

# **Rockland Country Day School Curriculum Guide**

**Updated 2018-19**

**Founders' Statement**

The principal aim of Rockland Country Day School is to provide an academic curriculum and intellectual environment suitable for young people preparing for advanced education in the arts and sciences.

Two conditions are necessary for the success of this aim. These are, first, a well-trained and humanistically-oriented faculty and, second, an atmosphere that encourages intellectual and artistic interests and initiative. These conditions go hand in hand. They are never to be taken for granted, and they must be continuously reinforced by cooperative discussion among faculty, students, administration, parents, and trustees. From the beginning, it has been our purpose to build a school that would have sufficient depth and life to make this constant re-examination inseparable from its very character.

A good curriculum does not in itself make a good school. The faculty must embody, in its mastery of materials, its methods of teaching, and its relationships with students, a dependable, encouraging, and concerned view of life.

The freedom of the student, the courage to reach out beyond oneself even at a certain risk, must be cherished even while the school seeks to give that freedom and courage a responsible, meaningful, and mentally disciplined context. The student must be recognized and rewarded for intellectual, artistic, and moral effort and achievement; for this recognition to be felt as truly responsive, it is necessary that the teaching staff respect and show true courtesy toward the student body.

A school that is guided by these principles, and that wishes to have a mutually beneficial relationship with the larger community around it, faces a constant need to re-examine itself and to shun complacency.

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# The Academic Program

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At Rockland Country Day School (RCDS), we pride ourselves on our ability to be a rigorous, college-preparatory program that balances a focus on academics with a focus on the individual needs and talents of our students. Our program is forward thinking in its approach to instruction as well as in its offerings, and students who graduate from RCDS leave with strong academic skills and a self-assured creativity that will allow them to innovate, problem-solve, and lead in the 21<sup>st</sup> Century.

## **Multi-age Classrooms**

Teaching children involves an all-encompassing respect for individual expression, learning styles, and ways of being. Students are taught based on their cognitive abilities, social interaction, and emotional make-up and are encouraged to be independent learners. The rigorous process of acquiring knowledge is paramount as we build and enhance skills, explore newly found curiosities, and share ideas about what we learn. Students who demonstrate an interest and readiness to do more advanced work are supported and encouraged. Students who need more time and support to master their grade-level content also receive the pacing they need. Our multi-age classrooms reflect our belief that every student learns at her or his own pace, and our classrooms are supportive and flexible environments conducive to all students' learning needs. Our small, multi-age class model is very successful in allowing children to problem-solve, share leadership roles, and respect what it means to learn something for the first time. Compassion, patience, diligence, and humor are valued assets as children engage in opportunities to learn from one another effectively. Our courses are offered on a two-year revolving curriculum to ensure that students at each particular grade level receive the appropriate content throughout each two-year cycle.

## **Individualized Instruction**

Teachers and staff address the individual needs of students. The Academic Support Program provides individualized instruction and learning strategies designed to foster academic success. Students receive instruction in organization, prioritization of workload, and support with homework and class work tailored to their individual learning styles. Faculty and staff communicate directly with parents and guardians about each student's academic history, concerns, and progress.

## **English Language Learners (ELL)**

RCDS has a long tradition of serving international students for whom English is a second, or more, language. Students are pre-screened for English competency in an Admission interview, and on arrival at RCDS are further assessed to determine the level of ELL support needed. We provide a traditional ELL class in which students learn how to better communicate and understand English, as well as ELL History and ELL English.

## **Integrated Curriculum**

The classroom environment is crucial to a student's engagement in school and is designed to encourage individual choice as well as cooperative experience. Hands-on materials permit developmentally appropriate, concrete investigation of subject matter. Materials and activities are carefully selected to encourage creative problem solving, open-ended inquiry, and mastery of specific skills and tasks. In a closely-knit community in which mutual respect, kindness, and creative thinking are attainable goals, and in which every member is honored for his or her unique spirit, students can achieve a strong sense of self-worth and a secure knowledge base for future learning. The integration of rich literature in all

subjects provides a vibrant foundation for inquiry, making meaning, and acquiring factual knowledge. Music and art play an integral role in deepening our understanding of the world. Students engage in cross-curricular activities within units of study.

### **Independent Study**

We envision a world in which each individual is equipped to effect real and meaningful change and prepared to pursue his or her dreams with confidence. We believe that the skills and insights essential to this--profound self-understanding and self-direction--come through an active curiosity and work in and reflection on specific personal projects.

Independent Studies, founded by two RCDS alumni, is intended to foster individually motivated study through which students derive excitement about and pride in their work. The motivation and enthusiasm that arise from such self-directed work make for a more fulfilling and vibrant school experience overall--both for those pursuing independent projects and for community that surrounds them.

Independent Studies acts as a gateway to a collection of resources--physical space, allotment of time, access to funds, independent-study-related events, centralized investment of institutional attention and support--to facilitate students' explorations of their interests and passions. With guidance from faculty, students learn an academic approach to their work using rationale, process, and reflection as steps to articulate the roadmap to their desired results.

### **21<sup>st</sup> Century Skills**

Central to our program is the integration of solid research skills, as well as a strong understanding of computer use. Our goal is for students to be able to read actively; discuss, discern, and debate ideas based upon their reading; conduct solid research; use Internet resources proficiently and responsibly; and employ digital resources as significant components of their coursework. All classrooms are equipped with SmartBoards, which enable teachers and students to project interactive images from the Internet and their computers. We believe it is essential that RCDS students:

- Acquire skills that allow them to fully integrate a spirit of inquiry and critical and creative thinking.
- Be educated in quantitative and information literacy.
- Assume individual and social responsibility including ethical reasoning, understanding the importance of embracing and celebrating cultural difference, and embracing civic responsibility and engagement.
- Strengthen their creative impulses, as creativity is the number one leadership competency of the future (from a 2010 IBM poll of 1,300 CEOs).
- Develop values that will promote social responsibility.
- Appreciate the role of technology and understand it as an integral component of their learning environment.
- View themselves as life-long scholars who participate actively in their learning environments.

### **Assessments**

We use a variety of assessment methods to ensure that students are *learning* what we are *teaching*. Teachers administer formal summative assessments ranging from traditional tests to term-long projects, in which students demonstrate application and mastery of concepts and skills. Teachers also use informal formative assessments such as group work observations, class participation, and homework to

gauge student learning and inform instruction.

### **Growth Portfolios**

Throughout the school year, we compile portfolios to measure students' growth as learners. The portfolio, which collects samples of student work in the core courses (Language Arts, Mathematics, and Science) and reflects their writing skills as well as their content knowledge and understanding, is sent home to parents and guardians each trimester for their review. In end-of-term comments, sent home with report cards, teachers provide their reflections about the student's learning each trimester.

### **Standards-Based Instruction**

The faculty and administrators continually review the curriculum to adjust the academic program, as needed, to ensure that our instruction continues to reflect rigorous learning standards and best teaching practices in education. This guide outlines key learning outcomes of an RCDS education. Language Arts, Mathematics, and Science courses contain sizable teaching objectives.

### **An Excerpt from EducationWeek.org:**

#### **Academics Find Common Standards Fit for College**

AUGUST 25, 2011

Instructors of entry-level college courses consider the common standards in mathematics and English/language arts good reflections of the skills students must master to be successful in courses in a range of disciplines, according to a survey released last week.

The study, ["Reaching the Goal,"](#) aims to verify a key premise of the academic standards that have been adopted by all but five states: that they prepare students for college by defining the skills and knowledge that are crucial to success in entry-level coursework. Although college instructors served on the panels that crafted the standards, the new survey is believed to be the only study to test that premise by putting the question directly to higher-education faculty members.

"It suggests strong support for the validity of the common-core standards, in terms of their applicability to college courses and their importance, and the appropriate level of challenge for students to be successful," said Michael W. Kirst, a professor emeritus of education at Stanford University who focuses on college-readiness issues and serves on the board of directors of the research group that produced the report. "Nobody has cross-checked it with the actual people who teach these courses, until now."

Ninety-six percent of the responding instructors agreed that the standards were at a level of rigor sufficient for preparation for their courses.

# Core Subjects Overview

## Language Arts

The primary objectives of the Language Arts program encourage enjoyment and involvement in reading, writing, and speaking, and help children develop into independent and critical thinkers. We know that all children do not learn in the same way and that we need to use a variety of instructional methods and materials. Class lessons introduce skills and follow up with individualized skill support. Students read books on their individual reading levels in addition to reading class novels. Teachers conference with individual readers to promote skills and understanding. Conferring individually with students ensures that writers progress at their own pace according to their aptitude. Response to literature is an active process that includes writing summary, investigating structure, and making connections to self, text, and the world. Flexible grouping allows students to share opinions and explore a common piece of literature in depth. Our classroom writing and reading environment ignites the imagination and inquiry process. The writing program emphasizes process and builds on the student's abilities as a storyteller and communicator. The writing process, involving collaboration and feedback from classmates and teachers, occurs at all grade levels.

## Mathematics

Our Mathematics program is committed to helping students become competent at solving problems, communicating mathematically, thinking deductively and inductively, and appreciating the aesthetics of mathematics. Students explore and create strategies to support their methodology through logical reasoning. Process is valued along with product. Students are encouraged to enjoy mathematics as both a pure intellectual activity as well as having numerous practical applications. Teachers guide students to connect real-life mathematics experiences to classroom study and to apply lessons to the outside world. We teach specific skills to prepare our students to be efficient and accurate problem solvers. We infuse Singapore Math into the K through Grade 6 curriculum.

## Science

Students learn effectively when they are actively engaged in the process of discovery. The Science program is committed to developing scientifically literate individuals who are knowledgeable about important scientific ideas and are aware of how the Sciences connect to mathematics and technology and relate to society. Our program is built on students' natural interests in the world. Science is hands-on, collaborative, inquiry-oriented, and centers on the processes that real scientists use in their everyday work: observing, communicating, comparing, ordering, categorizing, predicting, relating, inferring, and applying. Annually, fourth through eleventh grade students participate in the School's Science Fair. Based on evaluations provided by the guest judges (faculty and visiting science professionals), the Science department encourages select students to participate in the Tri-County Science Fair. All students have the option of creating an original invention or conducting an experiment.

## Social Studies and Humanities

Our Pre-K-4<sup>th</sup>-grade Social Studies program engages students in the study of history, geography, economics, government, and civics. Students examine the past, study the present, and speculate about the future. The curriculum challenges students to employ higher-order thinking skills, such as evaluation, analysis, and synthesis. Students are encouraged to solve problems, make connections, compare and contrast ideas, and analyze the cause and effects of actions. Students explore the immediate community (i.e., classroom, the Children's School, the entire school), and local, national, and

global communities.

Students in grades 5 through 12 explore the Humanities through literature, writing, culture, and history from early human history to the modern day. The interdisciplinary Social Studies curriculum is premised on a progression of awareness and understanding that gradually expands a student's view of self and the world. The Humanities program emphasizes human inter- and intra-dependence within and between communities and responsibility to the environment, fostering respect for different cultures, and understanding of how concepts such as geography, politics, religion, and government influence society.

### **Arts**

The mission of the RCDS Art program is to foster creative expression, build self-confidence, strengthen problem solving and critical thinking skills, develop the imagination and visual literacy, and guide our students to become flexible thinkers and life-long learners. In art class students are introduced to a wide variety of methods and materials including drawing, painting, printmaking, collage, mixed media, sculpture, ceramics, and photography. Process is more important than product, although often successfully reflected in the outcome. The RCDS Art department faculty regularly develops supplementary curricula to provide unique opportunities for year-long cooperative cross-curricular units of study, four of which are supported by arts education grants from the Arts Council of Rockland. The Art department also regularly enters student artwork in locally sponsored exhibits and visits local art museums. Select Middle and Upper School art students enter artwork annually in the Scholastic Art and Writing Awards, the nation's longest-running and most prestigious recognition program for creative teens. Participation in *Original Works* and *KidsArt Inc.* programs gives families the opportunity to reproduce their child's artwork professionally. RCDS hosts an annual Spring Art Show and all-school bi-annual "Kite Day." Such activities and events boost student motivation, creativity, and self-esteem.

### **Music**

Our Music program fulfills numerous musical objectives for students' social and emotional development, including learning the cooperative process of playing in an ensemble, building confidence through public performance, and developing musical appreciation. By playing music, students develop fine motor coordination, hand-eye coordination, symbol recognition and usage, ear training, and rhythmic coordination. There are numerous musical performance opportunities throughout the school year for students of all ages.

### **World Language**

The World Language program at Rockland Country Day School develops fluency in languages as a means of communication and insight into cultural behavior. This aim works to support the School's mission to promote and celebrate diversity and intellectual curiosity and to gain an understanding of the universal aspects of human life to enable students to interact successfully in a multicultural world. The program, staffed by native speakers of Spanish emphasizes specific concepts and skills, with increasing difficulty and fluency, completely immersing the students in their language of choice.

### **Fitness for Life**

Physical fitness and personal wellness are important aspects of the students' educational experience. The curriculum develops muscular and aerobic fitness, promotes coordination and the enjoyment of physical activity for life-long fitness, and teaches skills required by individual and group athletic activities.

# The Children's School

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At RCDS, we believe that students learn using multiple intelligences, and differentiation is a key component of classroom practice. Children are taught to think creatively, read critically, and reason logically. We stress the value of both individual and collaborative learning, which calls for the collective support of students, parents, and teachers. To this end, faculty teach to students' individual strengths and students deepen and expand their interests within the curriculum. Inquiry and a student's sense of wonder are highly valued as we encourage them to make responsible choices within the framework of classroom expectations.

The Children's School offers a supportive, rigorous, developmentally-appropriate program to students from Pre-K through Fourth Grade. Throughout the grades, project-based learning is a central feature of the curriculum, and teachers develop essential questions to guide students through research and learning.

Throughout the grades, we are constantly mindful of the interaction between children's social, emotional, and ethical development and their academic lives. Each year, the school selects a theme to weave through the academic curriculum as well as into all-school and class activities. Conflict resolution, mediation, anti-bullying programs, and grade and school-wide meetings all contribute to our caring, collaborative community.

