Brickton
MONTESSORI

Upper Elementary Curriculum: Material Skill Set Chart

Mathematics

In our Mathematics curriculum, there is a strong focus and reliance on moving from concrete Montessori materials to abstracting ideas and concepts. Students are able to experience concepts through not only visual and auditory activities and lessons but also kinesthetic activities, which strengthens understanding, and ultimately leads to mastery. This approach allows students to be introduced to advanced concepts early on and gives them time to practice with the materials to gain mastery. Students complete this program with a solid understanding of math processes presented and how to use these steps to solve real world problems.

Numeration

Concept	Materials	Skills
Place Value	• Pegboard • Decimal board • Decimal cards • Fraction pieces • Fraction cards • Negative snake game	• Understands place value to trillions • Recognizes parts of a whole • Identifies equal quantities of fractions and decimals • Understands negative numbers as the converse to the positive equivalent • Identifies absolute value • Uses exponential and scientific notation with decimals and whole numbers

Patterns and Relationships

Concept	Materials	Skills
Comparing and ordering fraction numbers	• <, >, = activities • Fraction insets • Fraction cards • Fraction number lines • Fraction drawers	• Understands what fractional denominators are greater than others • Identifies fractions greater and less than a whole • Reduces fractions • Simplifies fractions • Understands parts of a whole
Comparing and ordering decimal numbers	• Decimal Cards • Decimal Board • Decimal drawers • Rounding activities	• Understands what decimal numbers are greater than others • Recognizes decimal numbers in order of place value • Rounds decimal numbers appropriately to tenths, hundredths, and thousandths

Comparing and ordering integers	• Number Lines • Integer activities	• Can order integer amounts by value • Determines greater and lesser amounts of integer numbers
Factors	• Bead bars • Number theory cards • Primes/Composite chart	• Finds all factors for a specific number • Finds the greatest common factor of two or more numbers • Understands the difference between prime and composite numbers • Finds prime factorization of numbers
Multiples	• Bead bars • Number theory cards • Multiple pattern sheets	• Articulates multiples in sequence • Finds the least common multiple of two or more numbers • Skip counts by numbers 1 -10
Binomials and Trinomials	• Bead bars • Bead squares • Pegboard • Binomial/trinomial formula cards	• Understands the foil method of equations • Knows squares of numbers 1 - 13 • Recognizes binomial and trinomial formulas • Solves binomial and trinomial equations abstractly • Solves for four to six digit square root problems using appropriate formulas
Cubing	• Cubing materials • Prism bead bars • Cubing cards	• Recognizes cubing formula for consecutive cubes • Recognizes cubing formula for non-consecutive cubes • Recognizes cubing formulas • Solves cubing equations with materials and abstractly • Solves for six digit cube root problems using appropriate formulas
Bases	• Base cards • Base chart activities	• Understands powers of numbers • Understands exponents • Translates numbers in base 10 to another base • Translates numbers in another base to base 10 • Understands that other bases were/are used in specific cultures or sectors of our culture

Computation/Operations

Concept	Materials	Skills
Math facts	• Multiplication tables A, B, and C • Holey cards • Flashcards • Bead bars • Order rules • Order activities	• Knows division facts • Understands communicative property • Understands associative property • Demonstrates speed and accuracy of facts in all four operations • Knows rules of order of operations • Performs equations using the order of operations • Knows rules for divisibility by 2, 3, 4, 5, 6, 9 and 10
Whole Number Operations	• Stamp game • Checkerboard • Test tube division • Math sheets	• Performs dynamic addition for two complex quantities abstractly • Performs dynamic subtraction for two complex quantities abstractly • Performs dynamic multiplication for two complex quantities with multi-digit multipliers abstractly • Performs long division with multi-digit divisors abstractly
Fraction/Decimal Operations	• Fraction pieces • Fraction insets • Fraction cards • Decimal board • Decimal stamp game • Decimal cards	• Adds and subtracts fractions with like and unlike denominators accurately • Borrows during subtracting fractions accurately • Multiplies fractions using cross reducing • Understands the process of converting division of fractions to multiplication using reciprocals • Adds and subtracts decimals accurately with aligned decimals • Multiples decimals with understanding of placement of decimal in the answer • Divides decimals accurately
Integers	• Number lines • Number nomenclature circles • Integer sheets	• Orders positive and negative numbers • Compares positive and negative numbers • Understands absolute value

