

Standards / Objectives	Excel Math Lesson Numbers	Stretch Lessons/ Activity Numbers
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## Strand 1: Number Sense and Operations

<b>Concept 1: Number Sense</b>		
Understand and apply numbers, ways of representing numbers, the relationships among numbers and different number systems.		
PO 1. Read whole numbers in contextual situations (through six-digit numbers).	5, 10, 11, 15, 16, 32, 33, 40, 58, 59, 65, 68, 71, 75, 87, 88, 111, 115, 126, 127, 150,	
PO 2. Identify six-digit whole numbers in or out of order.	150	
PO 3. Write whole numbers through six-digits in or out of order.	1, 2, 3, 4, 6, 9, 12, 13, 14, 16, 19, 23, 24, 27, 34, 38, 41, 42, 43, 45, 46, 48, 49, 53, 60, 64, 67, 71, 79, 91, 96, 97, 98, 100, 104, 150	2, 6, 16, 21, 28, 36, 82, 93, 116, 146
PO 4. State whole numbers, through six-digits, with correct place value, by using models, illustrations, symbols, or expanded notation (e.g., $53,941 = 50,000 + 3,000 + 900 + 40 + 1$ ).	1, 3, 6, 7, 12, 14, 19, 23, 27, 29, 34, 41, 42, 43, 47, 49, 58, 59, 60, 64, 67, 79, 91, 100, 132, 133, 150	85, 125
PO 5. Construct models to represent place value concepts for the one's, ten's, and hundred's places.	1, 7, 12, 14, 19, 23, 27, 29, 34, 41, 42, 43, 47, 49, 64, 67, 91, 132, 133	85, 125
PO 6. Apply expanded notation to model place value through 9,999 (e.g., $5,378 = 5,000 + 300 + 70 + 8$ ).	7, 12, 23, 27, 29, 34, 42, 43, 64, 67, 100, 132, 150	
PO 7. Sort whole numbers into sets containing only odd numbers or only even numbers.	31, 46, 63	35, 48, 57, 91
PO 8. Compare two whole numbers, through six-digits.	4, 21, 38, 57	30, 91
PO 9. Order three or more whole numbers through six-digit numbers (least to greatest, or greatest to least).	4, 13, 38, 53, 98, 104	
PO 10. Make models that represent proper fractions (halves, thirds, fourths, eighths, and tenths).	31, 54, 58, 87, 109, 147, 148, 149	Activity 8
PO 11. Identify symbols, words, or models that represent proper fractions (halves, thirds, fourths, eighths and tenths).	54, 66, 82, 87, 109, 137, 140, 147, 148, 149	Activity 3, 8



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PO 12. Use proper fractions in contextual situations.	58, 66, 82, 87, 109, 137, 140	Activity 8
PO 13. Compare two proper fractions with like denominators.	140, 147, 148, 149	
PO 14. Order three or more proper fractions with like denominators (halves, thirds, fourths, eighths, and tenths).	147	
PO 15. Count amounts of money through \$20.00 using pictures or actual bills and coins.	16, 22, 44, 51, 82, 114, 146	55, 92
PO 16. Use decimals through hundredths in contextual situations.	33, 44, 95, 146	Activity 8
PO 17. Compare two decimals, through hundredths, using models, illustrations, or symbols.		
PO 18. Order three or more decimals, through hundredths, using models, illustrations, or symbols.		
PO 19. Determine the equivalency among decimals, fractions, and percents (e.g., half-dollar = 50¢ = 50% and $\frac{1}{4} = 0.25 = 25\%$ ).	33, 44, 82, 149	Activity 8
PO 20. Identify whole-number factors and/or pairs of factors for a given whole number through 24.	6, 13, 17, 24, 39, 46, 53, 71, 93, 96, 131, 141, 143, *151, 153 Prime Numbers 144	
PO 21. Determine multiples of a given whole number with products through 24 (skip counting).	94, 101, 111, 117	25, 141
<b>Concept 2: Numerical Operations</b>		
Understand and apply numerical operations and their relationship to one another.		
PO 1. Demonstrate the process of subtraction using manipulatives through three-digit whole numbers.	12, 17, 22, 23, 47, 52, 64, 136	11, 12, 13, 19, 24, 31, 33, 39, 44, 49, 52, 56, 63, 68, 73, 77, 79, 83, 89, 94, 101, 105, 107, 109, 114, 119, 122, 124, 125, 129, 130, 138, 139, 141, 144, 149, 154
PO 2. Add two three-digit whole numbers.	29, 33, 34, 41, 51, 115	
PO 3. Subtract two three-digit whole numbers.	33, 42, 47, 52, 64, 136	