The youngest students learn in a language-rich environment that prepares them for literacy, numeracy, and other academic work. The pre-reading program focuses on children's dictations and phonemic awareness (the association of sounds with symbols,) and the pre-writing program stresses motor coordination through manipulatives and art materials. As students reach reading readiness, teachers introduce letter study, word families, and organic vocabulary study. Reading aloud is an essential part of the daily curriculum throughout the grades. In math, young children use concrete materials and sensory-motor activities to actively encode numeracy into their minds; there are dozens of opportunities every day to point out mathematical relationships and questions as the children explore their environment.

As children's verbal and mathematical skills, knowledge, and intellectual capacities develop, they participate in highly individualized learning activities. Basal readers are not used at RCDS; the curriculum is not one-size-fits-all. Instead, teachers offer the children books carefully chosen to meet individual interests and reading levels. Writing is also an essential part of the curriculum. From very early on, children write in their ~~daily~~ journals and develop technical, organizational, and creative skills. Writing workshops ensure that writing is a personally satisfying, continually challenging, and enjoyable endeavor.

In the Children's School, faculty guide students to articulate their particular interests outside of the classroom experience. Creating a fundamental, age-appropriate, and experiential understanding of the evaluation criteria is a significant first step in developing an individual portfolio for each of our young students. Independent Studies projects may be short or long term, and students share their projects with classmates, supporting the value of self-expression and encouraging mutual support among students.

On-going assessment is vital to successfully guide academic development. We use a wide variety of



formal and informal assessments that align with the achievements and expectations included in the Core Standards. A cornerstone of assessment is the Comprehensive Learning Profile (CLP) we create for each student. The CLP is a concise composite of strengths, challenges, interests, and recommendations that informs the long- and short-term instruction of each student. Teachers update the profile yearly. The CLP includes:

1. Formal assessments of Language Arts and Math achievement
2. Portfolio of work samples
3. Observations and informal assessments
4. Multiple Intelligences Profile
5. Assessment of Fine and Gross Motor Development
6. Assessment of Social and Emotional Development
7. Strengths, challenges, and interests
8. Strategies and instructional recommendations

## Pre-Kindergarten

### Language Arts

The Pre-kindergarten Language Arts curriculum is designed to develop oral language and early literacy and writing skills. Students learn the days of the week, months of the year, and the four seasons. They practice rhyming skills, develop phonemic awareness, , and isolate letter sounds within words. Students learn the letters of the alphabet and their corresponding sounds through many different activities and games. Pre-writing activities begin with the development of fine motor skills. Students focus on fine motor and pre-writing activities such as building with clay, cutting with scissors, tracing, beading, hole-punching, and sewing. Children make observations and dictate their opinions and ideas for the teacher to record and send home to their parents. Children learn about titles, authors, and illustrators, and go on to illustrate and publish their own books.

### Among other skills, Pre-Kindergarten students learn to:

- Understand the organization and basic features of print.
- Follow words from left to right, top to bottom, and page by page.
- Recognize and name upper- and lowercase letters of the alphabet, especially those in their own names.
- Differentiate letters from numerals.
- Demonstrate an emerging understanding of spoken words, syllables, and sounds (phonemes).
- Engage in language play (e.g. alliterative language, rhyming, sound patterns).
- Ask and answer questions about characters and major events in a story.
- Compare and contrast two stories relating to the same topic and make cultural connections to text and self.
- Use a combination of drawing, dictating, and writing to express an opinion about a book or topic (e.g., I like..., because..., etc.).
- Write letters to represent a word.

- Identify new meanings for familiar words and apply them accurately (e.g., knowing a duck is a bird and learning the verb “to duck”).
- Produce and expand complete sentences in shared language activities.

### **Math**

The Pre-Kindergarten math curriculum encourages real-life math activities using manipulative materials in a playful and nonjudgmental setting. Learning math occurs every day, throughout the day. Daily calendar activities, placement in line, and counting the number of days of school are some of the ways students are exposed to math concepts. Students in the Pre-Kindergarten learn to count to 20 using one-to-one correspondence. They develop an awareness of numbers and their uses as they learn to associate quantities with their corresponding number name and written numeral. Students are exposed to math vocabulary words such as more, fewer, less, same, first, and last. Students create and extend simple patterns using concrete objects such as shapes, buttons, beads, and classroom art supplies. Sorting, comparing, and sequencing activities are often introduced through classroom art projects. Students also learn to name basic shapes such as squares, circles, triangles, rectangles, and trapezoids. Learning math through daily exposure to numbers and through play allows children to absorb concepts without realizing they are learning math. Children learn to love math without fear of failure or preconceived notions of its complexity.

#### **Among other skills, Pre-Kindergarten students learn to:**

- Count to 20 by ones .
- Count with an understanding and recognize "how many" in sets of objects.
- Demonstrate an understanding of numbers, ways to represent numbers, relationships among numbers and the number system.
- Recognize and describe the concept of zero.
- Identify first, last, and other simple words related to order and position.
- Compare the number of objects using vocabulary such as more, less, greater than, fewer, and/or equal.
- Demonstrate an understanding of "adding more" items to a set of items. (If we add two more apples to the three apples we have five apples.)
- Demonstrate an understanding of subtracting, (taking away) from a set of items. (If we have five oranges on the table and one orange is removed, we have four oranges left on the table.)
- Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light).
- Correctly name shapes regardless of size.
- Analyze, compare, and sort two- and three-dimensional shapes and objects, in different sizes, using informal language to describe their similarities, differences, and other attributes (e.g., color, size, and shape).
- Create and build shapes from components (e.g., sticks and clay balls, Legos, wooden blocks).
- Demonstrate an understanding of measurement using non-standard units of measure (How many wooden blocks tall are you?)

## **Science**

The Science program revolves around learning to make observations about the world around us. The RCDS campus provides a natural environment in which children begin to understand that they observe with all five senses including their eyes. They learn to ask relevant questions. They are curious, observant, and not afraid to take risks guessing or estimating. These early scientific thinking and process skills will provide the solid foundation in their learning as they navigate through the grades.

### **Pre- Kindergarten students learn to:**

- Make observations and describe characteristics about their environment.
- Make predictions based on background knowledge and previous scientific experience.
- Identify cause and effect relationships.
- Verify predictions by explaining “how” and “why.”
- Make age-appropriate, logical conclusions about investigations.

## **Social Studies**

Learning how to behave as a member of a group is critical to learning how to function in the world. Children learn to share, take turns, help one another, observe what is the same and different about each member of the class, respect one another’s possessions, and celebrate values, culture, opinions and ideas even if different from one’s own. At RCDS, children are exposed to literature portraying the lives of others throughout the world and discuss what is interesting, different, and the same. We encourage cooperation, building relationships, and working together to make connections to the larger school community through their participation in assemblies and special events.

### **Pre-Kindergarten students learn to:**

- Understand that other children have needs and rights.
- Express feelings, needs, opinions, and desires in a way that is appropriate to the situation.
- Demonstrate awareness of similarities and differences in habits, traits, preferences, abilities, motives, etc. among his/her family members and/or peers.
- Develop an understanding of self, family, and community.
- Demonstrate an awareness and appreciation of their own culture and other cultures.
- Demonstrate knowledge of the relationship between people, places, and regions.
- Develop an understanding of how people and things change over time and how to relate past events to their present and future activities.

## **Art**

Art lessons in Pre-Kindergarten incorporate basic art skills such as drawing, painting, cutting, gluing, and building. Clay work includes learning how to form a pinch pot, coil pot, and basic animal figures. Students build their fine motor skills through weaving with yarn, beading, playing with salt dough, and assemblage activities.

### **Pre-Kindergarten students learn to:**

- Name art materials introduced in lessons.

- Recognize and make simple patterns.
- Understand and use the elements of art: line, color, shape, texture.
- Demonstrate proper use and care of art tools such as scissors, glue, and paintbrush.
- Make a collage.
- Draw and use geometric shapes in a work of art.
- Create a three-dimensional form.
- Describe and discuss works of art.
- Derive meaning from a work of art.

### **Music**

Students participate in music class three times per week. Students focus on developing the skills needed to be part of a successful musical ensemble, including participation, cooperation, collaboration, and a love and respect for music of all genres. Students will develop a repertoire of songs, loco-motor movements (walk, run, hop, jump, twirl) and non-loco-motor movements (pat, clap, stamp, stretch, shake), explore concepts of space, respond to musical cues, identify small percussion instruments and create sound carpets for stories/songs, and perform steady beat and rhythm patterns.

### **Students learn to:**

- Observe a variety of musical performances, both vocal and instrumental.
- Move and keep rhythm to different kinds of music.
- React to music through oral, written, or visual expression.
- Compare and contrast samples of music.
- Express their preference for certain kinds of music.
- Repeat, respond and/or react to lyrics and/or melodies.

### **World Languages**

World Languages meets once per week in Pre-Kindergarten. Children begin to learn Spanish in Pre-Kindergarten. Songs, games, and other creative activities introduce students to the sounds, common words, and patterns of the language and help them develop an ear for the language. It also serves as an authentic introduction to the culture of Spanish-speaking countries.

### **Students learn to:**

- Sing songs in Spanish.
- Use greetings.
- Count from 0-10
- Illustrate objects using color
- Imitate basic sounds and words in Spanish.
- Listen to stories, learn dances, and play games reflecting the culture of Spanish-speaking countries.

- Explore holidays and traditions in the target culture.

## Kindergarten

### Language Arts

Literacy education in Kindergarten is a balanced one, with focus placed equally on the necessary core skills of language and an assortment of quality literature and creative reading and writing experiences. The curriculum incorporates opportunities for shared reading, independent reading, writing, and word and letter study. Regular reading and writing conferencing with the teacher happens several times weekly to assess and monitor each child's individual skill development and progress. Reading and writing is differentiated to meet each child's needs, interests, and strengths. The Kindergarten classroom is a rich environment of print with labels throughout the room and on a variety of reading materials. Reading aloud and story dictations build sequencing skills, prediction skills, and connections to plot and characters. The primary objective of the reading and writing program is to encourage an enjoyment of language arts while helping children develop into independent critical thinkers.

### Among other skills, Kindergarten students learn to:

- Recognize name and print all upper- and lowercase letters of the alphabet.
- Recognize and produce rhyming words.
- Ask and answer questions about key details in a text, retell familiar stories, including key details, and identify characters, settings, and major events in a text.
- Read emergent-reader texts with purpose and understanding.
- Identify the main topic and retell key details of a text.
- Compare and contrast the adventures and experiences of characters in familiar stories and make cultural connections to text and self.
- Identify the reasons an author gives to support points in a text.
- Use a combination of drawing, dictating, and writing to compose a variety of pieces in which they name the topic or the name of the book they are writing about, state an opinion, supply some information about the topic, or narrate and sequence an event and provide a reaction to what happened.
- Spell simple words phonetically, drawing on knowledge of sound-letter relationships.
- Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.
- Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).

### Math

The Kindergarten Math program emphasizes playful, real-life activities using manipulative materials while also encouraging verbal interaction. Students learn through both direct instruction and open-ended exploration, using materials such as number grids and lines, attribute blocks, base-ten blocks, unit cubes, Cuisenaire rods, geometric tiles, geoboards, and peg boards. The Kindergarten year builds upon Pre-Kindergarten math concepts and encourages children to experience further exploration and

independence. Students are continuously assessed so teachers target their individual skills. Teachers differentiate and supplement the Math program to meet the diverse needs of our students.

**Among other skills, Kindergarten students learn to:**

- Count to 100 by ones, fives, and tens.
- Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
- Write numbers from 0 to 100. Represent a number of objects with a written numeral 0-100 (with 0 representing a count of no objects).
- Count to answer “how many?” questions about as many as 20 things arranged in a line, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
- Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
- Fluently add and subtract within 5.
- Understand the meaning of the equals sign and determine if equations involving addition and subtraction are true or false.
- Directly compare two objects with a measurable attribute in common, to see which object has more or less of the attribute and describe the difference.
- Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices, i.e. corners) and other attributes (e.g., having sides of equal length).

**Science**

The Science curriculum promotes intellectual curiosity by engaging students in experimental learning. Students focus on building concepts of the objective world around them while developing inquiry skills. In Kindergarten, children are encouraged to develop respect for their natural and physical environment. A strong focus is placed on employing scientific methods and language. Students are introduced to scientific content through experiments, participatory lessons, inquiry, and group work. Areas of study include the five senses, weather and seasons, animal behavior in winter, natural materials, dinosaurs and pre-historic animals, and the life cycle.

**Students learn to:**

- Identify size, shape, color, texture, temperature, and sound using their five senses.
- Collect data using graphs, charts, journals, and calendars.
- Study the source of common materials and the manufacturing process in which raw materials become finished products (e.g. paper).
- Understand how a tree changes throughout the seasons.
- Understand what living things need in order to grow.
- Compare and classify objects, events, and information in meaningful ways.

- Make observations, measurements, and predictions about their surrounding natural world.
- Communicate their observations through drawing, writing, and speaking.
- Draw conclusions based on prior experiences.
- Look for patterns and relationships.

### **Social Studies**

The Kindergarten social studies curriculum focuses on familiar and immediate social structures in a Kindergartener's life – self, family, school, and neighborhoods. It is based on children's developmental needs and daily experiences. Many of the projects and lessons are designed to allow students to interpret the world around them and make meaningful relationships with these surroundings. Children's relationships with their peers and teachers become a source of social-emotional learning. Social interaction skills are an integral part of the Kindergarten program. Play provides an important medium for Kindergarteners to explore their expressive language and abstract and symbolic thinking. It offers a safe environment for children to think, feel, and create meaning from the world around them. Children begin to learn about their role as a member of a community. They learn to accept the rights and responsibilities that come with being part of a larger community. Students will answer important essential questions such as What is a family? What is a school? and What is a community?

