

Enduring Understandings

Language Arts	 Analysis of literary elements leads to a deeper understanding of what we read Literature provides pleasure to listeners and readers Reading helps to develop and improve achievement Reading builds experience, while reading a child can visit new places, gain new experiences and meet new people Literature develops thinking skills Provides a language model for those who hear and read it 	 Exposes children to correct senvariety of word usage Writing leads to better thinking Writing leads to better learning Self-expression will be made easier Prepares students for further adment Students are able to effectively
Mathematics	 Skills developed through mathematical problem solving help to clarify, answer and explain problems people encoun- ter in the real world Mathematical proficiency is required for many jobs; they are essential for science, engineering and research A mathematically informed citizenry will make better eco- nomic and political decisions about risk, policy and resource allocation Mathematics teaches patterns of problem-solving and insight that transfers to other knowledge domains 	 Mathematics proof teacher persuasion that transfer are domains Practicing mathematics b in the brain helping with o skills
Science	 Science helps to build a strong economy Science contributes to global health, better informed decisions Science prepares students to have a more personally fulfilling and responsible life Science provides humanity with the knowledge of the biophysical environment and of social behaviors needed to develop effective solutions to its global and local problems 	 Science allows children to exp them Knowing and applying the conscientific inquiry know and apply the concepts Collect and record data accurate recording techniques and med pected results in a data set
Foreign Language	 Exposure to other cultures; which offers insights into their own as well Allows for more worldly communication Always practicing writing, listening, speaking, and reading which also allows for improvement on these skills 	 Studying a foreign language a ing of our native language, as w opportunities for future careers Foreign languages provide op and better communication
Social Studies	 Social studies allows students to become more globally aware and more productive citizens It allows students to see how change occurs in societies and to explore other cultures Students learn about governance and economics They learn about the survival of different groups and how they adapted to changes 	 Historical events show studen some cultures/countries are the Analyzing history allows stude and to allow for better or more
Music	 A universal language Expresses a variety of emotions, as well as inspires creativity Music can unite or divide cultures Music helps in language development 	 Increase spatial-temporal skill makes the brain work harder Music can help improve abiliting spectrum Learning music helps studented be ability to solve problems with as teaches and enhances teams
Art	 Allows students to visually express themselves Art uses different medias and styles to challenge ideas, morals or concepts Art allows for a more globally aware student; there are different forms of art across the world 	 Art appreciation and exposure understand other cultures and own human experience Studying art helps to understa our own
Computer Science	 Allows students to interact with technology to help create and establish a better future Students learn teamwork Algorithmic though process Students become comfortable with technology Students learn stepwise refinement 	 Computer science opens the career choices By studying computer science stand the importance of their d Computer science teaches stumation on the web and protect
Physical Education	 Teaches students to live and maintain a healthy lifestyle Promotes the idea that fitness is significant to be both mentally and physically healthy Fitness improves brain activity With hard work we can all improve in areas of fitness 	 Physical fitness encourages terwellness Competition in physical fitness pline as well as teaches ethics Physical education teaches be Winning and losing both presentities

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A comprehensive and concise guide to the concepts in the curriculum for students age 3-8th grade at the Science Academy of Chicago.