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PO 4. Add a column of numbers.	12, 14, 16, 22, 27, 29, 39, 51, 53, 61, 67, 68, 73, 75, 85, 86, 91, 95, 114, 131, 146  All Checkanswers (back of tests)	2, 6, 9, 16, 21, 28, 36, 54, 82, 93, 116, 145, 146, 150
PO 5. Select the grade-level appropriate operation to solve word problems.	10, 11, 15, 22, 25, 32, 40, 68, 75, 82, 83, 85, 87, 88, 93, 105, 111, 114, 115, 123, 137	3, 5, 7, 8, 10, 12, 14, 18, 22, 23, 25, 26, 27, 29, 32, 34, 37, 38, 42, 43, 45, 47, 52, 53, 54, 55, 59, 61, 62, 64, 66, 69, 71, 74, 81, 88, 92, 96, 99, 103, 105, 106, 108, 112, 118, 122, 130, 131, 135, 137, 139, 140, 142, 143, 152, 153  Activity 5, 9
PO 6. Solve word problems using grade-level appropriate operations and numbers.	10, 11, 22, 25, 32, 40, 68, 70, 75, 82, 83, 85, 87, 88, 93, 105, 111, 114, 115, 123, 137	9, 10, 55, 92, 105, 112, 122, 130, 137, 139, 143, 152  Activity 5, 9
PO 7. Demonstrate the process of multiplication as repeatedly adding the same number, counting by multiples, combining equal sets, and making arrays.	39, 46, 53, 61, 68, 73, 91, 95, 97, 131, 143, 153, 154	70, 73, 83, 89, 94, 100, 101, 107, 114, 119, 124, 129, 134, 149, 154
PO 8. Demonstrate the process of division with one-digit divisors (separating elements of a set into smaller equal sets, sharing equally, or repeatedly subtracting the same number).	58, 59, 71, 87, 88, 93, 94, 101, 102, 103, 111, 118, 132, 133, 142, 153, 154	70, 75, 109, 134, 141, 149
PO 9. Demonstrate families of equations for multiplication and division through 9s.	39, 46, 53, 118, 126, 131, 143	
PO 10. State multiplication and division facts through 9s.	42, 44, 47, 48, 49, 51, 53, 56, 58, 59, 64, 67, 68, 73, 74, 76, 79, 81, 82, 83, 84, 86, 92, 96, 97, 99, 107, 113, 119, 124, 131, 136, 139, 142, 143, 144, 146, 151, 152	
PO 11. Demonstrate the commutative and identity properties of multiplication.	46, 71, 96, 117, 142, 151	
PO 12. Identify multiplication and division as inverse operations.	71, 96, 103, 117, 118, 133, 142, 151	

