**New Mexico / *Excel* Math Correlation**
**Grade 4**

| New Mexico Standards / Objectives | *Excel* Math Lesson Numbers | Stretch Lesson Numbers Activity Numbers |
|---|---|---|
| **Mathematics Standard 1 - NUMBER AND OPERATIONS**: Students will understand numerical concepts and mathematical operations. | | |
| **A. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.** | | |
| 1. Exhibit an understanding of the place-value structure of the base-ten number system by reading, modeling, writing, and interpreting whole numbers up to 100,000; compare and order the numbers: | | |
| a. Recognize equivalent representations for the same number and generate them by decomposing and combining numbers (e.g., 853 = 8 x 100 + 5 x 10 + 3; 853 = 85 x 10 + 3; 853 = 900 – 50 + 3) | 1, 3, 7, 11, 22, 46, 50, 74, 85, 102, 126 | 7, 11, 13, 25, 26, 76, 87, 95 |
| b. Identify the numbers less than 0 by extending the number line and using negative numbers through familiar applications (e.g., temperature, money) | 133, 140, 145 | Activity 12 |
| 2. Identify fractions as parts of unit wholes, as parts of groups, and as locations on number lines: | | |
| a. Use visual models and other strategies to compare and order commonly used fractions | *54, 67, 75, 79, 88, 99, 100, 110, 112, 114, 118, 125<br>Percents: 127, 128, 136, 143 | Whole Numbers: 17, 21, 63, 68, 90, 92, 106 |
| b. Use models to show how whole numbers and decimals (to the hundredths place) relate to simple fractions (e.g., ½, 5/10, 0.5) | 9, 15, *75, 85, 100, *115, 118, *131, 137, 148 | |
| c. Identify different interpretations of fractions: | | |
| • division of whole numbers by whole numbers | 54, 88, 148 | |
| • ratio | 56 | |
| • equivalence | 75, 84, 99, 110, 112, 118, 125, 127, 128, 143 | |
| • ordering of fractions | 75, 79, *114 | |
| • Parts of a whole or parts of a set | 15, 16, 54, 67, 75, 76, 79, 84, 99, 110, 112, 114, 137 | |
| 3. Add and subtract fractions with common and uncommon denominators using a variety of strategies (e.g., manipulatives, numbers, pictures): | 67, 76, 81<br>Multiply Fractions: 153, 154 | |
| a. Recognize and generate equivalent decimal forms of commonly used fractions (e.g., halves, quarters, tenths, fifths) | *75, 85, 100, 118, 137<br>Percent: 127, 128, 136, 143 | |

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|---|---|---|
| b. Identify the numbers less than 0 by extending the number line and using negative numbers through familiar applications (e.g., temperature, money) | 133, 140, 145 | Activity *12 |
| 4. Recognize classes of numbers (e.g., odd, even, factors, multiples, square numbers) and apply these concepts in problem-solving situations. | 13, 17, 33, 46, 51, 56, 61, 89, 91, 93, 94, 102, 106, 135, 151 | 90, 115, 117, 122<br>Activity 12 |
| **B. Understand the meaning of operations and how they relate to one another.** | | |
| 1. Demonstrate an understanding of and the ability to use: | | |
| a. Standard algorithms for the addition and subtraction of multi-digit numbers | 1, 3, 6, 7, 8, 9, 11, 12, 13, 14, 32, 36, 45, 63, 69, 86 | 8, 9, 10, 12, 13, 15, 18, 21, 43, 52, 75, 86, 87, 90, 95, 105, 113, 116, 122, 125, 126, 130, 136, 138 |
| b. Standard algorithms for multiplying a multi-digit number by a two-digit number and for dividing a multi-digit number by a one-digit number | 12, 13, 14, 21, 27, 28, 31, 32, 33, 36, 42, 43, 46, 47, 49, 51, 52, 59, 62, 70, 73, 74, 78, 81, 82, 83, 84, 87, 89, 96, 98, 101, 107, 108, 109, 114, 115, 116, 122, 124, 129, 131, 132, 136, 137, 138, 141, 142, 146, 148, 149, 151, 153, 154 | 15, 59, 117, 125, 142, 153<br>Activity 8 |
| 2. Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems. | 1, 9, 17, 26, 31, 33, 41, 45, 63, 72, 77, 90, 92, 104, 109, 111, 123, 124, 129, 139, 143 | 5, 10, 12, 13, 14, 16, 18, 22, 27, 29, 33, 41, 43, 47, 48, 59, 62, 70, 71, 77, 79, 83, 86, 91, 95, 101, 103, 111, 114, 115, 116, 117, 118, 121, 124, 125, 130, 135, 136, 138, 147, 148, 153, 155<br>Activity 8 |
| 3. Extend the uses of whole numbers to the addition and subtraction of simple decimals (positive numbers to two places). | 9, 11, 26, 86<br>Divide / Multiply: 61, 107, 109, 115, 116, 141 | 16, 28, 30, 114, 124, 146 |
| 4. Demonstrate commutative, associative, identity, and zero properties of operations on whole numbers (e.g., 37 x 46 = 46 x 37 and (6 x 2) x 5 = 6 x (2 x 5)). | 21, 24, 72, 108, 134<br>Inverse: 21, 24, 27, 28, 43, 48, 52, 53, 59, 61, 82, 83, 87, 89, 107, 109, 115, 138, 151 | |
| 5. Demonstrate the concept of distributivity of multiplication over addition and subtraction (e.g., 7 x 28 is equivalent to (7 x 20) + (7 x 8) or (7 x 30) - (7 x 2)). | *12, 108 | |
| **C. Compute fluently and make reasonable estimates.** | | |

