students demonstrate and utilize knowledge of psychological and sociological concepts, principles, and strategies that apply to the learning and performance of physical activity.

Electives

Technology Literacy
Prerequisite(s): none

Semesters: 2

Grade(s): 6-8

Students develop technology literacy skills throughout grades K-8, with up to two semesters per academic year. Students are provided instruction based on their current skill levels in each competency, building towards mastery of all competencies by the end of the 8th grade year. Students will be able to use a computer and its peripherals to complete tasks. They will develop word processing skills, create electronic presentations, create and use databases, and created and use spreadsheets. Students will gain Internet skills including browsing, searching, emailing, researching, and presenting. They will learn and demonstrate basic Internet safety and ethics while engaging in various forms of Online communication.

Keyboarding
Prerequisite(s): skills placement

Semesters: 2

Grade(s): K-5

Students learn proper finger placement and engage in systematic instruction to build both accuracy and speed.

Visual Arts
Prerequisite(s): none

Semesters: 2

Grade(s): 6-8

Students learn to perceive and respond to works of art, objects in nature, events, and the environment, and use the vocabulary of the visual arts to express observations. They apply artistic processes and skills, using a variety of media to communicate meaning and intent in original works of art. They also analyze the role and development of the visual arts in past and present cultures throughout the world, noting human diversity as it relates to the visual arts and artists. Students analyze, assess, and derive meaning from works of art, including their own, according to the elements of art, the principles of design, and aesthetic qualities, and they apply what they learn in the visual arts across subject areas. *Instruction is customized according to individual skill level in each competency, and students are guided towards greater mastery, continuously refining their visual art skills over the course of grades 6th through 8th, with up to two semesters per academic year.

Music
Prerequisite(s): none

Semesters: 2

Grade(s): 6-8

Students read, notate, listen to, analyze, and describe music and other aural information, using the terminology of music. They apply vocal and instrumental musical skills in performing a varied repertoire of music. They compose and arrange music and improvise melodies, variations, and accompaniments, using digital/electronic technology when appropriate. Students analyze the role of music in past and present cultures throughout the world, noting cultural diversity as it relates to music, musicians, and composers. Also, students critically assess and derive meaning from works of music and the performance of musicians in a cultural context according to the elements of music, aesthetic qualities, and human responses. They apply what they learn in music across subject areas and learn about careers in music. *Students are expected to develop competencies over the course of grades 6th through 8th, with up to two semesters per academic year.

Dance**Semesters:** 2**Grade(s):** 6-8**Prerequisite(s):** none

Students perceive and respond, using the elements of dance. They demonstrate movement skills, process sensory information, and describe movement, using the vocabulary of dance. They apply choreographic principles, processes, and skills to create and communicate meaning through the improvisation, composition, and performance of dance. Students analyze the function and development of dance in past and present cultures throughout the world, noting human diversity as it relates to dance and dancers. Students critically assess and derive meaning from works of dance, performance of dancers, and original works according to the elements of dance and aesthetic qualities. Students apply what they learn in dance to learning across subject areas, and they also learn about careers in and related to dance.

Theater**Semesters:** 2**Grade(s):** 6-8**Prerequisite(s):** none

Students observe their environment and respond, using the elements of theatre. They also observe formal and informal works of theatre, film/video, and electronic media and respond, using the vocabulary of theatre. Students apply processes and skills in acting, directing, designing, and script writing to create formal and informal theatre, film/videos, and electronic media productions and to perform in them. They analyze the role and development of theatre, film/video, and electronic media in past and present cultures throughout the world, noting diversity as it relates to theatre. Students critique and derive meaning from works of theatre, film/video, electronic media, and theatrical artists on the basis of aesthetic qualities. They apply what they learn in theatre, film/video, and electronic media across subject areas, and learn about careers related to theater. *Students learn and refine skills and competencies throughout grades 6th through 8th, up to two semesters per academic year, attaining mastery by the end of their 8th grade year.

Spanish**Semesters:** 2**Grade(s):** 6-8**Prerequisite(s):** none

Lessons focus on successful communication through speaking, writing, reading, and listening, as well as a thorough grounding in aspects of culture. Unit activities blend different forms of communication and culture, and strategies include warm-up activities, vocabulary study, reading, threaded discussions, multi-media presentations, self-checks, practice activities and games, oral and written assignments, projects, quizzes, and exams.

French**Semesters:** 2**Grade(s):** 6-8**Prerequisite(s):** none

Lessons focus on successful communication through speaking, writing, reading, and listening, as well as a thorough grounding in aspects of culture. Unit activities blend different forms of communication and culture, and strategies include warm-up activities, vocabulary study, reading, threaded discussions, multi-media presentations, self-checks, practice activities and games, oral and written assignments, projects, quizzes, and exams.

German**Semesters:** 2**Grade(s):** 6-8**Prerequisite(s):** none

Lessons focus on successful communication through speaking, writing, reading, and listening, as well as a thorough grounding in aspects of culture. Unit activities blend different forms of communication and culture, and strategies include warm-up activities, vocabulary study, reading, threaded discussions, multi-media presentations, self-checks, practice activities and games, oral and written assignments, projects, quizzes, and exams.

Additional Electives

Some high school elective courses can be taken by middle school students. Consult with your educational facilitator regarding details.