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PO 13. Apply grade-level appropriate properties to assist in computation.	7, 13, 14, 17, 23, 33, 37, 39, 40, 45, 46, 53, 57, 58, 59, 64, 73, 75, 79, 95, 97, 98, 101, 102, 103, 111, 114, 115, 118, 122, 137, 146, 151, 153, 154	2, 6, 16, 21, 28, 36, 82, 93, 116, 146 Activity 5
PO 14. Apply the symbols: $\times$ , $\div$ , $/$ , $*$ , $\%$ , and the grouping symbols ( ) and “,”.	28, 57, 58, 59, 73, 76, 83, 99, 114, 118, 137, 151, 153	33, 70, 73, 75, 83, 89, 94, 95, 100, 101, 107, 109, 114, 119, 124, 129, 134, 141, 149, 154 Activity 3, 5, 9
PO 15. Use grade-level appropriate mathematical terminology.	2, 4, 8, 9, 10, 12, 33, 37, 38, 39, 46, 48, 53, 58, 59, 60, 65, 73, 76, 83, 93, 94, 97, 98, 99, 101, 102, 103, 111, 114, 115, 122, 123	Activity 3, 5, 9
PO 16. Add or subtract fractions with like denominators (halves, thirds, fourths, eighths, and tenths) appropriate to grade level.	109, 140	Activity 3
PO 17. Apply addition and subtraction in contextual situations, through \$20.00.	16, 22, 33, 51, 65, 75, 83, 114, 115, 123, 146	10, 55, 92, 105, 112, 122, 130, 137, 139, 152 Activity 5, 9
<p><b>Concept 3: Estimation</b> Use estimation strategies reasonably and fluently.</p>		
PO 1. Solve grade-level appropriate problems using estimation.	60, 62, 75, 78, 85, 90, 115, 122, 134, 146	2, 6, 16, 21, 28, 36, 82, 93, 116, 146 Activity 3
PO 2. Estimate length and weight using U.S. customary units.	56, 62, 108 Time 78, 85	61, 102, 109, 117, 121, 127, 128, 140, 155
PO 3. Record estimated and actual linear measurements for real-life objects (e.g., length of fingernail; height of desk).	62, 108	
PO 4. Compare estimations of appropriate measures to the actual measures.	56, 62, 108	Activity 3
PO 5. Evaluate the reasonableness of estimated measures.	56, 62, 85, 108, 122	102, 109, 117, 121, 127, 128, 140, 155 Activity 3

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## Strand 2: Data Analysis, Probability, and Discrete Mathematics

### Concept 1: Data Analysis (Statistics)

Understand and apply data collection, organization and representation to analyze and sort data.

PO 1. Formulate questions to collect data in contextual situations.	30	Activity 1, 5, 9
PO 2. Construct a horizontal bar, vertical bar, pictograph, or tally chart with appropriate labels and title from organized data.	5, *30	23, 97, 143 Activity 10
PO 3. Interpret data found in line plots, pictographs, and single-bar graphs (horizontal and vertical).	5, 20, 35	23, 97, 143 Activity 10
PO 4. Answer questions based on data found in line plots, pictographs, and single-bar graphs (horizontal and vertical).	5, 20, 35	23, 97, 143 Activity 10
PO 5. Formulate questions based on graphs, charts, and tables to solve problems.	126, 127, 141	23, 97, 143 Activity 10
PO 6. Solve problems using graphs, charts and tables.	5, 20, 35, 126, 127, 141	23, 97, 143 Activity 10

### Concept 2: Probability

Understand and apply the basic concepts of probability. (*Grades 2-HS*)

PO 1. Name the possible outcomes for a probability experiment.	5, 20  Possibilities 30	Possibilities 5, 11, 24, 33, 39, 44, 48, 49, 56, 63, 82, 89, 95, 119, 124, 129, 143, 146  Activity 1
PO 2. Make predictions about the probability of events being more likely, less likely, equally likely or unlikely.	5, 20	Activity 1
PO 3. Predict the outcome of a grade-level appropriate probability experiment.	5, 20	5, 11, 24, 33, 39, 143



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PO 4. Record the data from performing a grade-level appropriate probability experiment.	5, *20	5, 11, 24, 33, 39, 143
PO 5. Compare the outcome of an experiment to predictions made prior to performing the experiment.	5, *20	5, 11, 24, 33, 39, 143
PO 6. Compare the results of two repetitions of the same grade-level appropriate probability experiment.	5, 20, 30	5, 11, 24, 33, 39, 143
<p><b>Concept 3: Discrete Mathematics – Systematic Listing and Counting</b>            Understand and demonstrate the systematic listing and counting of possible outcomes.</p>		
PO 1. Make a diagram to represent the number of combinations available when 1 item is selected from each of 3 sets of 2 items (e.g., 2 different shirts, 2 different hats, 2 different belts).	30	143 Activity 1
<p><b>Concept 4: Vertex-Edge Graphs</b>            Understand and apply vertex-edge graphs.</p>		
PO 1. Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).	Map / directions *10	