### **Students learn to:**

- Identify personal and physical characteristics of themselves and others.
- Understand that each person has needs, wants, talents, and abilities.
- Understand that all people are different but also have similarities.
- Learn that all people learn in different ways.
- Understand what it means to be a productive citizen and community member.
- Learn what it means to be a good friend.
- Study their own family structure, as well as different types of family structures in different cultures.
- Learn to respect the similarities and differences between different family structures.
- Study the physical geography of the RCDS campus and produce a map.
- Locate key places on the surrounding campus.
- Examine the geography of the surrounding neighborhood and make use of maps.
- Examine parent jobs, jobs of the staff at the school, and community workers.
- Identify various forms of transportation.

### **Art**

Kindergarten students participate in art class three times per week. Art lessons develop art skills such as drawing, painting, cutting, gluing, and building with a common theme or subject based on concepts introduced in the core curriculum, such as the four seasons or community. Clay work includes learning to form a pinch pot, a coil pot, and simple human, animal, or natural forms. Fine motor skills are continually strengthened through weaving with yarn, beading, playing with salt dough, and assemblage .

One long-term mixed-media project a year is based on a selection of children's literature such as *The Little House*.

**Students learn to:**

- Name art materials introduced in lessons.
- Understand and use the elements of art: line, color, shape, form, texture.
- Name the primary colors and mix colors to make secondary colors.
- Recognize the difference between 2D and 3D forms.
- Recognize patterns in nature and make a simple repeated pattern.
- Demonstrate proper use and care of art tools such as scissors, glue, and paintbrush.
- Make a mixed-media collage.
- Experiment with a range of malleable materials including dough, clay, pipe cleaners, straws, and papier-maché.
- Draw and use geometric shapes in a work of art.
- Create a three-dimensional form.
- Utilize basic printmaking techniques such as monoprints and fruit stamps.
- Describe and discuss works of art.
- Represent subject material as seen and imagined.
- Use our campus to make art with natural materials and participate in plein-air drawing activities.
- Derive meaning from a work of art.

**Music**

Kindergarten students meet for music three times per week. Students focus on developing the skills needed to be part of a successful musical ensemble, including participation, cooperation, collaboration, and a love and respect for music of all genres. Students will develop a repertoire of songs, loco-motor movements (walk, run, hop, jump, twirl) and non-loco-motor movements (pat, clap, stamp, stretch, shake), explore concepts of space, respond to musical cues, identify small percussion instruments and create sound carpets for stories/songs, and perform steady beat and rhythm patterns.

**Students explore:**

- Singing: demonstrating good vocal health, pitch matching, use of dynamics, practice of singing softly/loudly, good diction, memorization of a repertoire of songs.
- Moving: demonstrating moving through space with their bodies in varying directions, forward/backward, straight line, zig-zag, curves, moving fast/slow.
- Playing: a steady beat, rhythm patterns, using instruments to create sound effects, using correct techniques for pitched and non-pitched instruments.

**World Languages**

World Language meets once per week in Kindergarten. Children continue to build their understanding of



Spanish and are introduced to Mandarin. Songs, games, and other creative activities teach the students the sounds, common words, and patterns of the language, thus helping students develop an ear for the language and serving as an authentic introduction to the cultures of Spanish and Mandarin-speaking countries.

**Students learn to:**

- Sing a song in Spanish.
- Use greetings.
- Imitate basic sounds and words in Spanish.
- Count from 0-10
- Illustrate objects using color.
- Begin to recognize basic vocabulary, such as identifying different animals.
- Listen to stories, learn dances, and play games that reflect the culture of Spanish- speaking countries.
- Explore holidays and traditions in the target culture.

## **Grades 1 and 2**

### **Language Arts**

In Grades 1 and 2, students begin to be formally assessed two to three times a year and matched with books for independent reading. A reading workshop approach includes individual reading conferences that provide opportunities for students to learn specific skills and strategies as well as for ongoing assessment. These strategies include decoding with kinesthetic phonics materials, workbooks for reviewing skills, written response to reading, and “book talks” that develop comprehension skills such as, predicting, inferring, and making connections. Students are able to choose from a classroom library of leveled texts and, through individualized instruction, become thoughtful and proficient readers. Guided reading groups are formed throughout the year so that partners and small groups can read identical books and work on varied lessons ranging from letter/sound patterns, to plot, character development, and structure. Fluent readers focus on comprehension, making connections, and fluency in preparation for reading to learn. Students will study the work of favorite authors such as Cynthia Rylant, Lois Ehlert, and Byrd Baylor. Reading time includes read-aloud chapter books such as *My Father’s Dragon* and *Charlotte’s Web*, as well as picture books of all kinds (such as *Paddle to the Sea*, *Roxaboxen*, and *The Table Where Rich People Sit*) that also serve as mentoring texts for cross-curricular work. Enlarged texts (Big Books) are often used to teach skills, introduce topics of study, develop vocabulary, and model reading strategies.

Students are involved in many components of writing including handwriting, group interactive writing, and independent writing. In writing workshop, students write letters, free verse poetry, stories, and responses to material learned in other content areas. Social studies and science units are integrated into writing workshop at different times during the year. In these areas, students work on pamphlets, postcards, and “All about Books” units that focus specifically on inquiry and ideas are introduced in order to scaffold students into writing to learn. Students will be guided toward publishing pieces and

reading their own work at school assemblies.

**Among other skills, 1st Grade students learn to:**

- Recognize and read grade-appropriate irregularly spelled sight words and word families
- Recognize the distinguishing features of a sentence (e.g., first word, capitalization, ending punctuation).
- Read grade-level text orally with accuracy and expression on successive readings.
- Describe characters, settings, and major events in a story, using key details.
- Write opinion pieces on a topic of interest in which they introduce the topic or name the book they are writing about, state an opinion, supply a reason for the opinion, and provide closure. Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide closure.
- Write stories with two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order and provide closure.
- Participate in shared research and nonfiction writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions).
- Demonstrate understanding of the organization and basic features of print (i.e. chapters, heading, subheading, captions)
- Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide closure. Distinguish shades of meaning among verbs differing in manner (e.g., look, peek, glance, stare, glare, scowl) and adjectives differing in intensity (e.g., large, gigantic) by defining or choosing them or by acting out the meanings.

**Among other skills, 2<sup>nd</sup> Grade students learn to:** Identify words with inconsistent but common spelling-sound correspondences.

- Recognize and read grade-appropriate sight words and word families.
- Read grade-level text orally with accuracy and expression on successive readings.
- Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- Describe how characters in a story respond to major events and challenges.
- Identify the main topic of a multi-paragraph text
- Describe the overall structure of a story, including the beginning, middle, and end
- Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.
- Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.

## **Math**

The Math program combines number sense and arithmetic with life experience. It involves hands-on experience with mathematical concepts through a variety of routines, lessons, exercises, and games.

In Grade 1, instructional time focuses on four critical areas: developing understanding of addition, subtraction, and strategies for addition and subtraction up to 20; developing understanding of whole number relationships and place value, including grouping in tens and ones; developing understanding of linear measurement and measuring lengths in units; and reasoning about the attributes and composition of geometric shapes.

### **Among other skills, 1<sup>st</sup> Grade students learn to:**

- Recognize number patterns on a 100 chart
- Count and skip count to 120
- Understand part/whole relationships
- Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.
- Apply properties of operations as strategies to add and subtract.
- Add and subtract within 100, using concrete models or drawings and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
- Understand place value of tens and ones
- Use standard and nonstandard tools for measurement
- Tell and write time in hours and half-hours using analog and digital clocks; and recognize and identify coins, their names, and their value.
- Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape and compose new shapes from the composite shape.
- Partition circles and rectangles into two and four equal shares

In Grade 2, instructional time focuses on four critical areas: extending understanding of base-ten notation; building fluency with addition and subtraction; using standard units of measure; and describing and analyzing shapes. Students also start to learn the concepts of multiplication and division.

### **Among other skills, 2<sup>nd</sup> Grade students learn to:**

- Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with

unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

- Fluently add and subtract within 20 using mental strategies.
- By end of Grade 2, know from memory all sums of two one-digit numbers.
- Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- Count within 1000; skip-count by 5s, 10s, and 100s.
- Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
- Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
- Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
- Estimate lengths using units of inches, feet, centimeters, and meters.
- Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
- Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

### **Science**

Science is a process of wondering, researching, recording, classifying, and experimenting. Hands-on learning is a key factor as children examine their world. Students will practice the scientific method, learn to question effectively, engage in rudimentary research, write and draw observations, and integrate activities within the reading and writing curriculum.

### **1<sup>st</sup> and 2<sup>nd</sup> Grade students learn to:**

- Examine the concept of change.
- Collect data, including observations, using illustration and written record.
- Use scientific method (observe, hypothesize, record, conclude) in rudimentary experimentation and topics of study.
- Make connections across subjects from material presented.
- Classify, compare, and contrast objects and information within units of study.

- Understand life cycles.
- Draw conclusions based on prior experiences.
- Look for patterns and relationships.
- Learn how to question effectively.

Units of study include:

Year 1	Year 2
<ul style="list-style-type: none"> <li>• Tree and flower identification</li> <li>• Habitats in the U.S.</li> <li>• Mammals</li> <li>• Thematic Study</li> <li>• The Skeletal System</li> </ul>	<ul style="list-style-type: none"> <li>• Trees: life cycle and photosynthesis</li> <li>• Magnets</li> <li>• Reptiles and amphibians</li> <li>• Thematic Study</li> <li>• Our Skin</li> </ul>

### Social Studies

Students begin each year developing an understanding of the value of friendship, good citizenship, and exploring human feelings. Using literature as a base for understanding the intricacies of community, students gain a sense of self and how they relate to the world. The exploration of cultural diversity through music, art, and story continues throughout the cycle. Students study topics in meaningful ways that integrate with our reading and writing curriculum.

### 1<sup>st</sup> and 2<sup>nd</sup> Grade students learn to:

- Work cooperatively with peers to complete activities.
- Engage in a variety of hands-on activities to explore topics.
- Use beginning research skills to complete assignments.
- Engage in choices of activities to demonstrate knowledge.
- Expand capacity to respect and understand self and others.
- Identify significance of major figures and events in American history centered around calendar celebrations.
- Compare/contrast life in present times to life at an earlier time in history.

Units of study include:

Year 1	Year 2
<ul style="list-style-type: none"> <li>• Friendship, Citizenship and Civil Rights</li> <li>• What is a Community?</li> <li>• Wants and Needs</li> <li>• U.S. Geography Through Tall Tales</li> <li>• Pioneer Study</li> </ul>	<ul style="list-style-type: none"> <li>• Friendship, Citizenship and Civil Rights</li> <li>• Rural, Urban, and Suburban Communities</li> <li>• Natural Resources</li> <li>• U.S. Landforms- "This Land is Your Land"</li> <li>• Mapping Skills</li> </ul>

### Art

Students meet for art twice per week and expand on prior skills. Art lessons in the first and second

grades develop skills such as drawing, painting, printmaking, cutting, gluing, and building with a common theme or subject based on simple concepts like community, friendship, and the land. An annual cross-curricular collage project is based on a children's author, such as Lois Ehlert. Clay work includes forming a coil pot, simple human and animal forms, forms in nature, slab work, and enclosed or contained spaces. Students will create art works based on a particular story, culture, or artist. Team-building skills are taught through collaborative building activities and group projects.

**1<sup>st</sup> and 2nd Grade students learn to:**

- Name art materials introduced in lessons.
- Understand and use the elements of art: line, color, shape, form, texture, space.
- Name the primary colors and mix colors to make secondary and tertiary colors.
- Recognize and use principles of design: pattern proportion, emphasis.
- Recognize patterns in nature and make a simple repeated pattern.
- Recognize the difference between 2D and 3D forms.
- Demonstrate proper use and care of art tools such as scissors, glue, paintbrush, etc.
- Make a mixed-media collage.
- Create a self-portrait suitable for reproduction.
- Experiment with a range of malleable materials including dough, clay, pipe cleaners, straws, and papier-maché.
- Build a kite based on a theme, such as an Art History Kite or traditional Japanese kites and fly the hand-made kite during the school's kite day.
- Draw and use geometric shapes in a work of art.
- Create a three-dimensional sculpture.
- Utilize basic printmaking techniques such as monoprints, glue prints, and fruit stamps.
- Describe and discuss works of art.
- Represent subject material as seen and imagined.
- Use our campus to make art with natural materials and participate in plein-air drawing activities.
- Derive meaning from a work of art.

**Music**

Students in first and second grade meet for music twice per week and expand on prior skills.

**1<sup>st</sup> Grade students participate in:**

- Singing: demonstrating an expanded vocal range, pitch-matching skills, songs longer in form, an aural perception of skips and steps, knowledge of verse and chorus.
- Moving: demonstrating the ability to follow choreographed large and small-group activities, i.e. skip, gallop, leap and slide; and float, glide, tap, thrust, slash, and flick.
- Playing: as an ensemble (in combination with one another) playing harmonies with mallet

instruments.

- Reading music: interpreting icons representing long and short-quarter note beat and rest and eighth-note beat.

**As students move to 2<sup>nd</sup> Grade they participate in:**

- Singing: in canon, with expanded dynamics and pitch range, an aural perception of the home tone, and chest and head voice.
- Moving: to line and folk dances and snap and hand jive motions.
- Playing: invented rhythmic and melodic patterns to accompany songs and simple melodies on mallet instruments.
- Reading music: demonstrating an understanding of 2/4 and 3/4 meters and half-note rhythms and rests.

**World Languages**

Children continue Spanish in grades 1 and 2, meeting twice per week. This serves as a foundation for increasingly in-depth study. At this primary stage, the emphasis is on enjoyment not mastery, and includes recognizing and responding to new words. Students then begin to provide the words independently within an appropriate conversational context. It also serves as an authentic introduction to the cultures of Spanish-speaking countries.

**Students learn to:**

- Use greetings and introductions. Identify colors and fruits. Speak about everyday routines, the weather, the seasons, transportation, and clothing.
- Recognize the different sounds and vocabulary.
- Count from 0 to 20.
- Illustrate objects using colors.
- State the days of the week and months of the year.
- Identify different foods.
- Identify different animals.
- Describe parts of the human body.
- Share personal likes and dislikes.
- Create conversations and practice dialogue.
- Make short sentences.
- Play a variety of games, sing songs, learn dances, rhymes, and poems in the target language.
- Explore holidays and traditions in the target culture.