		• Understands the rules of adding, subtracting, multiplying, and dividing positive and negative numbers • Accurately solves addition, subtraction, multiplication and division equations and word problems

Problem Solving

Concept	Materials/Activities	Skills
Graphing	• Surveys • Line graphs • Bar graphs • Pie graphs	• Collects, presents and analyzes data to create graphs • Analyzes information from reading a graph • Answers word problems using graphs as information
Measurement	• Measurement charts – mass, volume, linear • Measurement activities for mass, volume, and lines • Protractor activities • Cooking cups and spoons • Science apparatus	• Recognizes all standard units (linear, mass, volume) • Recognizes all metric units (linear, mass, volume) • Measures objects to an 1/16 of an inch • Converts units within one measurement system (inches to feet, mm to m) • Uses appropriate tools to measure amounts • Measures angles to the degree
Estimation	• Estimation cards • Estimation activities	• Reasonably estimates answers to whole number equations • Reasonably estimates answers to fraction and decimal equations • Rounds numbers to the appropriate place value
Word Problems	• Calculator Math cards • Percent cards • Ratio and Proportion activities • Mean, Median, Mode and Range activities	• Analyzes information in a given problem • Comprehends multi-step word problems • Solves multi-step word problems accurately • Finds equivalency between fractions, decimals, and percents • Finds accurate answer to real world problems involving percents and money • Understands definitions of mean, median, mode and

		range • Solves for mean, median, mode and range

Geometry

Concept	Materials/Activities	Skills
Types of angles, lines, and shapes	• Stick box • Geometry cabinet	• Measures angles to the degree • Recognizes types of lines within the environment (parallel, perpendicular, convergent/divergent, horizontal, vertical, oblique) • Names types of angles (acute, right, obtuse, straight, reflex) • Understands the relationships between shapes with equal numbers of sides • Uses precise, proper nomenclature for shapes
Congruency, Similarity, and Equivalency	• Geometric insets • Stick box • Triangle box • Hexagon box	• Understands the definitions of congruent, similar, and equivalent shapes • Identifies congruent, similar, and equivalent pairs of shapes
Perimeter and Area	• Geometric insets • Area formula activities • Geometry cabinet	• Finds perimeter of regular and irregular two-dimensional shapes • Uses area formulas to solve for area of rectangles, triangles, trapezoids, other regular polygons and circles
Volume	• Geometric solids • Volume canisters • Volume formula activities	• Understands discriminations of different solids (e.g. prisms vs. pyramids) • Knows volume formulas for prisms, pyramids, and cylinders • Finds surface areas of prisms

Language

The Upper Elementary language program is designed to continue the development of student's reading fluency and comprehension as well as writing skills. By increasing students' understanding of vocabulary, grammar concepts, editing skills, and writing styles, they are able to analyze text and produce a variety of written works successfully. Upon exiting the program, students will have experience reading and evaluating a variety of texts and creating writing pieces for a range of purposes.

Oral Communication

Concept	Materials/Activities	Skills
Vocabulary Development	• Great Source Vocabulary for Achievement • Oxford-Sadlier Vocabulary • Word Study drawers	• Uses appropriate synonyms and antonyms for words • Uses specific words when speaking or writing • Uses cultural nomenclature when discussing a concept
Public Speaking	• Cultural Fair presentations • Small group class presentations • Drama • Book Fair/Raffle sales • Field trips	• Demonstrates poise and confidence when presenting information • Demonstrates poise and confidence when speaking with adults • Demonstrates confidence when asking or answering questions during outings