Science Academy Curriculum Guide



Curriculum Guide

	PreK3	PreK4	Kindergarten	1st	2nd	3rd	4th	5th		Middle School	
Language Arts	 Letter and word recognition Letter sounds Pre-primer and primer sight Frequency words recognition word blends, word families Expressing ideas using complete sentences Recognizing main ideas, problems, characters, setting and story structure 	 Interdisciplinary approach to content by alternating between science and social studies themes in each unit The content and materials are supplemented with additional projects and experiments 	 Journeys Curriculum Count syllables Hear and imitate rhythm/rhyme patterns Make predictions Write simple 2-3 word sentences Tell a focused story using pictures, scribbles, and letter approximations 	 Journeys Curriculum Word analysis and vocabulary skills Comprehension and fluency Grammar and spelling Writing, listening, speaking references 	 Journeys Curriculum Reading and comprehension Challenging spelling words New vocabulary & meanings Grammar, punctuation, sentence structure 6 traits of writing Styles of writing 	 Journeys Curriculum Words in isolation Words in context Reading strategies Author's purpose and design Drawing conclusions based on evidence, Characterization Literary terms and devices 	 Journeys Curriculum Literal or simple inference Summarizing and main idea Sequencing and ordering Enabling objectives Story and literary structure Characterization Literary terms and devices 	 Journeys Curriculum Read fiction/non-fictional short stories, dramatic plays, poetry, and informational articles Write narrative, persuasive, and expository essays Presenting group research projects Learn and utilize all eight parts of speech in their daily writing while learning various grammar rules 	 Participate in 2-3 whole-class novel studies Read monthly independent novels Learn the development of plot, figurative language, literary elements, theme, symbolism, and character development Write essays throughout the year Learn advanced vocabulary from classical Latin root words 	 Connect the experience of the characters with current issues in their lives Analyze the author's development of a literary theme Produce a narrative, an argumentative, and an expository essay & write creative poetry 	 Elements of fiction/non-fiction, point of view, author's voice, and mood versus tone Write a literary introduction and how to analyze literature effectively Produce an expository research essay, autobiographical narrative, response to literature essay, and present an argumentative speech
Mathematics	 Creating and extending patterns Counting up to 100 Identifying equal and unequal groups Measuring using non-standard measurements Reading time Understanding positional words Interpreting and constructing simple graphs Describing geometric figures (2D&3D) Simple addition and subtraction 	 Number bonds Other methods of addition/subtraction Naming positions Counting and comparing Addition/ subtractions shapes Tens and ones Adding three numbers multiplication, Division and sharing/grouping Halves and quarters, Money-bills and coins, shopping 	 Count with understanding including skip counting from zero Determine the attributes of an object that are measurable Describe common and uncommon attributes in a set Identify and construct two- and three-dimensional shapes Data analysis 	 Count with understanding, including counting from any number by 2's and 10's Identify the type of measure for each measurable attribute Sort, classify, and order objects by multiple properties Solve problems and justify solu- tions using patterns 	 Use place value through 10,000 Add and subtract whole numbers multiplication and division concepts and facts patterns and algebraic thinking Measure length, area, temperature, capacity, weight, volume and time Identify geometric figures and spatial reasoning Organize, display and interpret data Understand fractions and decimals 	 Place value through millions (standard, expanded, word form) Solving addition and subtraction problems Organize, display, and interpret data (Mode, Median, Outlier) Apply multiplication and division facts Multiply and divide by two-digit numbers Identify and describe geometric figures and lines 	 Use place value of whole numbers and decimals (standard, expanded, word form) Learn problem solving strategies Add and subtract decimals Multiply and divide whole numbers Use Algebraic expressions, equations, and function tables Display and interpret data (media, mode, line plots, frequency tables, bar and line graphs) 	 Multiply and divide decimals and fractions Solve ratio and rate problems Write fractions, decimals, and percent as each other Write algebraic expressions and equations with unknown numbers Properties of triangles, and Quadrilaterals Find perimeter, Area, and Volume 	 Integers (absolute value, coordinate plane, addition, subtraction, multiplication and division) Add, subtract, multiply and divide unlike fractions and mixed numbers Solve equations, inequalities, and linear functions Solve proportions and similar figures and apply percent of change prediction 	 Expressions, equations, inequalities Ratio, proportions & similar figures Linear functions and graphing slope-intercept form, systems of equa- tions Powers and nonlinear functions, exponents, prime factorization, scientific notation, monomials Squares and square roots, The Pythagorean theorem 	 Algebra1 Write and solve algebraic expressions and equations Represent relations and func- tions