## **Grades 3 and 4**

**Language Arts**

In third and fourth grades, students continue the process of using reading skills learned to make sense of

more challenging texts. Students read and view independently and with peers a variety of classical and contemporary literature, nonfiction, poetry, plays, autobiographies, and speeches. After reading informational and literary texts, students respond in a variety of ways to better understand the topic. Students begin to examine the way an author uses words to convey specific meaning, how the structure of the text supports that meaning, and how the graphic features of the text help readers make connections between their personal experiences, the text, and the world. As students continue to read fluently, development of vocabulary strategies and the ability to analyze words in context becomes important as they explore increasingly difficult text. As students encounter more complex vocabulary in their reading, they are able to derive denotation, connotation, and euphemisms to transfer to their own speaking and writing.

Students write to communicate, question, and explain. Students continue to plan, draft, revise, and edit narrative, descriptive, and expository writing. Students learn to pay attention to content and development, organization, voice, and writing mechanics and conventions used in their writing. Students begin to write for a variety of purposes and audiences as they make connections between what they read and their own writing. Throughout the year students maintain a writer's notebook to record thoughts, ideas, and useful information pertaining to their writing. Students are actively involved in research, reading, conversing, and thinking about topics relevant to their lives. Students learn to access information through emerging technology and primary source materials. Students create lists of sources used, acknowledging the distinction between their own ideas and the ideas of others. Through inquiry, students learn to access information and become life-long learners.

**Among other skills, 3<sup>rd</sup> Grade students learn to:**

- Read grade-appropriate irregularly spelled words.
- Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.
- Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.
- Determine the meaning of words and phrases as they are used in a text, distinguishing literal from non-literal language.
- Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- Refer to parts of stories, dramas, and poems when writing or speaking about a text, using terms such as chapter, scene, and stanza; describe how each successive part builds on earlier sections.
- Explain how specific aspects of a text's illustrations contribute to what is conveyed by the words in a story (e.g., create mood, emphasize aspects of a character or setting).
- Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).
- Write opinion pieces on topics or texts.
- Write informative/explanatory texts.
- Write narratives about real or imagined experiences or events



- Conduct short research projects that build knowledge about a topic.

**Among other skills, 4<sup>th</sup> Grade students learn to:**

- Use combined knowledge of all letter-sound correspondences, syllable patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words both in and out of context.
- Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- Describe the overall structure (e.g., chronology, cause/effect, problem/solution, comparison) of events, ideas, concepts, or information in a text or part of a text.
- Explain how an author uses reasons and evidence to support particular points in a text.
- Compare and contrast a firsthand and secondhand account of the same event or topic
- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
- Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.
- Explain the meaning of simple similes and metaphors (e.g., as pretty as a picture) in context.
- Recognize and explain the meaning of common idioms, adages, and proverbs.
- Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.
- Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

**Math**

In Grade 3, instructional time in Math focuses on developing understanding of four critical areas: multiplication and division within 100; fractions, especially unit fractions (fractions with numerator 1); the structure of rectangular arrays and of area; and two-dimensional shapes. Instructional materials such as number grids, base-ten blocks, and geoboards are utilized to explore and understand concepts. Instruction is differentiated to meet the diverse needs of our students, so that as students reach mastery, they are appropriately challenged.

**Among other skills, 3<sup>rd</sup> Grade students learn to:**

- Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as  $5 \times 7$ .

- Apply properties of operations as strategies to multiply and divide. Examples: If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative property of multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative property of multiplication.) Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive property.)
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
- Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- Explain equivalence of fractions in special cases and compare fractions by reasoning about their size.
- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
- Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
- Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
- Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Students in Grade 4 math focus on developing understanding in three critical areas: multi-digit multiplication and dividing to find quotients involving multi-digit dividends; fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; geometric figures analyzed and classified based on their properties, such as parallel sides, perpendicular sides, angle measures, and symmetry. Instructional materials such as number grids, base-ten blocks, and geoboards are utilized to explore and understand concepts. Instruction is differentiated to meet the diverse needs of our students so as students reach mastery, they are appropriately challenged.

**Among other skills, 4<sup>th</sup> Grade students learn to:**

- Interpret a multiplication equation as a comparison, e.g., interpret  $35 = 5 \times 7$  as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

- Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison
- Solve multi-step word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.
- Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule “Add 3” and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that  $700 \div 70 = 10$  by applying concepts of place value and division.
- Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- Explain why a fraction  $a/b$  is equivalent to a fraction  $(n \times a)/(n \times b)$  by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

## Science

The Science curriculum in the Third and Fourth grades continues to focus on topics in Life Science, Earth Science, and Physical Science. Science is hands-on, collaborative, and inquiry-oriented. Specific units are listed below, however, units may be changed or added based on student interest. In addition, students in the 4<sup>th</sup> grade participate in the RCDS Science Fair.

Units of study under Life Science include the cell, the plant, animal kingdoms, and the human body. Students create a three-dimensional model of their body as they study several of the major body systems. Under the heading of Earth Science, students study the biomes, ecology, space, and the Hudson River Ecosystem. The Hudson River unit is cross-curricular as students study the scientific attributes of the river, the river's role in history, and its significance to the artistic community. In Physical Science, students learn to apply the concepts of electricity and simple machines.

### Students learn to:

- Search out, describe, explain, and predict natural phenomena.
- Make observations and ask questions about objects, organisms, and the environment.
- Seek relevant information in books, magazines, and electronic media.
- Read and write a variety of science-related fiction and nonfiction texts.
- Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- Explain how an author uses reasons and evidence to support particular points in a text.
- Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- Search the Web and locate relevant science information.
- Sort, classify, and compare and contrast to explain phenomena.
- Order and sequence objects and events.
- Observe, identify, and communicate cause-and-effect relationships.
- Design and conduct simple investigations.
- Employ simple equipment and measuring tools to gather data and extend the senses.
- Use data to construct reasonable explanations.
- Use measurement tools and standard units (e.g., centimeters, meters, grams, kilograms) to describe objects and materials.
- Use mathematics to analyze, interpret and present data.

Year One Units of Study	Year Two Units of Study
<ul style="list-style-type: none"><li>● Measurement and Lab Safety</li><li>● World Biomes</li><li>● Plants and Ecology</li></ul>	<ul style="list-style-type: none"><li>● Measurement and Lab Safety</li><li>● The Hudson River Ecosystem</li><li>● The Animal Kingdom</li></ul>

<ul style="list-style-type: none"> <li>● Planets, Space, and Astronomy</li> <li>● Human Body-Nervous System</li> </ul>	<ul style="list-style-type: none"> <li>● Electricity and Magnetism</li> <li>● Simple Machines</li> <li>● Human Body-Digestive, Respiratory, and Circulatory System.</li> </ul>
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### **Social Studies**

The Third and Fourth grade Social Studies program builds on students’ understanding of families, schools, and communities and highlights the political institutions and historic development of their local communities with connections to New York State and the United States. Students also investigate how communities change over time. Specific units are listed below, however, units may be changed or added in response to student interest.

Students learn about the social, political, geographic, economic, and historic characteristics of different world communities. Students learn about communities that reflect the diversity of the world’s peoples and cultures. They study Western and non-Western examples from a variety of geographic areas. Students also begin to learn about historic chronology by placing important events on timelines. Students locate world communities and learn how different communities meet their basic needs and wants.

The in-depth study of local government emphasizes the structure and function of the different branches and the roles of civic leaders. Students continue to learn about the rights, responsibilities, and duties of citizenship. Students develop a sense of political efficacy and a better understanding of the roles of supporters and leaders. Students expand their civic concepts of power, equality, justice, and citizenship as they learn about local government.

The historic study of local communities focuses on the social/cultural, political, and economic factors that helped shape these communities. Students study the significant people, places, events, and issues that influenced life in their local communities. Students can investigate local events and issues and connect them to national events and issues.

### **Students learn to:**

- Read and write a variety of social studies-related fiction and nonfiction texts.
- Explain events, procedures, ideas, and concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- Compare and contrast a first and second-hand account of the same event or topic; describe the differences in focus and the information provided.
- Seek relevant information in books, magazines, and electronic media.
- Investigate and describe various communities and their interactions over time.
- Identify factors that helped shape and change communities such as economics, natural resources, climate, etc.
- Use a variety of resources and tools to gather, process, and communicate information about interactions among and between communities.

- Ask questions to gain information and explore alternatives.
- Use primary and secondary sources to locate key information.
- Collect information, analyze data and draw conclusions.
- Make and read a variety of graphs, charts, diagrams, maps, and models to understand and share information.
- Compare and contrast aspects of various communities.
- Investigate the development and responsibilities of national, state, and local governments.
- Use technology, oral presentations, written notes and descriptions, and drawings to communicate research findings.

Year One Units of Study	Year Two Units of Study
<ul style="list-style-type: none"> <li>● Geography               <ul style="list-style-type: none"> <li>▪ The World around Us</li> <li>▪ The United States</li> <li>▪ All About New York</li> </ul> </li> <li>● Native American Cultures</li> <li>● When Worlds Collide               <ul style="list-style-type: none"> <li>▪ European Explorers</li> <li>▪ Dutch and European Influence</li> </ul> </li> <li>● Immigration</li> </ul>	<ul style="list-style-type: none"> <li>● Geography</li> <li>● Colonial Times</li> <li>● American Revolution</li> <li>● New Nation</li> <li>● American Government</li> <li>● Economics</li> </ul>

### Art

Students meet for art twice per week. Third and fourth grade students incorporate growing art skills to create works in a variety of media. Art lessons aim to develop disciplined effort and increase motor development, visual awareness, reflective thinking, problem-solving skills, and imagination. Students develop their own ideas based on a common theme or subject, such as the drawings and letters of Vincent van Gogh, self-portraiture, an art movement such as Op Art, or art based on a work of literature, such as *The Secret Garden*. In ceramics, students incorporate hand-building skills and slab and wheel work to create complex forms and themes

### 3<sup>rd</sup> and 4th Grade students learn to:

- Name new art materials introduced in lessons.
- Understand and use the elements of art: line, color, shape, form, texture, value, and space.
- Understand and use principles of design: emphasis, pattern, rhythm, balance, proportion, and unity.
- Name the primary colors and mix colors to make secondary and tertiary colors.
- Demonstrate proper use and care of art tools such as scissors, glues, paint brushes, pallets, ink pens, and clay tools.

- Create a mixed-media self-portrait for reproduction.
- Build a kite based on a theme, such as an Art History Kite or traditional Japanese kites, and fly the hand-made kite during the school's kite day.
- Utilize printmaking techniques including monoprint, stamps, glue prints, and collagraphy.
- Create various three-dimensional sculptural forms.
- Create artworks based on personal observations, imagination, and experience.
- Describe and discuss student works of art as well as works from art history and cultures around the globe.
- Gather and use natural materials on campus to make art materials, such as walnut ink, and use the natural setting on campus for plein-air art drawing and painting activities.
- Analyze, assess, and derive meaning and enjoyment from works of art.

### **Band**

Fourth Grade students meet for band twice per week. The 4th grade band is the first of many levels of band available through Grade Twelve. Students explore each of the band instruments and choose the one best suited for them. Options include flute, clarinet, saxophone, trumpet, trombone, and percussion. Band instruction provides opportunities for individual and group work, regular performance, and creative expression. Students learn how to practice effectively, integrate within a team setting, and present their work in a public forum. Students expand their technique, learning new notes and fingerings, and reinforcing their reading and listening skills. The overall goal is to foster a love of musical instruments, performance, and self-expression.

### **Music**

Students in third and fourth grade meet for music twice per week. Students continue to build their repertoire of musical skills.

#### **3<sup>rd</sup> Grade students participate in:**

- **Singing:** Exploring traditional melodies, solfège, intervals, tuning, and harmony. Students collaborate in multi-grade vocal performances.
- **Playing:** Constructing pitches and rhythms on the recorder with proper technique, tonal quality, and breath support. Producing improvisations, call and response, and interactive exercises on hand percussion.
- **Reading:** Identifying, interpreting, and producing musical notation in both written and aural forms. Students develop interpretive skills such as timing, blend, and expressive dynamics.

#### **4th grade students participate in:**

- **Singing:** Exploring traditional melodies, solfège, intervals, tuning, and harmony. Students collaborate in multi-grade vocal performances.
- **Playing:** Constructing pitches and rhythms on band instruments with proper technique, tonal quality, form, and breath support. Developing rudiments, method book work, and multi-part band pieces.

- Reading Music: Identifying, interpreting, and producing musical notation in both written and aural forms. Students develop interpretive skills such as timing, blend, and expressive dynamics.

### **World Languages**

Children continue Spanish in grades 3 and 4, which serves as a foundation for more in-depth study of language. World Languages also serves as an authentic introduction to the cultures of Spanish-speaking countries. Students expand their understanding of the concepts introduced in early grades, such as using greetings and introductions, counting from 0 to 20, illustrating objects using colors, stating the days of the week and months of the year, identifying different animals, foods, and body parts, and to share personal likes and dislikes.

#### **Additionally, students learn to:**

- Name countries where the target language is spoken.
- Begin to master sounds and vocabulary.
- Spell in Spanish.
- Count from 0 to 30.
- Elicit the date and the season.
- Report the weather.
- Describe clothing, state what they and others wear and what their preferences are.
- Identify places in and around towns.
- Ask and answer questions in the target language.
- Create their own dialogues using appropriate vocabulary and grammar.
- Explore customs, traditions, and holidays in the target culture.
- Compare and contrast life in the target culture with their own.



# The Middle School

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The Middle School provides a smooth transition from the self-contained classroom of the Children’s School to the departmentalized Upper School. Grades 5-8 represent an important period in the life of a child, as s/he enters early adolescence. During this time, young learners experience rapid growth—physically, intellectually, and emotionally. As they move towards increased independence, students engage in learning with enthusiasm, value friendships, and explore their individual identity, place in the world, and relationships with others. Recognizing the ever-expanding developmental issues surrounding pre-adolescence, the Middle School offers tremendous opportunities for each student to flourish. Our goal is for middle school students to view themselves as writers, orators, scientists, musicians, artists, athletes, mathematicians, and historians poised to enter the dynamic global society of this century. Students are expected to become increasingly independent in applying the strategies and skills learned as they move through the Middle School division. Students encounter more rigorous challenges in their courses and develop an ability to think abstractly.