Written Communication

Concept	Materials/Activities	Skills
Fiction Writing	• Writing Circles • Right Source books • Word Study drawers	• Prepares creative writing with sequential flow • Writes with expression and point of view • Creates voice within writing • Demonstrates an understanding of audience and purpose within writing • Demonstrates ability to write poetry, descriptive writing, persuasive writing, transactional writing, and narrative writing with precision and organization • Performs all steps of the writing process: pre-writing, writing, revision, editing, final product • Uses peer support to improve upon writing
Research Writing	• Research skills • Recording of work	• Finds and records information • Summarizes information

	• Right Source books • Word Study drawers • Cultural Fair research projects	• Uses topic sentences and supporting sentences in a paragraph • Develops organization in writing, including use of transitional sentences • Writes introductions and conclusions to research writing • Creates tables of contents, bibliographies, and endnotes to support research writing

Grammar

Concept	Materials/Activities	Skills
Parts of speech	• Grammar charts • Advanced grammar activities • Pronoun charts • Verb tenses charts • Sentence to symbol packets • English Workshop workbook	• Can distinguish types of nouns, adjectives, pronouns, adverbs, prepositions, and conjunctions • Knows pronouns by person and number • Conjugates verbs by simple, continuous and perfect tenses • Determines uses of words based on context • Studies types of prepositional phrases • Studies verbals (participles, infinitives, and gerunds)
Sentence analysis	• Sentence analysis boxes • Sentence analysis drawers • Sentence analysis charts	• Can identify subjects, predicates, and direct and indirect objects • Finds different types of adverbial modifiers • Identifies kinds of sentences

Conventions

Concept	Materials/Activities	Skills
Capitalization and Punctuation	• Daily Oral Language books • Write Source books	• Understands and practices capitalization appropriately • Uses commas in a list, addresses, dates, compound sentences and to offset dialogue • Uses abbreviations appropriately • Uses apostrophes in contractions and possessives • Uses colons for times and to introduce lists • Understands when to underline or quote titles

		• Uses quotation marks for dialogue
Spelling	• Spellwell • Paper Revisions • Word Study drawers	• Knows conventional spelling rules • Can distinguish between commonly used homonyms • Demonstrates grade level spelling rules within writing • Understands spelling rules for plurals and changes in verb tense • Uses syllabication to determine proper spellings

Reading

Concept	**Materials/Activities**	**Skills**
Comprehension	• Reading about Science comprehension books • Taking the High Road comprehension books • Early Reading Comprehension in Varied Subject Matter workbooks • Literature circles	• Recalls key components of a story or article • Identifies main ideas and information that support them • Sequences and summarizes text material • Draws conclusions based on text passages • Infers information based on text passages • References text passages to support claims • Asks questions related to text passages
Literature	• Literature novels • Literature circles	• Explores character motivation through text passages • Examines author's writing style and writing choices • Identifies the climax and resolution of stories • Makes connections between literature and real life experiences
Using resources	• Word Study drawers • Dictionaries • Encyclopedias • Atlas • Thesauruses • Research material	• Uses guide words to locate words • Uses resources to find multiple word meaning, pronunciations, and parts of speech • Uses table of contents and indexes to efficiently find information • Finds locations, biomes and

		land resources using map grids, keys and longitude and latitude lines • Uses map scales appropriately

Cultural

In our cultural subjects, we hold true to Maria Montessori's idea of Cosmic Education. We introduce concepts as "big picture" presentations to spark an interest in the students and encourage them to ask questions and further their study by completing research and performing experiments.

In the Upper Elementary program, we foster scientific inquiry in several ways. We continue our studies of botany and zoology from the Lower Elementary level by delving deeper into the kingdom charts to understand how plants and animals are classified by scientists. We also expand this work to include the other three kingdoms of living things: fungi, monera, and protista. Similar work is done with these three kingdoms in order to understand their commonalities and how they are different from animals and plants. We also begin concentrated lessons and experimentation in chemistry, physics and the human body. These presentations are designed to expose the students to concepts that will be expanded upon in the Middle School program.