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|---|---|---|
| 1. Demonstrate multiplication combinations through 12 x 12 and related division facts, and use them to solve problems mentally and compute related problems (e.g., 4 x 5 is related to 40 x 50, 400 x 5, and 40 x 500). | 12, 13, 14, 21, 22, 23, 24, 26, 29, 31, 34, 36, 46, 47, 48, 49, 51, 52, 53, 56, 59, 61, 62, 64, 66, 73, 76, 77, 78, 81, 87, 89, 91, 92, 93, 94, 98, 102, 103, 129, 131, 132, 137, 138, 141, 142, 151, 152 | 16, 19, 117, 118, 129, 148 |
| 2. Add, subtract, and multiply up to two double-digits accurately and efficiently. | 2, 11, 18, 19, 24, 32, 45, 47, 49, 52, 53, 59, 62, 63, 69, 73, 74, 76, 77, 78, 81, 82, 83, 84, 87, 89, 91, 93, 98, 103, 107, 129, 131, 132, 137, 141, 142, 148, 151, 152 | 3, 6, 7, 8, 10, 11, 12, 13, 15, 16, 18, 19, 20, 21, 25, 26, 28, 39, 43, 45, 52, 56, 75, 76, 77, 80, 90, 92, 93, 95, 96, 102, 104, 105, 106, 109, 113, 116, 118, 122, 124, 125, 128, 129, 130, 132, 143, 147, 148, 155 |
| 3. Use a variety of strategies (e.g., rounding and regrouping) to estimate the results of whole number computations and judge the reasonableness of the answers. | 45, 47, 55, 62, 69, 90, 104, 129, 152 | 3, 6, 7, 8, 11, 13, 15, 16, 19, 21, 26, 39, 52, 56, 67, 75, 96, 99, 102, 104, 105, 109, 113, 121, 127, 132, 142, 153 |
| 4. Use strategies to estimate computations involving fractions and decimals | 9, 54, *55, 90, 99, *118, 131 | 16, 30 |
| **Mathematics Standard 2 - ALGEBRA**: Students will understand algebraic concepts and applications. | | |
| **A. Understand patterns, relations, and functions.** | | |
| 1. Represent and analyze patterns and simple functions using words, tables, and graphs. | 6, 8, 20, 23, 25, 44, 48, 56, 58, 77, 101, 103, 113, 117, 121, 152 | 10, 12, 16, 20, 28, 35, 43, 60, 62, 71, 77, 79, 86, 116, 124, 130, 136, 138 |
| 2. Create and describe numeric and geometric patterns including multiplication and division patterns. | 6, 21, 48, 56, 77, 101, 103, 152 | 12, 16, 20, 28, 35, 43, 60, 62, 71, 77, 78, 124, 136, 138 |
| 3. Express mathematical relationships using equations. | 13, 14, 34, 35, 41, 74, 87, 92, 113, 117, 121, 134, 147, 149, 152 | 10, *12, 16, 20, 43, *62, 71, 77, 79, 86, 114, 124, 125, 147<br>Activity 6, 11 |
| 4. Use and interpret variables, mathematical symbols, and properties to write and simplify expressions and sentences: | | |
| a. Use letters, boxes, or other symbols to stand for any number in simple expressions or equations (e.g., demonstrate an understanding of the concept of a variable) | 14, 22, 34, *35, 87, 92, 134, 152 | 9, 15, *16, 19, 20, 28, 31, 39, 45, 52, 56, 67, 69, 75, 80, 89, 93, 99, 104, 109 |
| b. Interpret and evaluate mathematical expressions using parentheses | 34, 77 | 31, 67, 69, 114, 129 |
| c. Use and interpret formulas (e.g., Area = Length x Width or A = L x W) to answer questions about quantities and their relationships | 92, 147, 149<br>Intersection of sets: 44 | |
| **B. Represent and analyze mathematical situations and structures using algebraic symbols.** | | |