Emphasis is placed on project-oriented, hands-on activities that challenge students to:

- think critically, develop excellent written and spoken expression,
- reinforce and master mathematical concepts and skills,
- become scientifically and technologically literate individuals,
- move towards proficiency in other languages and gain appreciation for new cultures and peoples,
- understand the importance of embracing a lifestyle which promotes sound physical and emotional health
- work cooperatively and collaboratively,
- and express themselves through the arts.

In Middle School (and the Upper School), the “Humanities” describes the intertwined disciplines of literature and history. Students develop a deeper understanding of the human experience by studying examples of people in the past feeling, thinking, and writing about many of the same questions they deal with today. Students are encouraged to formulate and express informed individual ideas and opinions. Units emphasize those skills basic to the study of history and other social sciences, gaining map and geography proficiency, understanding timelines and dates, recognizing cause-and-effect relationships, and learning to think critically. In addition to texts and other printed materials, interactive computer software, films, and field trips are integral resources of the program. In the Seventh and Eighth Grades, the academic program moves towards greater departmentalization, especially in languages, mathematics, and science. Emphasis is placed on the conceptual and concrete understanding of the material studied. Students learn to think, write, and speak critically as they actively question, debate ideas, classify and synthesize new information (data), and form judgments in the Humanities, arts, and sciences.

The focus of the Language Arts program is reading and analysis of various genres of literature and the techniques involved in the writing process. Literary discussions and close readings of selected passages occur throughout the program. Students read a range of literature, including novels, short stories, poetry, myths, epics, essays, and plays, as well as periodicals and news in print and online. These varied materials serve as models for the student writing. All students are expected to engage in independent

reading for at least 30 minutes or more daily. Students keep a reading log to reflect on their reading and, once a term, complete a project that showcases their understanding. Types of creative and responsive writing include stories and poetry, journals, book reviews, reading notes, and summaries. Attention is paid to strengthening spelling, vocabulary development, literary comprehension, the development of valid conclusions based on evidence, and the identification of literary devices.

Developing sound writing skills continues to be emphasized throughout the curriculum. In addition to the organization and development of ideas on paper, attention is given to the use of appropriate and descriptive vocabulary, literary devices, style, and mechanics. At each grade level, students learn different rhetorical forms, such as autobiographical essays, comparative essays, persuasive essays, personal experience narratives, analytical papers, thesis papers, technical and letter writing, and research papers.

The Middle School Math program aims to engage students critically and creatively in rigorous challenges that call upon them to develop intellectual, analytical, research, and communications skills. Math concepts are initially presented in concrete form. As students become more comfortable with the concepts, they are asked to think and work at more abstract levels. Lessons are developed to promote critical thinking, cooperative learning, and communication. In an environment conducive to exploration and experimentation, students play math games, solve word problems and puzzles, classify and graph information, use manipulatives and work on pencil-and-paper activities, among other activities. They work in varying configurations--whole class, small groups, or individually. The variety of activities and learning environments helps to ensure that the heterogeneous range of learning styles of students is appropriately addressed.

The Science program is committed to developing scientifically literate individuals who know and understand important scientific ideas and are aware of the nature of science's connections to mathematics and technology and its relation to society. The program's method of instruction draws as much upon real-world experiences as the abstract, with students actively exploring the world around them in ways that resemble how scientists go about their work. The curriculum is articulated in accordance with National Science Teachers Association (NSTA), Pathways to the Science Standards, and the emerging work of the National Research Council's (NRC) National Science Education Standards (NSES).

Students in Independent Studies in the Middle School work with their advisors on a year-long project in an area of their own deep interest. In each grade, the articulation, pursuit, and presentation of projects become increasingly complex. By offering independent studies in each grade, students are able to move outside of the core curriculum to broaden their academic and artistic studies.

Organization and study skills are addressed throughout the Middle School years within the context of each student's content-area classes. Focus shifts to acquiring new skills such as learning techniques for note-taking and outlining, developing strong research and study techniques, creating good research questions, evaluating resources, generating alternative strategies to solve problems, and developing tools for self-evaluation. Specific steps are taught regarding organizing and maintaining a notebook, effective use of textbooks and other resources, highlighting and taking notes from a text or classroom lecture/discussion, preparing for a test, conducting research, and organizing a thesis or research paper. The School's learning specialists work closely with classroom teachers to design effective study skills' teaching strategies. Learning specialists also provide individualized support during the school day.

Our Advisory Program guides students as they move through this period of growth. In Grades 5-8, students meet with their advisory group on a regular basis.

## Grades 5 and 6

### Language Arts

In the Language Arts program students begin to formalize their literature analysis skills by studying plot, character, point of view, and theme. Reading and responding to different forms of literature is cross-curricular as students learn to connect ideas from one subject to another.

Developing solid writing skills is a goal of the 5<sup>th</sup>- and 6<sup>th</sup>-grade program. Students write about what they read, think, and feel, while experimenting with different written forms and styles. Writing formal essays is a major focus. Students improve their vocabulary and grammar to express themselves more precisely and vividly in clear paragraphs. Parts of speech, style, and mechanics are emphasized. In Writing Workshop, students draft and revise their work with the help of both teacher and student feedback.

### Among other skills, 5<sup>th</sup> grade students learn to:

- Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize the text.
- Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).
- Describe how a narrator's or speaker's point of view influences how events are described; and recognize and describe how an author's background and culture affect his or her perspective.
- Compare and contrast stories in the same genre on their approaches to similar themes and topics.
- Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
- Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
- Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
- Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

### Among other skills, 6<sup>th</sup> grade students learn to:

- Determine a theme or central idea of a text and how it is conveyed through particular details;

provide a summary of the text, distinct from personal opinions or judgments.

- Describe how a particular story or drama plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.
- Analyze the ways a sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.
- Explain how an author develops the point of view of the narrator or speaker in a text.
- Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.
- Write arguments to support claims with clear reasons and relevant evidence.
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- Use a variety of transition words, phrases, and clauses to convey sequence and signal shifts from one time frame or setting to another.
- Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
- Interpret figures of speech (e.g., personification) in context.
- Use the relationship between particular words (e.g., cause/effect, part/whole, item/category) to better understand each of the words.

## **Math**

Students continue to build on their understanding of mathematical concepts and skills. Focus is placed on developing mastery in the four operations (addition, subtraction, multiplication and division) using integers, fractions, and decimals. Students learn different problem-solving strategies to solve word problems. Besides working on the domain of numbers and operations, students are introduced to algebraic thinking, measurement, statistics, and geometry. Students are given projects that relate to real life so that their mathematical skills can be employed.

### **Among other skills, 5<sup>th</sup> Grade students learn to:**

- Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- Write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as  $2 \times (8 + 7)$ . Recognize that  $3 \times (18932 + 921)$  is three times as large as  $18932 + 921$ , without having to calculate the indicated sum or product.
- Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.
- Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- Fluently multiply multi-digit whole numbers using the standard algorithm.
- Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit

divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

- Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.
- Add and subtract fractions with unlike denominators (including mixed numbers) by replacing fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example,  $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$ . (In general,  $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$ .)
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators.
- Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.
- Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.
- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.

**Among other skills, 6<sup>th</sup> grade students learn to:**

- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. Fluently divide multi-digit numbers using the standard algorithm.
- Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
- Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

- Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret  $-3 > -7$  as a statement that  $-3$  is located to the right of  $-7$  on a number line oriented from left to right.
- Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas  $V = lwh$  and  $V = bh$  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.
- Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.

### Science

Students continue their study of systems of the human body. Students also learn about the concept of matter, how it is structured, and how it changes. To accomplish this goal, students engage in laboratory activities in which they classify, separate, and investigate the internal structure of matter and chemical reactions. Students also explore how matter moves by studying the concepts of acceleration, force, and speed. Students learn about the electromagnetic spectrum by studying sound and light waves and about optics by investigating convex and concave lenses.

### 5<sup>th</sup> and 6<sup>th</sup> Grade students learn to:

- Search out, describe, explain, and predict natural phenomena.
- Make observations and ask questions about objects, organisms, and the environment.
- Seek relevant information in books, magazines, and electronic media.
- Sort, classify, and compare and contrast to explain phenomena.
- Design and conduct simple investigations.
- Identify the dependent and controlled variables in an investigation.
- Use data to construct reasonable explanations.
- Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.
- Select and use appropriate tools and technology (including calculators, computers, balances,

spring scales, and microscopes) to perform tests, collect data, and display data.

- Analyze, critique, and communicate investigations using words, graphs, and drawings.
- Read and write a variety of science-related fiction and nonfiction texts at grade 5-6 level.
- Search the Web and locate relevant science information.
- Integrate information from several texts on the same topic in order to write and speak about the subject knowledgeably.
- Use measurement tools and standard units (e.g., centimeters, meters, grams, kilograms) to describe objects and materials.
- Use mathematics to analyze, interpret, and present data.

Year One Units of Study	Year Two Units of Study
<ul style="list-style-type: none"><li>● Measurement and Lab Safety</li><li>● Scientific Method</li><li>● Science Fair</li><li>● Human Body</li></ul>	<ul style="list-style-type: none"><li>● Measurement and Lab Safety</li><li>● Scientific Method</li><li>● Science Fair</li><li>● Introduction to Matter</li><li>● Solids, Liquids, and Gases</li><li>● Chemistry</li><li>● Chemical Bonds</li><li>● Atoms and the Periodic Table</li></ul>

### Social Studies

5<sup>th</sup> and 6<sup>th</sup> Grade students study early civilizations. This study includes features of daily life, celebrations and traditions, economics, the natural environment, and political structure. The units are cross-curricular with reading and writing during language arts, and art and music are interwoven whenever possible.

#### Students learn to:

- Read and write a variety of social studies-related fiction and nonfiction texts.
- Seek relevant information in books, magazines and electronic media.
- Identify and describe major features of daily life and social organization in various early civilizations.
- Identify and compare the ways in which people in various early civilizations met their physical and social needs, including how they interacted with and used the natural environment. Use a variety of resources and tools to investigate characteristics of early civilizations, including their significant innovations and technological advances.
- Explain how innovations made by early civilizations influenced the modern world.
- Relate significant elements of early civilizations to aspects of contemporary communities. Formulate questions to guide research.
- Use primary and secondary sources to locate information about various civilizations.

- Read, interpret, draw, and label maps and create models relevant to the civilization.
- Use technology, oral presentations, written notes and descriptions, and drawings to communicate research findings.

Year One Units of Study	Year Two Units of Study
<ul style="list-style-type: none"> <li>● World geography</li> <li>● Ancient China</li> <li>● Ancient India</li> <li>● Ancient Greece</li> <li>● Ancient Rome</li> </ul>	<ul style="list-style-type: none"> <li>● Fossils tell of the past</li> <li>● Early humans and evolution</li> <li>● Sumerian Society</li> <li>● Ancient Egypt</li> <li>● Early Civilizations of the Americas (Mayans, Aztecs, Incas)</li> </ul>

### Art

Fifth and sixth grade students participate in art classes twice per week. Art lessons aim to develop disciplined effort and increase students' visual awareness, reflective thinking, problem-solving skills, fine motor development, and challenge the imagination. Students employ mastered art skills to create works in a variety of media. Students develop their own ideas based on a common theme or subject such as the environment, animal kingdom, art historical movement and/or figure, art from around the world, and myths and symbols. . Ceramics incorporate hand-building skills, clay extruding, tiling, and slab and wheel work to create complex and oftentimes functional pottery. Beginning in the fifth grade, art students participate in the *Creative Visualization Internal Landscape Self-portrait* sculpture project, which includes partnered life mask-making workshops.

### Students learn to:

- Choose appropriate vocabulary to discuss the use of art elements such as color, texture, form, line, space, and value and art principles such as emphasis, pattern, rhythm, balance, proportion, and unity.
- Invent ways to produce artworks using a variety of art media, materials, and techniques, including photographic and computer-generated imagery.
- Create a mixed-media self-portrait suitable for reproduction
- Participate in printmaking activities including monoprints, stamping, stenciling, and collagraphy.
- Create three-dimensional sculptural and low/high relief sculptural forms in various media.
- Build a kite based on a theme, such as an Art History Kite or traditional Japanese kites and fly the hand-made kite during the school's bi-annual kite day.
- Create artworks based on direct observation, ideas about self, feelings, life events, family, and community.
- Describe intent and form conclusions about personal artworks
- Interpret ideas and moods in artworks and exhibitions by peers and others.
- Analyze, assess, and derive meaning and enjoyment from works of art.



## **Music**

Students in Fifth Grade meet for band twice per week. Building on skills developed the previous year students perform more challenging music and explore composition and improvisation. The musicians learn that focus and teamwork are essential ingredients for learning and performing together. The development of this work ethic enables students to focus on details while encouraging everyone to do their best. In Sixth Grade, students choose a string, brass, woodwind, or percussion instrument for study and performance, individually and in groups.

## **World Languages**

Students study Spanish as a year-long course. Students meet two times per week at this level. The program emphasizes immersion in the spoken language and culture. Students develop a working vocabulary and develop their pronunciation and listening skills through vocabulary and grammar presentations and accompanying oral and written activities, drill work, songs, games, videos, skits, oral presentations, and projects.

### **Students learn to:**

- Listen, speak, read, and write in the target language.
- Apply basic vocabulary related to greetings, introductions, numbers 0-50, days of the week, months of the year, eliciting the weather, telling time, providing details about themselves and others, describing families, identifying foods, depicting emotions and states of being, and sharing information about their school and classes.
- Apply basic grammar including singular and plural nouns, basic regular and irregular verbs, gender, definite and indefinite articles, adjectives, and subject pronouns.
- Engage in dialogues with peers and teacher.
- Perform oral presentations and skits.
- Explore the cultures of the chosen language within the global context.
- Compare and contrast the target culture with their own.

# **Grades 7 and 8**

## **Humanities**

In alternating years, students learn about Medieval and Renaissance history and American history.