Our social studies curriculum covers a range of topics that are often interrelated, forming a deep understanding of time and place. In geography, students continue their understanding of land and water forms by creating continental maps and using the atlas to research places on the Earth. Additionally, we study the inner-workings of our planet as well as the attributes of our solar system. Our history curriculum spans from the beginnings of man through the recent history of our nation. We then transition into lessons about current events domestically and internationally, with an emphasis on our government and different cultural communities.

Science

Concept	Materials/Activities	Skills
Scientific Method	• Experiments	• Understands the steps of the scientific method, including: questions, hypothesis, procedure, data collection and conclusion • Uses steps of the scientific method appropriately
Botany	• Botany impressionistic charts • Botany Kingdom Chart • Botany experiments • Three Kingdom Chart • Research prompts	• Experiments with plants • Understands plant reproduction • Creates food webs • Understands how plants relate to animals
Zoology	• Animal Kingdom Chart • Tree of Life • Research prompts	• Distinguishes animals by characteristics • Can find the phylum, order,

	• Dissections • Science World magazine	and class of individual animals • Knows external and internal characteristics • Creates food webs
Human Body	• The Great River Chart • Body systems charts and cards • Parts of the eye and ear cards • Teeth • X-rays • Five senses experiments • Research prompts • Science World magazine	• Explores the internal body systems of the humans • Understands how the systems work to keep our bodies running • Experiments with the five senses • Understands how the five senses work to produce and affect actions within our body •
Chemistry	• Periodic Table chart • Atom cards • Molecule materials • Water Cycle charts • Nitrogen Cycle charts • Carbon Cycle charts • Science World magazine	• Knows the parts of an atom: proton, electron and neutron • Finds atomic number and mass • Uses information to determine how many electrons are part of the atom • Can recreate an atom using proper number of electrons on each shell • Understands how compounds are made • Knows what elements make up common compounds
Physics	• Nomenclature videos • Light Board • Ramps and Rollers • "Phriendly Physics" experiments from Fermi Lab • Simple machines • Science World magazine	• Understands potential and kinetic energy • Can define force and inertia • Understands magnetism and how it is used on the Earth • Defines gravitational pull and how it impacts Earth • Understands how heat is transferred • Recognizes properties of light

Social Studies

Concept	**Materials/Activities**	**Skills**
Geography	• Continent pin maps • Imaginary Island • Geography Command Cards • State Sheets • Continent map research • Constellation pin maps • Work of the Winds charts • Work of the Water charts • Map charts	• Uses lines of the globe to locate and identify areas on the Earth, including: latitude, longitude, tropics, equator, and prime meridian • Locates capitals, landmarks, and major land and water forms of a country • Researches important information and historical

	• Minerals • Resource stamps • Biome material • Scholastic News/Junior Scholastic magazine	facts about U.S. states • Explores the components of solar system and labels constellations • Understands the movements of the Earth • Understands how atmospheric and water forces affects life on Earth • Understands the movements of the Earth • Knows layers of the atmosphere • Recognizes different biomes and understands how they impact living things
History	• Migration chart • Timeline of Man chart • U.S. History charts • U.S. History Event cards • History books • Literature Novels • Scholastic News/Junior Scholastic magazine	• Understands the timeline of early man • Recognizes the migration of humans on the Earth • Examines ancient cultures to determine how they met their fundamental needs • Recognizes the rise and fall of time periods in world history • Identifies the contributions of ancient civilizations to current cultures • Explores Native American cultures • Understands the contributions of famous explorations • Recognizes and understands major events in U.S. history • Uses historical fiction as a means to understand social and political issues within our history
Civics	• World of Difference curriculum • Needs of humans charts • World Religion charts • World Religion cards • World Beliefs and Cultures religion series • Civilization research • Literature Novels • Import/Export activities • Three Branches of Government cards • Scholastic News/Junior	• Understands the significance of major historical U.S. holidays • Explores the many cultures found within our nation • Explores social economic differences within our country • Continues to look at the needs of humans within present day societies • Recognizes major world religions and has a basic understanding of them

	Scholastic magazine	• Understands the three branches of U.S. government and how each branch provides checks and balances to the others • Describes how supply and demand works • Defines imports and exports