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|---|---|---|
| 1. Identify symbols and letters that represent the concept of a variable as an unknown quantity. | 14, 22, 34, *35, 87, 92, 134, 152 | 9, 15, *16, 19, 20, 28, 31, 39, 45, 52, 56, 67, 69, 75, 80, 89, 93, 99, 104, 109 |
| 2. Explore the uses of properties (commutative, distributive, associative) in the computation of whole numbers. | 21, 24, 72, 108, 134 | |
| 3. Express mathematical relationships using equations. | 14, 31, 34, 35, 74, 87, 92, 121, 134, 147, 149, 152 | 10, *12, 16, 18, 20, 86, 114, 125, 147<br>Activity 6, 11 |
| 4. Determine the value of variables in simple equations (e.g., 80 x 15 = 40 x □□). | 14, 34, *35, 87, 92, 134, 152 | 9, 15, *16, 19, 20, 28, 31, 39, 45, 52, 56, 69, 75, 80, 89, 93, 99, 104, 109 |
| 5. Develop simple formulas in exploring quantities and their relationships (e.g., A = L x W). | 92, 147, 149, 152 | |
| **C. Use mathematical models to represent and understand quantitative relationships.** | | |
| 1. Solve problems involving proportional relationships (including unit pricing and map interpretations; e.g., one inch = five miles; therefore, five inches = □ miles). | 25, 35, 56, 66, 121, 139 | 71, 79<br>Activity 6 |
| 2. Model problem situations and use graphs, tables, pictures, and equations to draw conclusions (e.g., different patterns of change). | 4, 10, 17, 20, 21, 25, 35, 44, 56, 92, 121, 139, 147, 149, 152 | 10, 12, 16, 17, 18, 23, 35, 71, 79, 86, 133, 134<br>Activity 1 |
| 3. Use and interpret formulas (e.g., Area = Length x Width or A = L x W) to answer questions about quantities and their relationships.) | 66, 92, 121, 147, 149, 152 | |
| **D. Analyze changes in various contexts.** | | |
| 1. Identify and describe situations with constant or varying rates of change and compare them | 56, *92, 152 | 12 |
| 2. Determine how a change in one variable relates to a change in a second variable (e.g., data tables, input- output machines). | 56, 152 | |
| 3. Find and analyze patterns using data tables (e.g., T tables). | 25, *66, 152 | 10, 18, 71, 79, 124 |
| 4. Demonstrate and describe varying rates of change in relation to real-world situations (e.g., plant growth, students' heights | 92 | |
| **Mathematics Standard 3 - GEOMETRY**:<br>Students will understand geometric concepts and applications. | | |