### **History**

Medieval and Renaissance: Beginning with the fall of Rome and continuing through the rise of Christianity, the feudal system, the Crusades, and the growth of towns and trade, students examine questions of social justice, the role of faith in everyday life, and how the clash of cultures can bring new knowledge to light. Moving into the Renaissance, with the development of banking and new artistic and intellectual breakthroughs, students examine primary sources and other readings, do short research projects and take field trips, to reflect on the underpinnings of modern culture and technology, and on how these developments shaped future countries and cultures.

American History: Beginning with the European colonization of the Americas, students examine the development of a uniquely American society from European and English roots. Students read and write about the Revolution; the early republic, with special emphasis on the Constitution; the explosion of

Western settlement and the political battle that erupted into civil war; post-war urbanization and industrialization; America's growth into a world power in the 20th century, and the beginnings of post-modern America with the end of the Cold War. Through lectures, textbook and primary source readings, and field trips, students examine essential notions of freedom, distribution of power, class and ethnic issues, and finally the ways in which these historical narratives have resulted in their own story, as Americans and citizens of the world.

### **English**

During the study of Medieval and Renaissance history, students read and analyze texts such as *Beowulf*, Norse myths, *Le Mort d'Artur*, *Sir Gawain and the Green Knight*, *Call of the Wild*, and *The Daughter of Venice*.

Readings for American history include selected stories by Washington Irving and Edgar Allan Poe, selections from *Narrative of the Life of a Slave* by Frederick Douglass, and historical fiction and poetry..

### **Writing**

Students examine texts closely to identify themes, structure, grammatical usage, and the meaning contained in these constructs. Students write essays that require logical reasoning, coherence and clarity, and presentation of thesis in a formal style to develop an appreciation for prose and poetry, both historical and modern. In addition to other rhetorical modes, students write narratives that emphasize effective technique, well-chosen details, and well-structured sequence of events. In all writing, process is key, with re-writing and editing in workshops with teachers and peers.

### **Through the study of history, students learn to:**

- Cite specific textual evidence to support analysis of primary and secondary sources.
- Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).
- Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.
- Describe how a text presents information (e.g., sequentially, comparatively, causally).
- Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).
- Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.
- Distinguish among fact, opinion, and reasoned judgment in a text.
- Analyze the relationship between a primary and secondary source on the same topic.

**Additionally, among other skills, 7<sup>th</sup> Grade students in Language Arts learn to:**

- Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.
- Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts. a. Use their experience and their knowledge of language and logic, as well as culture, to think analytically, address problems creatively, and advocate persuasively.
- Write arguments to support claims with clear reasons and relevant evidence.
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
- Use technology, including the Internet, to produce and publish writing and link to and cite sources as well as to interact and collaborate with others, including linking to and citing sources.
- Conduct research to answer a question, drawing on several sources and generating additional related, focused questions for further research and investigation.
- Present claims and findings, emphasizing salient points in a focused, coherent manner with pertinent descriptions, facts, details, and examples; use appropriate eye contact, adequate volume, and clear pronunciation.
- Demonstrate command of the conventions of Standard English grammar and usage when writing or speaking.
- Interpret figures of speech (e.g., literary, biblical, and mythological allusions) in context.

**Among other skills, 8<sup>th</sup> Grade students in Language Arts learn to:**

- Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
- Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.
- Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through dramatic irony) create such effects as suspense or humor.
- Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
- Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.
- Evaluate the advantages and disadvantages of using different media (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

- Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
- Write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.
- Conduct short research projects to answer a question (including a self-generated question), drawing on outside sources and generating additional related, focused questions that allow for further exploration.
- Create a presentation, art work, or text in response to a literary work with a commentary that identifies connections and explains divergences from the original.
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
- Interpret figures of speech (e.g. verbal irony, puns) in context.

### **Pre-Algebra**

7<sup>th</sup> Grade students study Pre-Algebra. The Pre-Algebra course consists of a full academic year of mathematics in preparation for Algebra I. Students will expand number sense to perform operations and solve problems with rational and irrational numbers. They develop an understanding of geometric concepts and relationships and learn to apply algebraic, spatial, and logical reasoning to solve problems involving two and three-dimensional figures. They also learn to understand and apply statistical and probability concepts in order to organize and analyze data. . Moreover, the course will include graphing and probability.

### **Among other skills, 7<sup>th</sup> Grade students learn to:**

- Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks  $\frac{1}{2}$  mile in each  $\frac{1}{4}$  hour, compute the unit rate as the complex fraction  $\frac{1/2}{1/4}$  miles per hour, equivalently 2 miles per hour.
- Recognize and represent proportional relationships between quantities.
- Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
- Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
- Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- 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.
- 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.

- 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.
- Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
- Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

### **Algebra I**

Usually an 8<sup>th</sup> Grade student studies Algebra I, consisting of a full year of work on basic principles of Algebra. Students learn new language, concepts, and techniques to build a foundation for higher-level math classes. This course covers algebraic expressions, integers, and mathematical properties that lead to working with variables and linear equations. The course also introduces graphing, polynomials, quadratic equations, probability, and systems of equations through direct class instruction, group work, homework, and student projects, as preparation for Algebra II and Geometry.

#### **Among other skills, 8<sup>th</sup> Grade students learn to:**

- Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually and convert a decimal expansion which repeats eventually into a rational number.
- Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example,  $32 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .
- Use square root and cube root symbols to represent solutions to equations of the form  $x^2 = p$  and  $x^3 = p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.
- Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
- Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
- Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation  $y = mx$  for a line through the origin and the equation  $y = mx + b$  for a line intercepting the vertical axis at  $b$ .
- Analyze and solve pairs of simultaneous linear equations.
- Explain a proof of the Pythagorean Theorem and its converse.
- Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.

- Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
- Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.
- Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

### **Science**

The Science curriculum engages students in a process of scientific investigation whereby they gradually learn to take the initiative in directing and assessing the results of their inquiry. Students pose questions based on their own understanding and curiosity, as they integrate information taught through lessons and create their own knowledge. Students actively engage in discussions about ideas and responsibility as young scientists, with an eye toward social concerns and environmental impact. They take responsibility for demonstrating the accuracy and soundness of their observations and conclusions. Students learn to design experiments by first asking a question and then sharing the opportunity to pursue their own experimental designs. Middle School science courses place great emphasis on laboratory work. All MS students are actively involved in lab studies, many of which use the resources of the campus outdoors and off-campus science field opportunities.

#### **Among other skills, students learn to:**

- Cite specific textual evidence to support analysis of science and technical texts.
- Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
- Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
- Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- Distinguish among facts, reasoned judgment based on research findings, and speculation in a text
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- Write arguments focused on discipline-specific content.
- Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

- Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas, clearly and efficiently.
- Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
- Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
- Draw evidence from informational texts to support analysis, reflection, and research.

### **Life Science**

Students in Grade 7 study the origins of life and evolution, life at the micro and macroscopic levels, human biology, ecology, and the ethics of scientific advancements.

#### **Among other skills, students learn to:**

- Describe characteristics of living things.
- Understand and implement the scientific method.
- Explain cell processes and cell division.
- Prepare slides for examination under a microscope.
- Describe photosynthesis and cellular respiration.
- Predict genotype and phenotype ratios using a Punnett Square.
- Describe theories of evolution.
- Understand taxonomy and describe the characteristics of the kingdoms.
- Investigate ecology, levels of organization, and biodiversity.

### **Earth Science**

Students in Grade 8 study Geology and Plate Tectonics, Oceanography, Meteorology, and Space Science.

#### **Among other skills, students learn to:**

- Understand and implement the scientific method in laboratory investigations.
- Understand differences between a hypothesis, theory, and law.
- Describe the composition of the hydrosphere and atmosphere.
- Identify and describe the zones of the Earth's interior.
- Investigate the results of the Earth's rotation and revolution.
- Develop proficiency in topographic map reading.
- Investigate meteorology, pollution, global warming, and wind belts.
- Determine humidity and dew point using reference tables.
- Investigate plate tectonics and earthquakes/volcanoes.

- Locate the epicenter of an earthquake using seismic data.
- Understand the rock cycle and the categories of rocks.
- Use half-life data to determine the age of rocks and fossils.
- Research areas of astronomy and oceanography.

### **The Arts**

The primary purpose of the Arts program is for students to experience the powers inherent in creative expression and discover the personal rewards of self-discipline and personal effort. Technical knowledge, history, theory, aesthetics, and interdisciplinary projects are all incorporated into the art programs.

### **Studio Arts**

As they progress through Middle School, art students will have the opportunity to explore drawing, painting, ceramics, printmaking, 2D and 3D mixed media, and free-standing sculpture. Students learn to communicate visually by gradually improving their technical skills and developing their creative voice. Art lessons emphasize the process of making art, as well as the aesthetics and originality of finished works. The vernacular of art, art history, social context, and the arts of cultures, myths, and universal symbols are integral to the program. Artwork is routinely displayed around campus. The culmination of the studio arts curriculum is the Spring Arts Show.

### **Music**

Bands at RCDS are geared toward different ages and levels of musicianship. All students in the Middle School study a musical instrument. The curriculum focuses on the development of technique, reading skills, theory, ear training, history, improvisation, world music, jazz, classical repertoire, personal expression, and teamwork..

Students are required to choose a string, brass, woodwind, or percussion instrument each year in Middle School. Guitar and Songwriting classes are also offered if students' schedules allow. Performance opportunities abound throughout the year in talent shows, band concerts, and the spring musical. The Friday Band, a weekly jam session, and the Blue Light Café, showcasing songwriting students, also offer regular public performances.

### **Theater**

While Theater is not part of the formal curriculum, it plays a central role in the life of the Middle School. In the context of English classes, students read and stage plays from Shakespeare to contemporary works.

Extra-curricular drama productions, including the annual the Fall Drama and the Spring Musical, are open to students in Grades Five through Twelve. RCDS also has a long tradition of students designing and executing light and sound for all major productions, supervised by the Technical Director. Middle School students who display the requisite maturity may participate in these activities. When scheduling permits, students also can take Acting Improv as an elective.

### **World Languages**

Our Middle School program continues to immerse students in the spoken language and culture of Spanish-speaking countries. Students develop a working vocabulary and develop their pronunciation



and listening skills, through cooperative and collaborative exercises, including vocabulary and grammar presentations, accompanied by oral and written activities, songs, games, videos, skits, oral presentations, and projects. As their communication skills improve, students begin to learn more complex grammatical structures and give increasing attention to written expression. This continues to be the emphasis of the program through the eighth grade. Teachers in the language department help students increase proficiency in speaking, listening, reading, and writing in the target language. Students learn through dialogues, texts, films, tapes, and online technologies. In classes, speaking primarily in the target language, students progressively develop skills in communication and understanding the language. Middle School students have many opportunities to further develop and showcase their language skills through interdisciplinary projects, in-class presentations, and our annual International Day celebration. Middle School students may also gain greater appreciation for Spanish culture through field trips, such as concerts, and restaurant and museum trips.

**Students learn to:**

- Listen, speak, read, and write in the target language.
- Apply appropriate vocabulary in oral and written communication. Vocabulary topics include sharing information about classrooms, counting from 100 to 1,000, offering opinions on sports and pastimes, articulating emotions and states of being, describing homes and elaborating on objects found in homes, sharing information about household chores, identifying places around town, and discussing music, movies, and television programs.
- Write structurally and grammatically correct paragraphs. Grammar topics include forming regular, irregular and stem-changing verbs in the present tense to state their daily routine, creating and answering questions using interrogative words, using descriptive, possessive, and demonstrative adjectives, the gerund, and adverbs.
- Perform oral presentations and skits.
- Explore the culture of the chosen language within the global context.
- Describe Hispanic influences in the United States.
- Compare and contrast life in the target culture with their own.

# Upper School

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The Upper School offers a progressive, creative, and dynamic educational program that recognizes each student's capacity to learn, understand, and apply knowledge throughout their time at RCDS. We believe *how* each student learns, constructs, understands, and uses knowledge is as important as *what* she or he learns.

While maintaining the small class size and friendly environment that permeates the two lower schools at RCDS, the Upper School is departmentalized and has an increased level of rigor. We recognize that we are preparing students for higher education, and that we are uniquely qualified to find the right college for each student based on his or her individual needs, talents, and aspirations. This begins with students identifying and clarifying those goals and aspirations, so the focus is on ethical reflection, individual responsibility, and achieving personal excellence.

The academic program of the Upper School provides a solid foundation in all major disciplines: Humanities (English and history), world languages, mathematics, science, and the visual and performing arts. As in the Children's School and Middle School, the Upper School curriculum is organized around experiential and multidisciplinary learning. Class work and activities are integrated around a focused course of study. Field trips, overnight trips, and whole-school assemblies enhance the curriculum and prepare students for greater independence and intellectual challenge.

Upper School students must fulfill the following requirements to graduate:

- 4 credits in English
- 4 credits in History or social science
- 3 credits in Mathematics
- 3 credits (or 2&2) in World Languages [except in special circumstances]
- 3 credits in Lab Science (including Biology or an equivalent course)
- 1 credit in Visual Arts
- 1 credit in Performing Arts
- 2 credits in Fitness for Life (physical education)
- .5 credits in Community Service
- Successful completion of a WISE Senior Project

The Upper School Humanities program encourages individualism and appreciation of learning through in-depth study of language, literature, and history. History is taught through a multi-faceted lens that broadens student perspectives by providing a firm foundation in the basic themes of a diverse range of civilizations, cultures, and countries. Teachers approach the study of these cultures using the Socratic Method, encouraging students to think critically about issues of importance in history, literature, and their own lives.

In English, students learn to connect personal experience with the literature they read and engage in respectful and cooperative discourse with the community at large. At the same time, Upper School students develop reading, writing, research, and speaking skills, with a strong focus on the writing process. Reading for information and enjoyment is also strongly emphasized. In writing and research,

ease and familiarity with academic essay writing and the generation of original ideas are key goals. Finally, in speech, the Upper School emphasizes active participation of its students. The program requires practicing these skills by challenging students to take on creative projects and roles that strengthen writing and reading skills.