Science	 \$ food groups and developing healthy eating habits \$ Living and nonliving things \$ senses \$ Weather and seasons \$ Plants and how to protect Earth \$ Year long Project 	 Year long Project Know and apply the concepts principles and process of technological design, How living things function adapt and change Properties of matter and energy and the interaction between them Features and processes of the earth and its resources 	 Compare living and non-living things Explore sources and types of energy Experiment with sounds by vibrating different materials Describe how push or pull may effect motion of objects Year long Project 	 Describe how plants and animals get energy Identify local habitats Compre properties of matter and classify objects or material Describe different types of and uses of Earth's rocks and minerals Year long Project 	 Identify constellations such as the Big Dipper, Orion, and Cassiopeia Describe simple life cycles Describe different types of energy Year long Project 	 Scientific Process of Researches Life's diversity and classification of living objects (plants, animals) Life cycles (plants and animals) Organization of living objects Ecosystems, food chains and food webs Earths' Features such as layers of Earth, land forms Minerals and types of rocks Year long Project 	 Animal Classification Differentiation of life cycles Types of Ecosystems, Biomes Earth's shaping processes Mineral Identification Weather Patterns, tracking weather and water cycle, Solar and Lunar eclipses, stars and constellations Year long Project 	 Earth/space sciences Science technology and society Effects of gravitational force in the Solar system (e.g., orbital shape and speed, tides, spherical shape of the planets and moons) Large-scale dynamic forces, events and processes that affect Earth's land, water and atmospheric systems Year long Project 	 Analyze patterns in data from an experiment Classifications, cell biology, genetics and reproduction, botany, change over time water and nitrogen cycle Properties of matter, the atom, Acids and bases, Energy, light, force and motion The earth's structure, the earth's dynamic process, the atmosphere, water, astronomy 	 Techniques and media, explain the existence of unexpected results in a data set, Know how cells function Analyzing the many functions cells carry on to sustain life, specialized cells, Compare/contrast asexual and sexual reproduction Interactions of energy with matter, how forces affect motion 	 Work and Simple Machines Laws of Motion Describing motion Forces and Fluids Energy and Energy Resources Thermal Energy Foundations of Chemistry Year long Project
Foreign Language	 Maintain the native language for use in a variety of purposes Use and maintain the native language in order to build upon and develop transferable lan- guage and literacy skills 	 Understanding oral communication in the target language Understand manners and customs of various target language societies Use the target language to reinforce and further knowledge of other disciplines 	 Interact in the target language Understand written passages Use the target language to present information, concepts and ideas, manners and customs, music, dance, folk art, visual art, drama, and architecture Understand literature, history and geography, career options 	 Identify differences between formal and informal forms of address Hear differences between singular and plural Hear simple language-appropriate differences of gender and case React to an increased number of simple commands Greater variety of basic memorized questions as well as respond Use routine courtesy expressions appropriately complete fill-in-the-blank activities 	 Distinguish between questions and statements Recognize sound differences Distinguish commands directed to self, others and group Ask and respond to a variety of questions read aloud, recognize repeating patterns Demonstrate understanding of simple stories, poems or songs 	 Show comprehension of illustrated stories Audio-visual programs or websites Follow directions for classroom routines Ask and respond to questions spontaneously Exchange basic information Give a short presentation Read and paraphrase 	 Demonstrate improved pronunciation, intonation and inflection Demonstrate comprehension of gestures and body language Follow written classroom instructions Summarize a simple passage, read paraphrase and summarize selected literary works 	 Identify the elements and principles that convey meaning in a work of art Present a simple age- and stage-appropriate report on a familiar topic Use known vocabulary and grammatical structures to write and present a simple production or media presentation (e.g., skit, commercial, ad, song) 	 Demonstrate understanding (e.g., retell, dramatize, illustrate) of narratives, conversations, and aural presentations using available resources Follow multi-step instructions in a variety of contexts Initiate conversation about familiar topics Dramatize non-verbal cues, including gestures, common to the culture of the target language 	 Create original responses to open-ended questions Sustain conversation using familiar language patterns Demonstrate understanding of how word use, phrasing, and sentence structure of the target language convey meaning Write a report including supporting details, logical organization, and conclusion 	 Demonstrate understanding of longer, more complex presentations in a variety of contexts Recognize a speaker's use of paraphrase and restatement cues used to convey the message Employ a variety of discourse strategies (e.g., turn-taking, circumlocution, linguistic fillers) to sustain conversation Recognize errors and attempt to self-correct
