

# Matrix: Wonderful Leaves

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| <b>Student's Name:</b>   |  | <b>Grade Level:</b>  |                                | <b>School:</b>  |  |
| <b>Analytical Score:</b>   |  |  | <b>Holistic Score: N A P E</b> |   |  |
| <input type="checkbox"/> Understanding:  |  | N A P E  |                                | <b>Comments or Observations:</b>  |  |
| <input type="checkbox"/> Reasoning, Strategies, & Mathematical Procedures:   |  | N A P E  |                                |   |  |
| <input type="checkbox"/> Communication:  |  | N A P E  |                                |   |  |
| <b>APS MATHEMATICS STRAND: Geometry, Spatial Sense and Measurement</b>   |  |  |                                |   |  |
| <b>GRADE: KINDERGARTEN</b>   |  |  |                                |   |  |
| <b>Sorts and matches</b> shapes according to attributes.   |  | <b>Compares</b> size of plane geometric figures.   |                                | <b>Describes, records, and reports</b> comparisons in length, weight, and capacity.                   |  |
| <b>Uses</b> spatial vocabulary (e.g., left, right, above, below) to describe relative position.  |  | <b>Identifies and describes</b> objects in the environment that depict geometric shapes and solids.                            |                                | <b>Compares and orders</b> objects by length, weight, and capacity.                                   |  |
| <b>Describes, identifies, models, and draws</b> circles, squares, rectangles, and triangles.   |  | <b>Builds and takes-apart</b> pictures, shapes, and structures formed with geometric shapes.                                   |                                | <b>Represents</b> mathematical work with manipulatives.   |  |
| <b>Describes and identifies</b> spheres, cubes, and cones.   |  | <b>Measures</b> using estimation and direct comparison of objects against one another.   |                                |   |  |
| <b>GRADE: FIRST</b>  |  |  |                                |   |  |
| <b>Identifies, describes, and compares</b> two-dimensional shapes (e.g., rectangles, circles, triangles, squares, hexagons, rhombus, trapezoid). |  | <b>Identifies, describes, and compares</b> three-dimensional shapes (e.g., cubes, cylinders, rectangular solids, and spheres). |                                | <b>Estimates and orders</b> length by directly comparing the length, weight, and capacity of objects. |  |

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| <b>Develops</b> vocabulary to describe two-dimensional shapes.   |  | <b>Develops</b> vocabulary to describe three-dimensional shapes (e.g., corners, faces, and edges). |  | <b>Estimates, measures, and compares</b> length, weight, and capacity using nonstandard units (e.g., measure an object with your hand). |  |
| <b>Constructs and takes apart</b> two-dimensional shapes.  |  | <b>Identifies</b> three-dimensional shapes from two-dimensional representations (e.g., nets).      |  | <b>Represents</b> measurements with numbers, manipulatives, and pictures.   |  |
| <b>Uses</b> rotation and reflection to rearrange shapes.   |  | <b>Recognizes</b> geometry as a means of describing the physical world.                            |  |   |  |
| <b>Sorts and groups</b> shapes according to common attributes.   |  | <b>Develops</b> vocabulary to describe and compare length (e.g., longer, shorter).                 |  |   |  |
| <b>GRADE: SECOND</b>   |  |  |  |   |  |
| <b>Sorts, describes, and analyzes</b> shapes and solids by various attributes (e.g., faces, edges and comers). |  | <b>Describes</b> lines of symmetry in two-dimensional shapes.                                      |  | <b>Estimates and measures</b> length, weight, and capacity using nonstandard units.   |  |
| <b>Describes</b> the spatial and numerical relationships found among shapes.                                   |  | <b>Explains</b> how geometry helps describe the physical world.                                    |  | <b>Compares</b> the effects of using units of different sizes.  |  |
| <b>Defines</b> circles, triangles, squares, rectangles, hexagons, rhombi, and trapezoids.                      |  | <b>Examines</b> the concept of area, using common geometric shapes.                                |  | <b>Explores</b> the use of standard units and <b>explains</b> the need for using standard units.  |  |
| <b>Compares and builds</b> two-dimensional (plane) and three-dimensional (solid) geometric shapes.             |  | <b>Compares</b> the length, weight, and capacity of objects using direct and indirect comparisons. |  | <b>Represents</b> the results of length, weight, and capacity comparisons.  |  |
| <b>APS MATHEMATICS STRAND: Number Sense and Operations</b>   |  |  |  |   |  |
| <b>GRADE: KINDERGARTEN</b>   |  |  |  |   |  |
| <b>Counts</b> orally from 1 to 30 and backward from 10 to 1.   |  | <b>Creates</b> a set of a given size.  |  | <b>Combines and separates</b> two single-digit numbers using pictures, stories, and objects to model the situation.                     |  |