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|---|---|---|
| **A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.** | | |
| 1. Identify, compare, and analyze attributes of two- and three-dimensional shapes and develop vocabulary to describe the attributes: | | |
| a. Build, draw, create, and describe geometric objects | 15, 39, 40, 58, 60, 64, 71, 96, 98, 101, 105, 144, 155 | 4, 24, 32, 36, 44, 53, 58, 60, 65, 66, 78, 82, 94, 100, 107, 110, 119, 123, 131, 140, 141, 150<br>Activity 3, 4, 9 |
| b. Identify lines that are parallel or perpendicular | 38, 39 | *4 |
| c. Identify and compare congruent and similar figures | 60, 98 | *4, *32, *53, *78, *110, *119 |
| 2. Classify two- and three-dimensional shapes according to their properties and develop definitions of classes like triangles and pyramids: | | |
| a. Visualize, describe, and make models of geometric solids in terms of the number of faces, edges, and vertices | 40, 105, 149 | *140, *141 |
| b. Interpret two-dimensional representations of three-dimensional objects | 40, 95, 105, 149 | 140, 141 |
| 3. Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusion | *39, *40, 58, 60, 95, 98, 105, 132, 144, 147, 149 | 4, 24, 32, 36, 44, 53, 58, 60, 65, 66, 78, 82, 94, 107, 110, 119, 140, 141, 150<br>Activity 3, 9 |
| **B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.** | | |
| 1. Describe location and movement using common language and geometric vocabulary. | 60, 97, 132 | 4, 36, 53, 66, 78, 82, 100, 107, 123, 140, 141<br>Activity 5 |
| 2. Use ordered pairs to graph, locate, identify points, and describe paths in the first quadrant of the coordinate plane. | 65, 97, 120, 130, 140 | Activity 5 |
| 3. Use a variety of methods for measuring distances between locations on a grid. | *65, 97, 120, 130, *140 | Activity 5 |
| **C. Apply transformations and use symmetry to analyze mathematical situations.** | | |
| 1. Create and describe rotational designs using language of transformational symmetry. | 30, 60, *155 | 36, 53 |
| 2. Describe a motion or set of motions that will show that two shapes are congruent. | 60, *98, *155 | *4, *94, 140, 141 |
| **D. Use visualization, spatial reasoning, and geometric modeling to solve problems.** | | |

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|---|---|---|
| 1. Develop and use mental images of geometric shapes to solve problems (e.g., represent three-dimensional shapes in two dimensions). | 105, 120, 132, 149 | 4, 24, 32, 36, 44, 58, 65, 66, 77, 82, 94, 100, 107, 110, 119, 123, 140, 141, 150<br>Activity 3 |
| 2. Use geometric models such as number lines, arrays, and computer simulations to investigate number relationships (e.g., patterns). | 48, 56, 66, *101, 152 | *16, 71, 79 |
| 3. Explore relationships involving perimeter and area: | | |
| a. Measure area of rectangular shapes and use appropriate units | *64, 68, 147, 149 | 137, 150<br>Activity 7 |
| b. Recognize that area can have the same perimeter but different areas and vice versa | *64, *96, *120, *147, *149 | *125, *135, *137, 150<br>Activity 7 |
| c. Use models and formulas to solve problems involving perimeter and area of rectangles and squares (e.g., arrays) | *64, 68, 96, 120, 147 | 125, 135, 137, 150<br>Activity 7 |
| **Mathematics Standard 4**<br>**MEASUREMENT**: Students will understand measurement systems and applications. | | |
| **A. Understand measurable attributes of objects and the units, systems, and process of measurement.** | | |
| 1. Select the appropriate type of unit for measuring perimeter and size of an angle. | 70, 78, 132, *155 | 135, 150<br>Activity 7 |
| 2. Understand the need for measuring with standard units and become familiar with the standard units in customary and metric system. | 37, 63, 64, 121 | *150 |
| 3. Identify the inverse relationship between the size of the units and the number of units. | 63, 87, 105, 121 | 49, 135<br>Activity 7 |
| 4. Develop formulas to determine the surface areas of rectangular solids. | 68, 149<br>Volume: 95, 105 | Activity 10 |
| 5. Develop, understand, and use formulas to find the area of rectangles and related triangles and parallelograms. | 64, 68, 96, 120, 147, 155<br>Volume: 95, 105 | 125, 135, 137, 150<br>Activity 7 |
| 6. Carry out simple conversions within a system of measurement (e.g., hours to minutes, meters to centimeters). | 37, 63, 66, 87, 111, 121, 123, 124 | *49, 118, 125, 148, *150 |
| **B. Apply appropriate techniques, tools, and formulas to determine measurements.** | | |