Social Studies	 Learning about the home and family Where we live Our community American symbols 	 Understanding and explain basic principles of United States Government elections process and responsibilities of citizens Understand trade as an exchange of goods and services Understand the development of significant political events 	 United States foreign policy United States political ideas and traditions Economic systems, culture, social systems and social history Environmental history, physical features and regions Geography Culture 	 Rules and responsibilities, How the governments help people live safely and fairly Identify the official and political bodies that form the organization of their local government Describe how holidays represent ideas/celebrations Explain how/why people benefit from basic rights Identify stories and folk-tales that describe various customs practiced in America and or local communities 	 Distinguish between different kinds of rules and responsibilities as applied in the home, school, and community Identify the names of people who occupy government offices in their community, state, and federal government Name both the current President and Vice President of the United States Identify the current Government Officials List the three branches of government within the state and federal government Define the concept of "Patriotism" 	 Describe the purpose of the Declaration of Independence, and the Illinois and United States Constitutions Recite basic rights of citizens and restrictions upon government afforded to Americans through the Bill of Rights Differentiate between citizenship by birth or naturalization Describe values that have formed the foundation of our American democratic Explain the significance of political symbols and mottoes of the United States 	 Identify the basic principles of American democracy expressed in the Declaration of Independence, the U.S. Constitution, the Bill of Rights and the Illinois State Constitution Understand why the Bill of Rights was added to the Constitution Identify the role and responsibilities of local, state and federal branches of government 	 Government, economics, and geography as they study the United States Eras: Exploration and Colonization, Beginnings of Self-Government, American Revolution, the Constitution and Bill of Rights, the Civil War, and the United States on the World Stage Expected to connect this information to current events around their neighborhood, their city, state, their country, and their world. Understanding of key events and the basic chronology of United States history 	 Ancient civilizations of the world: Latin America, Europe, India, China, and Australia include an examination of the impact of economics, politics, and social history on the developing world The five themes of geography how geography affected the development of these civilizations 	 United States history, beginning with The Age of Exploration and finishing the year with the American Civil War demonstrate the cause and effect relationships The major focus of the year is the acquisition of knowledge to pass the United States Constitution and Illinois State Constitution tests 	 The geographic, social, political, economic, and military history of the United States of America: American Civil War, Reconstruction, Cattle Kingdom, Industrial Growth, Immigration, World War I, The Great Depression, and World War II Students will explore the physical characteristics of the United States and their impact on population distribution and settlement patterns in the past and present Students will evaluate the impact of scientific discoveries and technological innovations on the development of the United States
Music	 Instruments and instrument families, Note recognition Musical genres and world music Gain fundamental rhythm and pitch through song and dance Use technology to learn about music history and music composition 	 Understanding the sensory elements Understand the similarities, distinctions and connections in and among the arts Understand processes, traditional tools and modern technologies used in fine arts Identify various sounds Use instrument to create a mood 	 Principles of music Connections to the arts Process, tools, and technologies, Creation and performance History, society of the art 	 Imitate loud/soft, high/ low sounds Identify fast/slow music Identify tone colors Echo a steady beat Indicate the phrases or sections in simple AB and ABA songs Identify sensory elements, organizational principles Label environmental sounds Identify instruments visually 	 Same and different tone colors of voices classroom instruments, and environmental sounds Long and short sounds, echo a rhythm pattern Replicate the beat in a musical composition Distinguish between two different voices, environmental sounds, classroom instruments Identify orchestral/band instruments visually 	 Describe tempos and dynamic levels in a simple musical example Replicate rhythm pattern of a given musical example Demonstrate duple and triple meter Identify major and minor tonalities Identify melodies going upward/downward/staying the same Describe repetition and contrast, use vocabulary of elements/principles/tools when describing work Classify voices by range Identify general groupings of instruments and voices 	 Distinguish between beat and rhythm Describe melodic movement Classify singers by vocal range Classify instruments as well as categorize by how their sounds are produced Write accurately melodies with rhythm patterns in