However, along with the preparatory skills necessary for entrance into college, the program also emphasizes humanistic growth. The Humanities department attempts to create a balanced understanding of the disparate and often conflicting concepts within a collection of world literature. As opposed to a merely canonical approach to literature, creating an appreciation for the universal human truths contained in literature fosters the cooperation and individualism that are tenets of the school. This humanistic approach is reinforced by the varied electives offered by RCDS teachers each year, allowing students to further their appreciation of varied forms of literature.

In the Upper School, focus is on deep reading of texts in order to make connections and interpret politics and personalities objectively. Throughout the high school years, papers and tests become the norm for assessment. Research papers encourage students to incorporate their growing knowledge base with individual observations and opinions to produce a personal response to history's facts and figures. Note-taking skills, testing, and participation in class discussion provide quantifiable and qualitative observations for review of student performance and progress.

Upper School students write frequently. The writing process, involving reflection, drafting, and re-writing, with collaboration and feedback from classmates and teachers, occurs at all grade levels. Under the guidance of teachers, students edit their own and one another's work, and rewrite to polish several pieces for their own writing portfolio. Students are expected to master the basics of written communication as essential tools in the process of expression and self-discovery. Students are expected to display a consistent and improving level of ability in the organizational and study skills taught in Middle School.

As in the lower schools, the Upper School mathematics curriculum parallels the cognitive development of the students as they progress from the concrete to the abstract. Students explore and create a variety of strategies and learn to support their methodology with logical reasoning. Process is valued along with product. Students are encouraged to enjoy mathematics as a pure, intellectual activity as well as see its practical applications. The math department aims to engage students critically and creatively in rigorous challenges that prompt them to develop intellectual, analytical, research, and communications skills.

Upper School science broadens students' vision of the world and helps them redefine their understanding of that world. As students move through the grades, and at a level appropriate to their intellectual growth, demands are made for understanding explanations of increasingly complex sets of related facts about the workings of nature. Each science course taps these increasingly complex conceptual, mathematical, and spatial skills, which continue to develop throughout the high school years. Learning objectives for all science courses include listening, speaking, reading, writing, and critical thinking. The science department believes that language skills are important to both understand and communicate scientific ideas. Tests, lab assignments, projects, class work, homework, and independent assignments are integral pieces of student assessment. All ninth grade students are required to participate in the school science fair. Tenth, eleventh, and twelfth graders may participate, but it is not mandatory. Students are required to utilize the scientific method to design an original experiment. The students have the opportunity to demonstrate their critical thinking skills, ability to collect and analyze

data, and display confidence in the presentation of their work at the annual Science Fair.

As in the Children and Middle Schools, the Upper School is committed to recognizing and respecting individual learning styles, and teachers demonstrate familiarity with techniques appropriate to differing student profiles. Students may also receive support from the School's learning specialist, who works closely with the classroom teachers to design effective teaching strategies. As a result, all students are able to succeed in the rigorous environment of the Upper School. The learning specialist also provides individualized support within the context of the school day to students, as needed.

As students reach high school, they manage the responsibilities of their curriculum with significantly more independence than in the Middle School. As students progress toward graduation, it is increasingly important that they experience both collaborative and individual independent study to magnify the benefits of this work, especially as they move to higher education.

Seniors are encouraged to use the Independent Studies program as a means to explore their WISE project before the year begins. While the Independent Studies program is separate from WISE and has different criteria for evaluation and grading, students frequently choose to bring the two programs together or use their Independent Studies results to explore possible WISE projects before the second trimester of senior year.

Capping the process of self-discovery during the Upper School years, Seniors spend much of the first trimester reflecting on an independent learning experience they would like to pursue. They are strongly encouraged to stretch out of their "comfort zone" to explore what excites them. This might take the form of an internship, a research project, a work of art or fiction, or some combination of all three. The emphasis of the WISE program is on curiosity-driven exploration, documented in a weekly journal and mentored by a faculty member chosen by the student. Following a period of reflection, research and reading, in the third trimester, Seniors take complete charge of their experience, and then report what they have learned to the members of the RCDS community in a series of presentations. In displaying their maturity as learners, RCDS Seniors ensure that they are ready to make the next crucial step into the wider world of college and adult life.

While RCDS graduates have attended some of the most prestigious colleges and universities in the world, RCDS' college guidance program prides itself on making the right match between student and college. Based on years of reflection and personal growth, RCDS students are ready to make choices about college programs at the end of their Junior year. RCDS students receive a great deal of one-on-one time in the college application process. They are guided through the maze of applications, essays, and recommendations to choose a range of schools that reflect their unique interests and abilities. A list of college acceptances and colleges attended by RCDS graduates is available through the Admissions office.

## **Humanities**

### **Grades 9 and 10**

Students learn about Global Civics and Western Civilizations in a two-year cycle, with corresponding

literature and writing.

### **History**

**Global Civics:** Utilizing the methodologies of comparative political science and history, students will examine during the first half of the year the evolution and responsibilities of citizenship in the United States and then, during the second half of the year, will explore other political systems, as well as global organizations. Through foundational texts—ranging from the American Declaration of Independence to the constitution of the Union of Soviet Socialist Republics—students will develop an understanding of what citizenship is, how they can participate within national politics and international organizations, and the influence of non-governmental organizations upon the global stage. Key essential questions will include: What does citizenship mean at the beginning of the 21<sup>st</sup> century? How has citizenship changed and what forces continue to change our responsibilities today? Why are participatory citizens important and how can students remain engaged with and informed about local, state, national, and international political systems? Students will experience political science methodologies, including the classification and study of individual states and international systems, as well as the selection and use of historical case studies.

**Western Civilization & the World:** Did the Modern World create Western Civilization or did Western Civilization create the Modern World? Through primary and secondary sources, students will explore the origins of Western Civilization in classical antiquity, the fragmentation of the Mediterranean world system after the decline of the Roman Empire, and how the surviving fragmented polities evolved from remote hinterlands to the global economy in the 12<sup>th</sup> century to centers of international power—and conflict—during the 20<sup>th</sup> century. Students will develop an understanding of how historians research and write regional histories within a global framework by learning how to engage with the primary sources that support secondary readings. Through macro-historical thematic topics—including class, gender, race, immigration, trade, technology, nationalism, imperialism, capitalism, communism, and socialism—students will examine how individual lives contributed to our understanding of the past. Students will practice, through historical laboratories, analyzing a variety of sources—ranging from personal diaries to imperial edicts—for arguments, individual biases, and cultural assumptions, in order to better understand how a narrative of their modern world was and is created.

### **English**

The English curriculum mirrors the History curriculum in terms of themes and skills, but students practice the skills and explore the essential questions through a variety of literary genres and time-periods. Readings in 9/10 English include *Antigone*, *Oedipus*, *Macbeth*, *For Whom the Bell Tolls*, *Lord of the Flies*, *The Catcher in the Rye*, *Romeo and Juliet*, *The Odyssey*, and *Persepolis*. As they read, students take notes in the Cornell style and then come to class prepared to discuss themes including civilization, alienation, maturity, anxiety, friendship, family, revolution, the individual versus society, guilt and responsibility. Ultimately, these notes and discussions form the basis of their academic writing.

### **Writing**

Students write frequent essays with an emphasis on formulating their own logical thesis statements and using precise language and textual evidence to support their arguments. Students learn to structure their essays and cite their evidence in accordance with MLA format. Students also engage in extensive brainstorming, outlining, drafting, re-writing, and peer review sessions.

**Among other skills, 9<sup>th</sup> and 10<sup>th</sup> Grade students learn to:**

- understand major comparative political science concepts, themes, theories, and generalizations.
- demonstrate knowledge of important facts pertaining to the governments and politics of the United States and selected case studies through argumentative writing.
- understand typical patterns of political processes and behavior, as well as the consequences of different systems of governance.
- be able to compare and contrast political institutions and processes across countries.
- be able to analyze sources—including historic case studies, statistical data sets, and foundational documents—for author biases, source problems, and utility.
- be able to analyze political theories and sources (including statistical data sets) to generate informed generalizations.
- differentiate the principle methodologies of comparative regional history.
- demonstrate knowledge of key events within Western Civilization.
- demonstrate a comparative knowledge of key actors and processes.
- understand and demonstrate the principles and methodologies of history as an investigative process including
  - mastery of history laboratory techniques;
  - mastery of individual primary source evaluation;
  - understanding of comparative primary source evaluation;
  - mastery of single paragraph historical responses;
  - mastery of multi-paragraph, hypothesis driven historical analyses.
- Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.
- Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden’s *Musée des Beaux Arts* and Breughel’s “Landscape with the Fall of Icarus”).
- Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.
- Analyze how an author’s choices concerning how to structure a text, order events within it (e.g., parallel plots), and manage time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.
- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence; explore and inquire into areas of interest to formulate an argument
- .Analyze seminal U.S. documents and other documents of historical and literary significance (e.g., Washington’s Farewell Address, the Gettysburg Address, Roosevelt’s Four Freedoms speech, King’s “Letter from Birmingham Jail”), including how they address related themes and

concepts.

- Conduct short and sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.
- Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
- Use parallel structure.
- Compare and contrast treatments of the same topic in several primary and secondary sources.

## **Grades 11 and 12**

Students examine World and American History and literature in a two-year cycle.

### **History**

World: Through World History students will develop an understanding of how historians have and are creating an understanding of the interconnecting of previously isolated regions and dispersed societies from 1500 to the present. Students will analyze primary and secondary documents to explore key processes in the development of connectivity, including migration, warfare, empire, technology, trade, and cultural diffusion. Central units of the course include the creation of the homogenization of peoples and institutions after 1492, the development of global institutions, the rise and fall of imperialism, the emergence of the nation-state, the evolution of globalization, and the realities of the fractured world of the present. *(Offered as AP, Honors, or College Prep)*

History of the United States: Through the History of the United States students will develop an understanding of how Americans—from historians to tourists—have developed a national narrative for the United States from the American Revolution to the near-present. Students will analyze a variety of primary documents and secondary sources to explore how politics and decisions in the United States have been influenced by processes, including expansion, race, class, gender, industry, and technology. Central units of the course include the American Revolution, the creation and expansion of the Early Republic, the development of Jacksonian democracy, slavery and industry during the antebellum period, the Civil War, Reconstruction, the Gilded Age, the Progressive Era and the First World War, segregation, modernity and, during the 1900s, the Great Depression and the New Deal, the Second World War, Suburbanization and the Atomic Era, the Long Rights Movement, the rise of the Conservative Right, the long Technology Boom of the 1990s, the War on Terror, and the challenges of Barack Obama's two presidential terms. Each of these topics will require students to empathize with the past as a living narrative fraught with consequences for their lives today. *(Offered as AP, Honors, or College Prep)*

### **English**

The English curriculum mirrors the History curriculum in terms of themes and skills, but students practice the skills and explore the essential questions through a variety of literary genres and time

periods. Readings in 11/12 English include *The Turn of the Screw*, *The Crucible*, *The Scarlet Letter*, *The Fire Next Time*, *The Things they Carried*, *When the Emperor was Divine*, *The Turner House*, *Hamlet*, *The Tiger's Wife*, *The Metamorphosis*, and *A Portrait of the Artist as a Young Man*. As they read, students take notes in the Cornell style and then come to class prepared to discuss themes including alienation, the individual versus society, what it means to be an artist, family, power, war, freedom, and captivity. Ultimately, these notes and discussions form the basis of their academic writing.

### **Writing:**

Students write frequent essays with an emphasis on formulating logical thesis statements and using precise language and textual evidence to support their arguments. Students learn to structure their essays and cite their evidence in accordance with MLA format. Students also engage in extensive brainstorming, outlining, drafting, re-writing, and peer review sessions.

### **Writing**

Students write frequently in essay and narrative forms, exploring assigned topics and topics of personal interest. They are expected to display a high level of competency, writing about complex ideas with logic, clarity, and coherence, using a variety of grammatical tools, supporting analytical claims with examples of concrete supporting evidence, and with an appreciation of cultural contexts and a displayed understanding of critical theories of literature.

### **Among other skills, 11<sup>th</sup> and 12<sup>th</sup> Grade students learn to:**

- Analyze and evaluate the effectiveness of the structure an author uses in his/her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
- Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness, or beauty of the text.
- Analyze how an author's choices concerning how to structure specific parts of a text (e.g., the choice of where to begin or end a story, the choice to provide a comedic or tragic resolution) contribute to its overall structure and meaning as well as its aesthetic impact.
- Analyze a case in which grasping a point of view requires distinguishing what is directly stated in a text from what is really meant (e.g., satire, sarcasm, irony, or understatement).
- Demonstrate knowledge of eighteenth, nineteenth, and early twentieth-century foundational works of American literature, including how two or more texts from the same period treat similar themes or topics.
- Analyze and evaluate the effectiveness of the structure an author uses in his or her exposition or argument, including whether the structure makes points clear, convincing, and engaging.
- Interpret, analyze, and evaluate narratives, poetry, and drama, aesthetically and philosophically by making connections to: other texts, ideas, cultural perspectives, eras, personal events, and situations.
- Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis and provide an objective summary of the text.
- Delineate and evaluate the reasoning in seminal U.S. texts, including the application of



constitutional principles and use of legal reasoning (e.g., U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist Papers, presidential addresses).

- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. Explore and inquire into areas of interest to formulate an argument.
- Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.

## Math

The courses described below are taken in sequence by most students. However, if a student has an aptitude in mathematics, they may accelerate to a higher-level course, provided they achieve a grade of no less than B on the final examination in the course they propose to skip.

### Geometry

The Geometry course examines two and three-dimensional geometric figures and their properties, geometric constructions, conjectures, conclusions, and development of formal logical proofs. Students will gain the ability to see mathematical ideas more abstractly. The skills learned in Algebra I will be revisited, reinforced, and applied throughout the year in preparation for Pre-Calculus or Advanced Algebra. The work in this course is promoted through direct class instruction, group work, homework, and student projects.

#### Among other skills, students in Geometry learn to:

- Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
- Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
- Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
- Prove theorems about triangles. Theorems include measures of interior angles of a triangle sum to  $180^\circ$ ; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.
- Prove theorems about parallelograms. Theorems include opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.
- Use congruence and similarity criteria for triangles to solve problems and to prove relationships

in geometric figures. Prove theorems about lines and angles. Theorems include vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.