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| <b>Reads</b> numerals to 20 in and out of sequence.  |  | <b>Connects</b> numerals to the quantities they represent.   |  | <b>Records</b> numerical information using pictures, words, and/or numbers.  |  |
| <b>Writes</b> numerals to 10 in order.   |  | <b>Demonstrates</b> that the meaning of a number does not change no matter how objects are grouped.  |  |  |  |
| <b>Demonstrates</b> one-to-one correspondence by keeping track of quantities while counting.                   |  | <b>Represents</b> numbers in a variety of equivalent ways (e.g., dots, pictures, numerals).  |  |  |  |
| <b>GRADE: FIRST</b>  |  |  |  |  |  |
| <b>Counts</b> orally to 100.   |  | <b>Forms and counts</b> groups of objects (e.g., 2s, 5s, 10s).   |  | <b>Develops</b> strategies and estimation skills for solving addition and subtraction problems.  |  |
| <b>Reads, writes, and sequences</b> numbers to 100.  |  | <b>Represents</b> equivalent forms of the same number (i.e., part – part – whole) through the use of physical models, diagrams, and number expressions to 20 (e.g., $3+5=8$ , $7+1=8$ , $2+6=8$ ). |  | <b>Records</b> strategies for solving, combining, and separating problems using pictures, numbers, equations, and words.                         |  |
| <b>Counts</b> orally by 2s to 30 and by 5s and 10s to 100.   |  | <b>Builds, estimates, and compares</b> combinations of numbers to 20 in different ways using pictures, stories, and objects to model the combinations.   |  | <b>Uses</b> estimation and other methods to justify whether or not an answer is reasonable (e.g., Will 25 marbles fit in this small container?). |  |
| <b>GRADE: SECOND</b>   |  |  |  |  |  |
| <b>Reads, writes and sequences</b> numbers to 200.   |  | <b>Applies</b> patterns in skip counting; <b>compares and defends</b> the relationship between skip counting, grouping, and equal sets.  |  | <b>Analyzes</b> relationships of quantities to 20 using part – part - whole (e.g., $1+7$ , $2+6$ , $3+5$ , $4+4$ : all equal 8.).                |  |
| <b>Explains</b> numbers to 1,000 using a variety of strategies (e.g., manipulatives, numbers, drawing, words). |  | <b>Explains</b> that digits stand for different amounts in different place value positions (e.g., 22 means 2 groups of ten and 2 ones).  |  | <b>Uses and explains</b> multiple strategies to solve addition and subtraction problems, with and without re-grouping, using two-digit numbers.  |  |

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| <b>Counts</b> by 2s to 100, by 5s and 10s to 200 and by 100s to 1,000.   |  | <b>Develops</b> fluency with 10 as an important (anchor, landmark, friendly) number and <b>applies</b> it in problem situations.                         |  | <b>Decomposes and recombines</b> numbers in logical ways to solve problems (e.g., $8+5 = (3+5)+5 = 3+(5+5) = 3+10=13$ ). |  |
| <b>APS MATHEMATICS STRAND: Patterns, Functions, and Algebraic Concepts</b>   |  |  |  |  |  |
| <b>GRADE: KINDERGARTEN</b>   |  |  |  |  |  |
| <b>Identifies, describes, and extends</b> patterns with familiar objects in both classroom and real-life situations.   |  | <b>Creates, describes, and extends</b> patterns.   |  |  |  |
| <b>GRADE: FIRST</b>  |  |  |  |  |  |
| <b>Identifies, describes, creates, and extends</b> patterns observed in familiar objects in real-life situations (e.g. 1 child = 2 eyes, 2 children = 4 eyes). |  | <b>Describes</b> how a pattern develops, repeats, and builds toward more complex patterns.   |  |  |  |
| <b>GRADE: SECOND</b>   |  |  |  |  |  |
| <b>Describes, creates, and extends</b> a wide variety of patterns.   |  | <b>Identifies</b> patterns in the number system (e.g., 5, 10, 15...).  |  | <b>Develops and applies</b> more complex patterns and relationships in real-life and mathematical problem situations.    |  |
| <b>APS MATHEMATICS STRAND: Global Mathematical Processes</b>   |  |  |  |  |  |
| <b>GRADE: K - 12</b>   |  |  |  |  |  |
| <b>Develops</b> resourcefulness and perseverance in problem solving in mathematics and other disciplines.  |  | <b>Recognizes</b> when to use previously learned strategies to solve new problems.   |  | <b>Develops and uses</b> strategies for solving given problems.  |  |
| <b>Monitors and reflects</b> on the process of mathematical problem solving.   |  | <b>Makes and investigates</b> mathematical conjectures and <b>uses</b> them successfully in developing and evaluating mathematical arguments and proofs. |  | <b>Uses</b> the concept of counterexample to test the legitimacy of an argument.   |  |

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| <b>Develops</b> a logical sequence of arguments leading to a valid conclusion or solution to a problem (statement/reasons, proof, informal proof, and algebraic steps).  |  | <b>Works</b> in teams to share ideas, to develop and coordinate group approaches to problems, and to share from each other in communicating findings. |  | <b>Relates</b> applications to mathematical language in various modalities.                      |  |
| <b>Communicates</b> mathematical thinking coherently and clearly to others.  |  | <b>Analyzes</b> and <b>evaluates</b> mathematical thinking and strategies of others.  |  | <b>Identifies</b> and <b>connects</b> functions with real-world applications.                    |  |
| <b>Identifies</b> how seemingly different mathematical situations may be essentially the same (e.g. the intersection of two lines is the same as the solution to a system of linear equations).                                |  | <b>Investigates</b> and <b>explains</b> the mathematics required for various careers.   |  | <b>Recognizes</b> and <b>applies</b> mathematics in contexts outside the mathematics course.     |  |
| <b>Develops</b> a repertoire of mathematical representations that can be used purposefully, and appropriately interchangeably (e.g. pictures, written symbols, oral language, real-world situations, and manipulative models). |  | <b>Selects, applies, and translates</b> among mathematical representations to solve problems.   |  | <b>Uses</b> representations to model and interpret physical, social, and mathematical phenomena. |  |