

LEELANAU MONTESSORI UPPER ELEMENTARY

ACADEMIC SKILLS

MATH

The student....

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 an specific outcome
- Reads and writes probabilities
- Constructs, reads and interprets: tables, graphs of all types

- Finds mean, median, 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

- Engages in concrete exploration
- Writes through to abstraction

ORDER OF OPERATIONS

- Applies knowledge of order of operations to written expressions
- Solves multi-step equations

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

PROBLEM SOLVING AND LOGICAL REASONING

- Solves word problems involving addition and subtraction of fractions
- Represents and interpret data on a line plot using fractions
- Solves real world problems involving multiplication of fractions and real world numbers
- Solves problems by using inductive reasoning
- Solves multi-step story problems all operations, fractions, decimals, pre-algebra

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