whole, half, quarter, eight, and dotted notes and rests in 2/4, ³/₄, 4/4, 6/8, 3/8 	 Translate common Italian tempo markings into English Label intervals in written melody Identify texture in a given aural example Compare/contrast use of expressive qualities in two performances of the same musical example Basic sound production theory Use standard notation to record simple musical ideas Sing or play melodies accurately and expres- sively from a written score in at least one clef 	 Describe texture and harmony of given aural example Define large musical forms Critique the appropriate use of organizational and sensory elements to create a mood emotion or idea Sing/play accurately and with expression from standard notation symbols for pitch, rhythm, dynamics, tempo, articulation and expression Sight-read simple melodies and rhythms 	 Analyze the sound sources of a given recorded example Critique the effectiveness (e.g., style, interpretation, instrumentation) of a performer or conductor Demonstrate or describe the relationship of practice/rehearsal techniques to performance Demonstrate or describe cooperative interaction in ensemble performance 	 Explain how sensory elements organizational principles and expressive qualities are combined to produce unity/variety, tension/release, and balance in a musical performance Sight-read an instrumental or vocal score of up to four staves Demonstrating accuracy in reading symbols for pitch, rhythm, expressive qualities, and articulation/diction
Art	 Understanding the sensory elements organizational principles and expressive qualities of the arts Understand the similarities distinctions and connections in and among the arts Understand processes, traditional tools and modern technologies used in fine arts Apply skills and knowledge necessary to create and perform in one or more of the arts 	 Understanding the sensory elements organizational principles and expressive qualities of the arts Understand the similarities distinctions and connections in and among the arts Try a variety of experssive media Identify media and tools used in painting, drawing, and constructing 	 Recognize various types of lines in given art works Discover shapes in given art work Name simple materials used to paint, draw, and construct 	 Describe a variety of lines Distinguish between organic and inorganic forms/shapes Identify sensory elements, primary, secondary and analogous colors in art work Identify elements in artwork tell the story an art work shows, Distinguish between materials and tools used in 2-D and 3-D works Share comments in a positive manner about a performance/work, describe how the arts tells us things in different ways 	Describe line direction Give examples of organic ad person-made shapes in the visual environment Select examples of natural colors found in nature Know the difference between warm and cool colors, distinguish between foreground, middle ground and background Identify horizon line in a given art work Describe symmetrical and asymmetrical balance Classification of groups of art works according to subject	 Identify positive and negative space Distinguish between 2-D and 3-D art works Explain the importance of light source Construct a color wheel in given media Recognize rhythm Compare mood in several portraits of famous people Proper use of vocabulary 	 Distinguish between figure and ground in a still life, light and dark values using a monochromatic scale Differentiate between positive and negative spaces in a sculpture, characteristics of similar materials Describe value and line Recognize variation in size and proportion to express an idea Describe moods depicted in a variety of art works with the same subjects Explain how elements, principles and tools are used to express ideas Describe or demonstrate tools and processes to create a sculpture, create the illusion of depth in 2-D artwork 	 Explain the illusion of a 3-D object drawn on a flat surface Recognize color schemes in a work of art Construct a color wheel, which consists of primary, secondary, and intermediate colors Demonstrate an understanding of the ability of line to create value and surface change Explain how tools, processes, and materials combine to create specific effects in a 2-D art work (e.g., foam or bristle brushes, q-tips or sticks to apply paint) Create a realistic 2-D art work 	 Demonstrate an understanding of dimension and value in black/white and in color Demonstrate an understanding of contour and cross contour Point out a specific element or group of elements that create the center of interest in an art work Use linear perspective to create the illusion of 3-D on a flat surface 	 Demonstrate an understanding of formal/linear perspective (e.g., horizontal Lines, vanishing point, one/two point perspective) Describe the elements and principles that create harmony Identify the elements and principles that convey meaning in a work of art 	 Analyze the relationship among elements, principles, and expressive qualities in a 2-D or 3-D work Identify the aesthetic criteria for evaluat- ing an art work (e.g., value, function, purpose, context, appropriateness, creativity/uniqueness)