## **Algebra II**

In Algebra II, students investigate topics in rational and irrational numbers, graphing, functions, inequalities, operations involving polynomials, matrices, conics, complex numbers, and trigonometry. The course is designed to further develop the knowledge students acquired in Algebra I and their expertise with a differentiated approach. Students will become competent with a graphing calculator. Each grading period, students will complete a project designed to relate course material to everyday life.

### **Among other skills, students in Algebra II are taught to:**

- Rewrite expressions involving radicals and rational exponents using the properties of exponents.
- Know there is a complex number  $i$  such that  $i^2 = -1$ , and every complex number has the form  $a + bi$  with  $a$  and  $b$  as real numbers.
- Use the relation  $i^2 = -1$  and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.
- Solve quadratic equations with real coefficients that have complex solutions.
- Extend polynomial identities to the complex numbers. For example, rewrite  $x^2 + 4$  as  $(x + 2i)(x - 2i)$ .
- Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.
- Interpret expressions that represent a quantity in terms of its context.
- Interpret parts of an expression, such as terms, factors, and coefficients.
- Use the structure of an expression to identify ways to rewrite it. For example, see  $x^4 - y^4$  as  $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as  $(x^2 - y^2)(x^2 + y^2)$ .
- Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
- Factor a quadratic expression to reveal the zeros of the function it defines.
- Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
- Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law  $V = IR$  to highlight resistance as  $R$ .
- Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

## **College Prep Math**

Students needing more focus on algebraic concepts will spend a year strengthening and reinforcing those skills, as preparation for placement in Pre-calculus or Statistics.

## Pre-calculus

This course is the study of algebraic, transcendental, and trigonometric functions through problem solving with the use of a graphing calculator. The course will prepare students for an introductory course in college calculus. Students will learn to understand functions from graphical, analytical, and numerical points of view. They will also learn to apply functions to applications such as radioactive decay, business, and surveying.

### Among other skills, students in Pre-calculus are taught to:

- Interpret key features of graphs and tables in terms of the quantities, for a function that models a relationship between two quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.
- Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
- Illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.
- Know and apply the Remainder Theorem: For a polynomial  $p(x)$  and a number  $a$ , the remainder on division by  $x - a$  is  $p(a)$ , so  $p(a) = 0$  if and only if  $(x - a)$  is a factor of  $p(x)$ .
- Solve an equation of the form  $f(x) = c$  for a simple function  $f$  that has an inverse and write an expression for the inverse. For example,  $f(x) = 2x^3$  or  $f(x) = (x+1)/(x-1)$  for  $x \neq 1$ .
- Verify by composition that one function is the inverse of another.
- Read values of an inverse function from a graph or a table, given that the function has an inverse.
- Produce an invertible function from a non-invertible function by restricting the domain.
- Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.
- Interpret the parameters in a linear or exponential function in terms of a context.
- Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
- Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.
- Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed.

## AP Calculus AB

This course is the study of calculus and its applications. It prepares students for the AP Calculus AB exam. Students learn to apply the methods of calculus to problems presented graphically, analytically, and in table form. They are taught to communicate in the language of calculus, both verbally and in writing. Technology is an integral part of the course. Specifically, the graphing calculator will be used extensively, both in class and on the AP exam. Topics covered include limits and continuity, derivatives and their applications, and integrals and their applications.

### **AP Calculus BC**

This course is the study of calculus and its applications. It will prepare students for the AP Calculus BC exam. Students learn to apply the methods of calculus to problems presented graphically, analytically, and in table form. They will learn to communicate in the language of calculus, both verbally and in writing. Technology is an integral part of the course. Specifically, the graphing calculator will be used extensively, both in class and on the AP exam. Topics covered include all the topics covered in AP Calculus AB as well as series, vector functions, and polar functions.

### **Statistics**

Statistics class will introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. The course is based on four broad conceptual themes: exploring data to observe patterns and departures from patterns, planning a study that includes deciding what data to use and how to measure it, producing models using probability theory and simulation, and confirming models using statistical inference. On completion of this course, students will be able to communicate effectively in the language of statistics and to perform and analyze the results of surveys and experiments using correct statistical methods. A major component of the course will be individually designed and analyzed experiments and surveys applying the methods taught in the class.

#### **Among other skills, Statistics students learn to:**

- Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentiles. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
- Distinguish between correlation and causation.
- Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
- Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).
- Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities and use this characterization to determine if they are independent.
- Understand the conditional probability of A given B as  $P(A \text{ and } B)/P(B)$ , and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.
- Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.
- Use permutations and combinations to compute probabilities of compound events and solve problems.

### **AP Statistics**

This course is taught concurrently with Statistics. Students in AP Statistics will complete all the regular course work for Statistics. They will also complete additional assignments throughout the year and will attend dedicated review classes to prepare for the AP exam in May.

**In addition to the skills above, students learn to:**

- Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability of 0.5. Would a result of 5 tails in a row cause you to question the model?
- Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values.
- Find the expected payoff for a game of chance. For example, find the expected winnings from a state lottery ticket or a game at a fast-food restaurant.
- Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).

**Independent Studies in Mathematics**

Students who advance beyond the math curriculum work independently on M.I.T. Open Courseware. Guided and mentored by a member of the mathematics faculty, students choose from courses such as Multivariable Calculus and Linear Algebra. These courses, when successfully completed, are reflected on the student's transcript.

## Science

**Biology**

Ninth graders taking Biology study and develop experiments based on examination of topics such as cellular systems, genetics, evolution, anatomy and physiology, systems of the body, and an introduction to the life of plants and ecology.

**Among other skills, students learn to:**

- Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
- Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
- Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
- Prepare slides for examination under a microscope.
- Convert measurements using the Metric system.
- Determine the significance of surface area to volume ratio.
- Explain the methods and results of famous experiments and identify and label parts of cellular, body, and plant systems.

- Produce projects and papers that are scientifically sound, clearly and logically presented, reflecting research using authoritative sources.

Students in Grades 10 and 11 study Physics and Chemistry.

### **Physics I and Physics II**

Physics I is an introductory lab-based survey course in which students study topics in Mechanics and Energy. Physics II addresses Thermodynamics, Optics, Electricity and Magnetism, and Modern Physics.

#### **Among other skills, students learn to:**

- Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
- Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
- Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
- Calculate, graph, and evaluate velocity and acceleration.
- Describe Newton's Laws of Motion and use these Laws to calculate force, mass, and acceleration.
- Explain how optical instruments such as microscopes and telescope work.
- Solve problems concerning the magnetic force on a moving charge and on a wire carrying current.
- Comprehend and explain basic concepts behind the emerging science of quantum mechanics.
- Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

### **Chemistry**

Chemistry is an introductory, lab-based survey course of basic topics in chemistry. Topics covered include matter and changed atomic structure and the Periodic Table; chemical names, formulas and reactions; stoichiometry; states of matter; thermochemistry; and oxidation reduction reactions.

#### **Among other skills, students learn to:**

- Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
- Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
- Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

- Identify elements and compounds.
- Understand and distinguish chemical reactions.
- Understand and distinguish the structure of the nuclear atoms and distinguish between atoms.
- Understand and organize the elements of the periodic table.
- Understand and re-create representation of chemical compounds.
- Understand and solve chemical equations.
- Understand and solve oxidation numbers.

### **AP Biology**

AP Biology is a year-long preparation for the Advanced Placement test in biology. Students are expected to demonstrate a high level of motivation, mastering college-level material focusing on biological molecules, DNA, evolution, plants, body systems and homeostasis, animal development, and ecology.

#### **Among other skills, students learn to:**

- Identify the basic groups of biological molecules.
- Compare/contrast the chemical reaction of photosynthesis and cellular respiration.
- Explain and illustrate the structure of DNA and the behavior of enzymes, proteins and genetic mutations.
- Explain Darwin's principles of natural selection and master the list of categories for each genus and species.
- Understand and illustrate the structure and life cycle of plants, with specific attention to plant hormones and their effects.
- Explain how homeostasis is achieved.
- Describe the developmental stages of an embryo from fertilization and the various learning patterns exhibited by animals.
- Explain the concept of biotic potential and factors affecting biotic potential.
- Discuss the earth's carrying capacity and human population growth and the role of competition in community.
- Give examples of different symbiotic relationships.
- Explain how primary and secondary succession occur and list the major biomes found on earth and the characteristics of each.

A series of labs accompanies each unit, and students create detailed reports on each lab, with emphasis on the scientific method, clarity, logic, and demonstrated ability to do scientific observation and reporting.

### **Electives**

The department offers Environmental Science, Tropical Ecology, Marine Biology, and Astronomy.

# World Languages

The World Languages program is designed to develop fluency in languages as a means of communication and insight into cultural behavior. This coursework supports the School's mission to promote and celebrate diversity and intellectual curiosity, and to gain an understanding of the universal aspects of human life that can enable students to interact successfully in a multicultural world.

The program recognizes the individual needs and abilities of each student, encouraging students to work towards their highest academic performance, and demonstrate competence and independence in world languages.

Classes are organized in three categories, according to degrees of fluency and, in grades 9 – 12, prior experience with the language:

- Beginner Level (Beginning and Introductory classes)
- Intermediate Level (Level II, Level III courses)
- Advanced (Level IV, Honors, AP courses when offered)

For each level, students develop these essential skills in the following ways:

## **Beginning-Level** Students

- Acquire a basic understanding of grammar and vocabulary and can read and write short paragraphs on topics studied in class.
- Speak in short conversations and express feelings and emotions.
- Generate and respond to short messages such as invitations, directions, appointments.
- Express details of their everyday lives and experiences.
- Engage in original conversations in the target language.
- Create and respond to phrases, questions and sentences.
- Understand and use basic vocabulary in context.
- Conduct personal research to develop the topics studied in class.
- Understand the basic cultural norms of the target culture, such as food, school, family life, and can compare these norms to their own culture.

## **Intermediate-Level** Students

- Communicate successfully in basic everyday situations.
- Participate in progressively more challenging conversations.
- Strengthen command of spoken and written foreign language by demonstrating accuracy of expression with the basic structures learned in the previous levels.



- Narrate past, present, and future events with particular emphasis on the ability to use the preterit, imperfect, subjunctive, and compound past tenses.
- Appreciate short literary pieces and movies.
- Demonstrate an understanding of the relationship between the practices and perspectives of the culture studied.

#### **Advanced-Level Students**

- Immerse themselves in the studied language’s contemporary culture as well as those of other countries speaking this language and develop appreciation for the culture.
- Read short stories, newspapers articles, plays, novels and other literary texts from areas of the world that use the studied language using pre and post reading strategies.
- Share their own observations, thoughts, and feeling with others in the language.
- Write essays and compositions using writing strategies.
- Practice written expression in a variety of forms: summary, essays, and poems in progressively increasing levels of complexity.
- Attend theatrical performances, go to a Spanish restaurant and/or meet with a guest speaker to enhance listening and conversational skills.
- Participate in regular discussion to improve listening and speaking skills.
- Comprehend formal and informal spoken forms of the language by following foreign language television, movies, radio, and news broadcasts.
- Develop strategies for interpretation of familiar words and idioms.
- Present and defend ideas and points of view, orally and in writing.
- Reach spontaneity of written and spoken expression on topics developed in class, describing a picture, seeing a movie, retelling a story, sharing experiences, learning a song, a poem, talking about current events, giving a recipe or having a phone conversation.

## **The Arts**

### **Visual Art**

Upper School art students are given the opportunity to produce creative work in various media using different tools, techniques, and processes such as drawing, painting, collage, sculpture, ceramics, printmaking, fibers, mixed media, and traditional and digital photography. Studio art classes promote new ways of thinking, working, communicating, reasoning, and investigating. Problem solving in art classes opens students to new ideas and solutions; the creative process of making art becomes part of the student’s “toolbox” that may be applied to other disciplines, now and later in life.

Acknowledging that an experiential understanding of art is essential to a humanistic education, visual art is a requirement through Grade Ten. Advanced Studio, and Portfolio Art are offered as electives in Grades Ten through Twelve. Art classes meet twice a week and the programs are designed to enable all

students to experience success, increase self-confidence, and develop cognitive and fine motor abilities.

Student assessment is based on criteria established by the National Visual Art Education Content Standards. Students are assessed on their classroom participation, effort, skill, creativity, and the aesthetics of both individual and group projects. Assessment of age-appropriate skills is performed on an ongoing basis. The Spring Arts Exhibition showcases student art and provides an overall view of the learning experiences and individual achievements of the students.

### **Music**

The Music Department's goals include providing and developing an intellectual environment by encouraging musical exploration and analysis. Students are led through daily routines of rhythm, theory, and reading exercises that expose them to different musical styles from around the world. The music faculty responds to students' natural curiosity about music while nurturing their musical development through practice, rehearsal, and ensemble performance.

Given our commitment to multi-dimensional arts education with an emphasis on experience, music is a requirement through grade 10 during which time students must choose Band, Strings, or Guitar/Songwriting.

- Students are grouped by grade and are provided an encouraging environment to explore both group work and individual study. Through differentiation and grouping, students prepare for two major concerts and are encouraged to participate in many smaller performance opportunities throughout the school year.
- Guitar/Songwriting classes and the after-school Friday Band give students an opportunity to rehearse and perform their original songs. Songwriting classes perform publicly three times per year.
- Chorus is comprised of students from Grades 5 – 12 as an elective.

Using skills learned in math and language also help students decipher the written musical language. Students are expected to practice their instrument's basic rudiments in order to master their specific musical parts. Students accomplish this by rehearsing in band class and practicing their instrument at home. Students learn to apply these skills in regular rehearsals, concerts, and quizzes in class.

### **Theater**

Acting is offered as an elective for Grades 5 – 12, and students are grouped according to ability and experience.

In the context of English classes, students read and stage plays from the Shakespearean era to contemporary pieces, in addition to additional student work. As appropriate, teachers often establish linkages between dramatic work and Humanities themes.

Extra-curricular drama productions, including the annual Fall Drama and the spring musical, draw significant participation from Upper School students as performers, choreographers, designers, and technicians. RCDS has a long tradition of students designing and executing lights and sound for all major productions.

