**Math in the Garden - PD Supplement - July 2021**

| Grade | Math concepts/Common Core Standards | Lessons |
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| **ALL** | CARDINALITY - counting within a set<br><br>COMPUTATION - space needs for plants or seeds<br><br>DATA - measuring plant height; tracking growth, weather, temperature using graphs<br><br>ESTIMATIONS - seed counting and planting using multiplication<br><br>FRACTIONS - making recipes<br><br>GEOMETRY - shapes/structures, mapping dimensions, determining irrigation strategies, planting methods, compost piles, plant and animal structure drawing with shapes<br><br>GRAPHING numbers of plant and animal structures (Animal Math lesson)<br><br>MEAN, MEDIAN, MODE - plant height, compost temperatures, decomposition time<br>PATTERN/SYMMETRY in nature<br><br>RATIOS - "roots to shoots" uses number sense, estimation and comparison; ratios of plant growth comparisons<br><br>STORY PROBLEMS (imaginative, linked to LA)<br><br>SCALE/PROPORTION - map the garden on graph paper (linked to perspective narratives in writing)<br><br>TIME COMPUTATION - days to maturity/comparisons | Visit https://www.slcww.org/wwvf2s-garden-lessons<br>for all the lessons that the Farm to School program can offer. Most individual lessons work for a range of grade levels as well as a range of subjects concepts.<br><br>We can also help you brainstorm if you want to use the garden but aren't sure where to start! |

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| **Kinder** | **MATH.K.CC.B.4**: Understand the relationship between numbers and quantities; connect counting to cardinality.<br><br>**MATH.K.OA.A.1**: Represent addition and subtraction with objects, fingers, mental images, drawings1, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.<br><br>**MATH.K.MD.A.1**: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.<br><br>**MATH.K.MD.A.2**: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference.<br><br>**MATH.K.MD.B.3**: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.<br><br>**MATH.K.G.A.1**: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to*. | Animal math (LL)<br><br>Seed sort/counts (LL)<br><br>Shape hunt- geometry<br><br>Color hunt<br><br>Tally marks - counting |

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| **1st** | **MATH.1.OA.A.1** Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions.<br><br>**MATH.1.OA.A.2** Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.<br><br>**MATH.1.MD.A.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object.<br><br>**MATH.1.MD.C.4** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.<br><br>**MATH.1.G.A.3** Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. | *K lessons can often be used for 1st graders too!*<br><br>Garden Bug Friend or Foe<br>-Collect data on # of creatures<br>-Compare data<br>-Map where creatures exist |

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| **2nd** | **MATH.2.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.<br><br>**MATH.2.MD.A.2** Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.<br><br>**MATH.2.MD.A.3** Estimate lengths using units of inches, feet, centimeters, and meters.<br><br>**MATH.2.MD.A.4** Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.<br><br>**MATH.2.MD.D.9** Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.<br><br>**MATH.2.MD.D.10** Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. | Scientists at Work<br>● Tests the assumption that plants need light to grow.<br>● Measure the effect of no light on plant growth.<br><br>Popcorn Weights and Measures<br><br>2nd Grade Series lessons |

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| **3rd** | **MATH.3.OA.D.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.<br><br>**MATH.3.MD.A.2** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.<br><br>**MATH.3.MD.B.3** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.<br><br>**MATH.3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.<br><br>**MATH.3.MD.C.5** Recognize area as an attribute of plane figures and understand concepts of area measurement.<br><br>**MATH.3.MD.D.8** Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. | Room to Live – radish density test<br>measurements, data collection, graphing<br><br>Garden Bug Friend or Foe<br>Collect data, Compare data using fractions /decimals/percentages, Map where creatures exist<br><br>3rd Grade Series Lessons |

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| **4th** | **MATH.4.MD.A.2** Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.<br><br>**MATH.4.MD.A.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems.<br><br>**MATH.4.G.A.1** Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.<br><br>**MATH.4.G.A.2** Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles. | Angle search in the garden<br><br>Estimation of degrees and labeling angles<br><br>Measure angles and predicting lengths in triangle sides |
| **5th** | **CCSS.MATH.CONTENT.5.NF.B.6**☐Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.<br><br>**CCSS.MATH.CONTENT.5.MD.C.4**☐Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.<br><br>**CCSS.MATH.CONTENT.5.MD.C.5**☐Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.<br><br>**CCSS.MATH.CONTENT.5.G.A.2**☐Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | Photosynthesis - fractions<br><br>Measuring beds and predicting volume of soil<br><br>Multiplication story problems determining the number of seeds |