Computer Science	 Basic computer interaction Educational Games IPad Games 	 Basic computer interaction Educational Games Learning how to use a computer 	 Basic computer interaction Educational Games Learning how to use a computer 	 Basic computer interaction Educational Games Learning how to use a computer 	 Basic computer interaction Educational Games Learning how to use a computer 	 Visuals for teaching very basic computer skills: What is inside a desktop computer Build up a desktop computer from scratch Computer vocabulary Handouts and activities to teach everyday computer vocabulary Keyboarding (Get Ten-Key Certification Online) Internet for research purposes Lessons and activities on using the internet Basic image editing with Paint Copy&Paste, Flip, Rotate, Curve, Using Shape and Using Selection 	 Create slide shows Digital storytelling: Animation in PowerPoint Creating photo album in PowerPoint Creating documents such as letters, invitation, term papers, flyers, resumes and more! Using advance table techniques, Managing long document 	 What is digital citizenship? Stand up to Cyber bullying Respect Protect private information Stay safe online WordPress: Post your ideas, pictures, and audio/video Store static information Understanding Dashboard Pages & Posts Menus, Widgets , Adding Media and Themes Spreadsheets 	 Introduction to Computer Science with Scratch Create and share your own interactive stories, games, music and art Learn programming basics with Scratch Desktop Publishing with Adobe Photoshop Identify the basic tools of Photoshop; Basic understanding of the Bridge Modify workspaces; understand workflow Reshape and resize the image through different image processing techniques; Add layers image; Use painting and blending tools to change the appearance of an image; Create images for different applications 	 Basic understanding of Bridge Modify workspaces; understand workflow Reshape and resize the image through different image processing techniques; Add layers image; Use painting and blending tools to change the appearance of an image; Create images for different applications App Inventor Environment Designing the components Adding Behaviors to the Components Packaging the App for Downloading Sharing the App 	 Alice's 3-D environment provides an engaging platform for developing interactive stories, animations, and games. Learn about design by creating 3-D characters, backgrounds, and stories; then they use the programming tiles to make those objects interact in compelling ways Alice also allows young people to get immediate feedback on their work Gain understanding of the relationship between programming statements and the behavior of objects in their animation.
Physical Education	 Individual and team sports Movements, safety, fitness, group physical activities Health and safety Human body systems Communication conflicts 	 Demonstrate physical competency in individual and team sports Creative moment and leisure and work-related activities Analyze various movement concepts and applications Demonstrate knowledge of rules, safety and strategies during physical activity Assess individual fitness levels, set goals based on fitness data and develop, implement and monitor an individual fitness improvement plan Demonstrate individual responsibility during group physical activities, & cooperative skills during structured group physical activities 	 Demonstrate physical competency in individual and team sports Creative moment and leisure and work-related activities Analyze various movement concepts and applications Demonstrate knowledge of rules, safety and strategies during physical activity Assess individual fitness levels, set goals based on fitness data and develop, implement and monitor an individual fitness improvement plan Demonstrate individual responsibility during group physical activities, & cooperative skills during structured group physical activities 	 Demonstrate basic locomotor, non-locomotor, and manipulative skills using developmentally appropriate form Combine two or more locomotor and/or non-locomotor skills in a sequence Identify personal space Participate in health-related fitness activities Set goals based on fitness gram data with teacher guidance Demonstrate the ability to work cooperatively with a partner or small group during physical activity 	 Demonstrate a proper form while executing all locomotor and non- locomotor movements Participate successfully in obstacle course activities Identify simple cues involved in weight transfer and balance movements 	 Participate in physical activities without interfering with others or objects with fewer teacher prompts Participate in health-related fitness activities that will improve cardiovascular endurance, flexibility, muscular strength, and muscular endurance 	 Demonstrate manipulative skills using a variety of changes in effort, flow, space, time, weight transfer, balance, absorption, and application of force Participates in a wide variety of physical activities without interfering with others or with objects Identify biomechanical principles of movement related to weight transfer, balance, absorption, and application of force 	 Apply concepts of effort, flow, space, and time into establishment of mechanically correct form Participate in a progression of activities that will maintain or improve personal fitness levels 	 Apply sport skills in game like situations using correct form Explain how to alter the outcome of a skill by application of a biomechanical principle Define principles of training 	 Identify personal performance factors that impact the outcome of activities, games, or sport Observe and critique performance of a manipulative skill of a classmate and identify the effective use of mechanically correct form 	Combine knowledge of basic skills and strategies to participate success- fully in each of the following categories: work related activities, leisure activities, creative movement activities, team sports, and individual/dual sports