LEELANAU MONTESSORI
UPPER ELEMENTARY

ACADEMIC SKILLS

MATH

INTRODUCTION
• Understands the history of numbers

WHOLE NUMBERS AND NUMERATION
• Identifies place value up to one million
• Completes dynamic addition abstractly
• Completes dynamic subtraction abstractly
• Completes multi-digit multiplication abstractly
• Completes multi-digit division with multi-digit divisor abstractly
• Writes numbers up to millions in expanded notation
• Solves multi-step story problems with four operations

MULTIPLES
• Finds the lowest common multiple
• Finds the greatest common factor
• Distinguishes between prime and composite numbers

PROPERTIES
• Identifies and solve problems with the commutative property
• Identifies and solve problems with the associative property
• Identifies and solve problems with the distributive property

FRACTIONS
• Finds equivalent fractions abstractly
• Adds and subtract fractions with common denominators
• Adds and subtract fractions with uncommon denominators
• Multiplies a fraction by a fraction
• Divides a fraction by a fraction
• Converts mixed number to improper/improper to mixed
• Simplifies fractions
• Solves story problems with fractions

DECIMALS
• Reads decimals up to millionths
• Writes decimals in expanded form
• Adds and subtracts decimals
• Writes fractions as decimals
• Multiplies a decimal by a decimal
• Divides a decimal by a decimal
• Converts fractions to decimals
• Solves story problems with decimals

RATIO, PROPORTION, PERCENT
• Understands a ratio as a relationship between two things
• Reads and writes ratios as fractions
• Completes problems involving rate/base
• Solves problems to find a missing value
• Calculates percentages

DATA ANALYSIS, MEASUREMENT, STATISTICS AND PROBABILITIES
• Finds probability of a specific outcome
• Reads and writes probabilities
• Constructs, reads and interprets: tables, graphs of all types
• Finds mean, medium, range, mode and frequency
• Creates diagrams
• Collects, sort, organize and draw conclusions about data collecting (tally marks)
• Reads graphs and make inferences from the information displayed
• Prepares and read picture, line, bar, and pie graphs
• Tabulates data into a graph
• Locates points for given coordinates and name the coordinates of a given point in any of the four quadrants
• Draws polygons in a coordinate plane
• Identifies and convert English measurement
• Identifies and convert Metric measurement
• Calculates volume using appropriate containers
• Solves word problems including volume
• Understands liquid measurements (pints, quarts, gallons)
• Uses volume in practical applications
• Reads weight measurements (grams, kilograms, ounces, pounds)
• Reads linear measurements both metric and English

ALGEBRAIC IDEAS
• Constructs and solves sentences that have variables
• Solves for an unknown variable
• Reads, writes, and evaluates expressions where a letter stands for a number
• Solves multi-step equations and inequalities
• Calculates powers of numbers

SQUARES AND CUBES
• Explores other number bases
• Squares binomials and trinomials
• Cubes of binomials and trinomials

SQUARE ROOTS
• Understands the square root concept
• Engages in concrete exploration
• Writes through to abstraction

CUBE ROOTS
• Understands the cube root concept
<table>
<thead>
<tr>
<th>ORDER OF OPERATIONS</th>
<th>Applies knowledge of order of operations to written expressions</th>
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<tbody>
<tr>
<td></td>
<td>Solves multi-step equations</td>
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| WORKING WITH INTEGERS  |
|------------------------|---------------------------------------------------------------|
| Adds, subtracts, multiplies, and divides positive and negative numbers  |
|                         | Reads ordered pairs and plot them on a coordinate grid        |
|                         | Writes the ordered pair for a point on a coordinate grid      |
|                         | Identifies the quadrant where an ordered pair is located      |
|                         | Plots integers on a number line                               |
|                         | Solves problems with inequalities                             |
|                         | Identifies and solve problems with rational numbers           |
|                         | Solves absolute value problems                                |
|                         | Writes and reads numbers using scientific notation            |

<table>
<thead>
<tr>
<th>PROBLEM SOLVING AND LOGICAL REASONING</th>
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<tbody>
<tr>
<td>Solves word problems involving addition and subtraction of fractions</td>
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<tr>
<td>Represents and interpret data on a line plot using fractions</td>
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<tr>
<td>Solves real world problems involving multiplication of fractions and real world numbers</td>
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<td>Solves problems by using inductive reasoning</td>
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<tr>
<td>Solves multi-step story problems all operations, fractions, decimals, pre-algebra</td>
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GEOMETRY

- Identifies and constructs geometric figures
- Identifies similarities and congruence
- Identifies parts and positions of lines and relationships between two lines: parallel and perpendicular
- Identifies similar and congruent shapes
- Calculates the area of a square, rectangle, triangle, and parallelogram
- Identifies angles: acute, obtuse, right, straight
- Adds angles
- Measures angles with a Montessori protractor
- Names angles formed by two straight lines cut by a transversal
- Names the relationship between two angles
- Identifies the sum of the interior angles of a triangle or regular polygon
- Constructs an angle of a given measure with a protractor and straight edge
- Bisects an angle with a compass and a straight edge
- Bisects a line segment with a compass and a straight edge
- Identifies parts of a circle: radius, diameter, circumference
- Constructs a circle using a compass
- Measures the radius and diameter of a circle
- Finds the circumference and area of a circle
- Finds the area of a circle
- Calculates the volume of a square based prism, triangle based prism, hexagon based prism, cylinder, cone and sphere
- Calculates the surface area of cube and rectangular prism
- Recognizes the 3-4-5 case of the Pythagorean Theorem
- Recognizes the isosceles right case of the Pythagorean Theorem