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|---|---|---|
| 1. Estimate perimeters, areas of rectangles, triangles, and irregular shapes. | *64, *155<br>Weight: 29<br>Angles: 70 | 135<br>Activity 10 |
| 2. Find the area of rectangles, related triangles, and parallelograms. | 64, 96, 120, 147, 155 | 125, 137, 150<br>Activity *7 |
| 3. Estimate, measure, and solve problems involving length, area, mass, time, and temperature using appropriate standard units and tools. | *18, *19, 29, 30, 37, 57, 63, 64, 66, 111, 121, 124, 155 | 23, 49, 135<br>Graphing Activity 3, 4<br>Activity 10 |
| 4. Identify common measurements of turns (e.g., 360 degrees in one turn, 90 degrees in a quarter-turn). | 70, 132 | |
| 5. Compute elapsed time and make and interpret schedules. | 18, 19, 57, 111, 124 | 1, 10, 18, 54, 70, 148 |
| 6. Use tools to measure angles (e.g., protractor, compass). | 70, 78, *98, *155 | |
| **Mathematics Standard 5 - DATA ANALYSIS AND PROBABILITY**:<br>Students will understand how to formulate questions, analyze data, and determine probabilities. | | |
| **A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.** | | |
| 1. Organize, represent, and interpret numerical and categorical data and clearly communicate findings: | | |
| a. Choose and construct representations that are appropriate for the data set | 20, 152 | 71, 79, 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6<br>Activity 1 |
| b. Recognize the differences in representing categorical and numerical data | 20, 56, 80, 119, 152 | 71, 79, 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6<br>Activity 1 |
| 2. Design investigations and represent data using tables and graphs (e.g., line plots, bar graphs, line graphs). | 152 | 79, 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6 |
| **B. Select and use appropriate statistical methods to analyze data.** | | |
| 1. Compare and describe related data sets. | 20, 80, 119, 152 | Graphing Activity: 1, 2, 3, 4, 5, 6 |
| 2. Use the concepts of median, mode, maximum, minimum, and range and draw conclusions about a data set. | 45, 150<br>Averages: 122 | Graphing Activity: 4, 6 |

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| 3. Use data analysis to make reasonable inferences/predictions and to develop convincing arguments from data described in a variety of formats (e.g. bar graphs, Venn diagrams, charts, tables, line graphs, and pictographs). | 5, 20, 56, 80, 119, 152 | 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6<br>Activity 1<br>Deductive Reasoning: 1, 2, 34, 37, 38, 40, 41, 42, 46, 47, 50, 51, 54, 55, 57, 61, 64, 72, 73, 74, 81, 84, 88, 98, 108, 120, 127, 133, 134, 139, 144, 149, 152, 154, Activity 2 |
| **C. Develop and evaluate inferences and predictions that are based on data.** | | |
| 1. Propose and justify conclusions and predictions based on data. | 5, 20, 56, 80, 119, 152 | 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6<br>Activity 1<br>Deductive Reasoning: 1, 2, 34, 37, 38, 40, 41, 42, 46, 47, 50, 51, 54, 55, 57, 61, 64, 72, 73, 74, 81, 84, 88, 98, 108, 120, 127, 133, 134, 139, 144, 149, 152, 154, Activity 2 |
| 2. Develop convincing arguments from data displayed in a variety of formats. | 5, 20, 56, 80, 119, 152 | 86, 97, 112, 124, 145, 151<br>Graphing Activity: 1, 2, 3, 4, 5, 6<br>Activity 1<br>Deductive Reasoning: 1, 2, 34, 37, 38, 40, 41, 42, 46, 47, 50, 51, 54, 55, 57, 61, 64, 72, 73, 74, 81, 84, 88, 98, 108, 120, 127, 133, 134, 139, 144, 149, 152, 154, Activity 2 |
| **D. Understand and apply basic concepts of probability.** | | |
| 1. Describe events as "likely," "unlikely," or "impossible" and quantify simple probability situations: | | |
| a. Represent all possible outcomes for a simple probability situation in an organized way (e.g., tables, grids, tree diagrams) | 5 | 85<br>Graphing Activity 1 |
| b. Express outcomes of experimental probability situations verbally and numerically (e.g., three out of four, | 5 | 85<br>Graphing Activity 1, 2 |
| 2. List all the possible combinations of objects from three sets (e.g., spinners, number of outfits from three different shirts, two skirts, and two hats). | 5, 77 | 85, 121, 155<br>Graphing Activity 1 |

* Gives opportunity to teach specific Standard