\*Gives opportunity to teach specific State Standard

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<h2 style="text-align: center;">Strand 3: Patterns, Algebra, and Functions</h2>		
<p><b>Concept 1: Patterns</b> Identify patterns and apply pattern recognition to reason mathematically.</p>		
PO 1. Communicate a grade-level appropriate iterative pattern, using symbols or numbers.	2, 6, 37, 48, 49, 77, 80, 97, 113, 126, 130, 155	1, 2, 6, 16, 21, 28, 36, 45, 77, 78, 82, 93, 116, 146
PO 2. Extend a grade-level appropriate repetitive pattern (e.g., 5, 10, 15, 20, . . . rule: add five or count by five's).	48, 49, 70, 77, 80, 113, 126, 130, 155	45, 78
PO 3. Solve grade-level appropriate pattern problems.	2, 6, 37, 48, 49, 70, 77, 80, 97, 113, 126, 130, 155	1, 45, 77, 78
<p><b>Concept 2: Functions and Relationships</b> Describe and model functions and their relationships. (<i>Grades 2-HS</i>)</p>		
PO 1. Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model, and frames and arrows).	1, 2, 4, 6, 7, 11, 12, 26, 34, 36, 37, 48, 75, 80, 84, 97, 101, 105, 115, 117, 126, 127, 143, 144, 155	2, 6, 16, 21, 23, 28, 36, 82, 93, 97, 116, 146  Activity 1
<p><b>Concept 3: Algebraic Representations</b> Represent and analyze mathematical situations and structures using algebraic representations.</p>		
PO 1. Use variables in contextual situations.	11, 24, 36, 76, 81, 107, *122, *123  Parentheses 28, 57, 92	11, 19, 22, 24, 31, 33, 35, 39, 40, 44, 48, 49, 54, 56, 63, 65, 68, 70, 73, 75, 77, 83, 89, 94, 95, 101, 107, 110, 114, 119, 123, 124, 125, 129, 134, 141, 149, 154
PO 2. Solve equations with one variable using missing addends to sums of 18 (e.g., $\square + 9 = 18$ , $9 + \square = 18$ ); and using minuend through 18 (e.g., $18 - \square = 9$ , $18 - 9 = \square$ ).	8, 36, 58, 59, 76, 81, 105, 107, *122, *123  Multiplication 92	1, 11, 19, 22, 24, 30, 31, 33, 35, 39, 40, 44, 48, 49, 54, 56, 63, 65, 68, 70, 73, 75, 77, 83, 89, 94, 95, 101, 107, 110, 114, 119, 123, 124, 125, 129, 134, 141, 149, 154
<p><b>Concept 4: Analysis of Change</b> Analyze change in a variable over time and in various contexts.</p>		
PO 1. Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).	80	Activity 10
PO 2. Make simple predictions based on a variable (e.g., increases in allowance as you get older).	25, 80, 126, 127	Activity 9, 10

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## Strand 4: Geometry and Measurement

**Concept 1: Geometric Properties**  
 Analyze the attributes and properties of 2- and 3- dimensional shapes and develop mathematical arguments about their relationships.

PO 1. Build geometric figures with other common shapes (e.g., tangrams, pattern blocks, geoboards).	Angles 138, 139	4, 17, 46, 50, 58, 72, 76, 78, 87, 90, 104, 111, 115, 132, 136, 147 Activity 1, 7, 12
PO 2. Name concrete objects and pictures of 3-dimensional solids (cones, spheres, and cubes).	2- dimensional 8, 41, 139 3- dimensional 69, 141	2- dimensional 41, 51, 60, 86, 90, 126, 132 Activity 7, 12
PO 3. Describe relationships between 2-dimensional and 3-dimensional objects (squares/cubes, circles/spheres, triangles/cones).	69, 106, 141, 145 Perpendicular / parallel 128, 129 Parts of a circle 119	90, 132 Activity 7
PO 4. Recognize similar shapes.	41, 69, 77, 106, 120	Activity 1
PO 5. Identify a line of symmetry in a 2-dimensional shape.	55	Activity 1

**Concept 2: Transformation of Shapes**  
 Apply spatial reasoning to create transformations and use symmetry to analyze mathematical situations.

PO 1. Recognize same shape in different positions (turn/rotation)	120	46, 72 Activity 1, 7
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**Concept 3: Coordinate Geometry**  
 Specify and describe spatial relationships using coordinate geometry and other representational systems.

PO 1. Identify points in the first quadrant of a grid using ordered pairs.	Line segment 138	Activity 4
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**CONCEPT 4: MEASUREMENT - UNITS OF MEASURE - Geometric Objects**  
 Understand and apply appropriate units of measure, measurement techniques, and formulas

PO 1. Select the appropriate measure of accuracy: <ul style="list-style-type: none"> <li>• length – centimeters, meters, kilometers,</li> <li>• capacity/volume – liters, and</li> <li>• mass/weight – grams.</li> </ul>	50, 62, 63, 108, 145	29, 140, 150 Activity 1
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PO 2. Tell time with one-minute precision (analog)	18, 65, 78, 89	64
PO 3. Determine the passage of time across months (units of days, weeks, months) using a calendar.	26, 27, 84, 89, 112, 152	12, 22, 38, 54, 64, 88
PO 4. Measure a given object using the appropriate unit of measure: <ul style="list-style-type: none"><li>length – centimeters, millimeters, meters, kilometers,</li><li>capacity/volume – liters, and</li><li>mass/weight – grams.</li></ul>	56, 62, 108, 135, 145	29, 150
PO 5. Record temperatures to the nearest degree in degrees Fahrenheit and degrees Celsius as shown on a thermometer.	32	Activity 10
PO 6. Compare units of measure to determine more or less relationships for: <ul style="list-style-type: none"><li>length – inches to feet; centimeters to meters,</li><li>time – minutes to hours; hours to days; days to weeks; months to years, and</li><li>money – pennies, nickels, dimes, quarters, and dollars.</li></ul>	16, 22, 32, 44, 50, 62, 63, 65, 74, 83, 108, 114, 121, 125, 129, 146	102, 117, 128
PO 7. Determine relationships for: <ul style="list-style-type: none"><li>volume – cups and gallons,</li><li>weight – ounces and pounds,</li><li>money – extend to amounts greater than one dollar.</li></ul>	33, 50, 51, 62, 63, 114, 121, 125, 134	
PO 8. Compare the length of two objects using U.S. customary or metric units.	50, 56	
PO 9. Determine the perimeter using a rectangular array.	86, 116	145
PO 10. Represent area using a rectangular array.	72, 124, 145	Activity 2

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**Strand 5: Structure and Logic**

**Concept 1: Algorithms and Algorithmic Thinking**

Use reasoning to solve mathematical problems in contextual situations.

PO 1. Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.	15, 83, 110, 123, 137, 151	20, 51, 67, 80, 84, 98, 113, 120, 133, 143, 148
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**Concept 2: Logic, Reasoning, Arguments, and Mathematical Proof**

Evaluate situations, select problem-solving strategies, draw logical conclusions, develop and describe solutions and recognize their applications.

PO 1. Draw conclusions based on existing information (e.g., All students in Ms. Dean’s 1st grade class are less than 7 years old. Rafael is in Ms. Dean’s class. Conclusion: Rafael is less than 7 years old.).	25, 83, 123, 126, 127, 141, 151	5, 7, 8, 14, 18, 20, 25, 26, 27, 32, 34, 37, 42, 43, 51, 52, 53, 59, 61, 62, 66, 67, 69, 74, 80, 81, 84, 92, 96, 98, 99, 103, 106, 108, 113, 118, 120, 131, 133, 140, 143, 148, 153  Activity 1, 6, 11
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