

Standards / Objectives	Excel Math Lesson Numbers	Stretch Lessons Activity Numbers
Strand 1: Number and Operations		
Concept 1: Number Sense		
PO 1. Convert between expressions for positive rational numbers, including fractions, decimals, percents, and ratios.	1, 18, 24, 27, 35, 40, 44, 46, 48, 52, 54, 61, 66, 67, 71, 74, 83, 90, 93, 94, 95, 97, 98, 99, 101, 105, 110, 111, 113, 114, 116, 128, 129, 133, 135, 140, 151	54, 62, 70, 86, 98, *109, 113, 117, *119, *131, 133, 142, 143, 155
PO 2. Use prime factorization to <ul style="list-style-type: none"> • express a whole number as a product of its prime factors and • determine the greatest common factor and least common multiple of two whole numbers. 	1, 6, 17, 26, 50, 56, 64, 103, 132	67, 72, 88, 90, 92, 99, 139 Activity 11
PO 3. Demonstrate an understanding of fractions as rates, division of whole numbers, parts of a whole, parts of a set, and locations on a real number line.	5, 18, 19, 27, 57, 106, 118, 119, 120	7, 12, 50 Activity 12
PO 4. Compare and order integers; and positive fractions, decimals, and percents.	2, 18, 22, 27, 47, 48, 49, 53, 57, 63 , 66, 67, 73, 74, 78, 87, 94, 97, 105, 111, 113, 116, 119, 123, 127, 128, 133, 135, 140	1, 3, 23, 29, 36, 75, 81, 143, 144 Activity 12
PO 5. Express that a number’s distance from zero on the number line is its absolute value.	*49, *63, *119, *130, *131	*23, *29, *36
PO 6. Express the inverse relationships between exponents and roots for perfect squares and cubes.	*59, 77 , *109, *139	*141
Concept 2: Numerical Operations		
PO 1. Apply and interpret the concepts of addition and subtraction with integers using models.	1, 2, 130, 131, 143, 144, 155	20, 32, 141
PO 2. Multiply multi-digit decimals through thousandths.	51, 79, 81, 94, 95, 102, 110, 116, 126, 129, 135, 138 Multiply Whole Numbers 12, 83, 103, 122, 136, 147 Add / Subtract Decimals 1, 35, 61	18, 38, 46, 47, 85 Whole Numbers, 31, 44, 73, 89



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PO 3. Divide multi-digit whole numbers and decimals by decimal divisors with and without remainders.	31, 52, 79, 81, 102, 111, 120, 126, 128, 129, 138, 140, 150, 152 Whole Numbers 9, 16, 26, 38, 41, 62, 82, 103, 134, 136, 147	38 Whole Numbers 44, 78, 87, 89, 98, 102, 115, 130
PO 4. Multiply and divide fractions.	18, 19, 85, 95, 98, 101, 104, 107, 112, 117, 118, 120, 126, 127, 128, 133, 142, 150, 153 Add / Subtract 5, 28, 39, 57, 62, 78, 93, 106, 146	69 Add / Subtract 49, 68, 96, 104, 124
PO 5. Provide a mathematical argument to explain operations with two or more fractions or decimals.	1, 31, 51, 79, 85, 94, 95, 101, 104, 106, 110, 111, 112, 117, 118, 135, 138, 142, 150, 153	35, 49, 69, 93
PO 6. Apply the commutative, associative, distributive, and identity properties to evaluate numerical expressions involving whole numbers.	1, 3, 6, 16, 37, 38	81
PO 7. Simplify numerical expressions (involving fractions, decimals, and exponents) using the order of operations with or without grouping symbols.	40, 48, 112 Whole Numbers 3, 37, 91	46, 47, 69, *75, 141 Whole Numbers 5, 22, 27, 63 , 132
Concept 3: Estimation		
PO 1. Use benchmarks as meaningful points of comparison for rational numbers.	20, *47, *48, 58, 61, 86, 98, 108, 119, 132, 134, 154	20, 35, 66, 103, 128
PO 2. Make estimates appropriate to a given situation and verify the reasonableness of the results.	20, 49, 58, 61, 86, 98, 108, 132, 134, 154	1, 17, 20, 31, 32, 35, 66, 103, 125, 128

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Strand 2: Data Analysis, Probability, and Discrete Mathematics		
Concept 1: Data Analysis (Statistics)		
PO 1. Solve problems by selecting, constructing, and interpreting displays of data, including histograms and stem-and-leaf plots.	2, 8, 40, 65, 69, 70, 94, 100	4, 11, 19, 21, 34, 60, 65, 81, 91, 92, 154 Activity 9, 10, 11
PO 2. Formulate and answer questions by interpreting, analyzing, and drawing inferences from displays of data, including histograms and stem-and-leaf plots.	2, 8, 40, 65, 69, 70, 94, 100	4, 11, 19, 21, 34, 60, 65, 81, 91, 92, 154 Activity 9, 10, 11
PO 3. Use extreme values, mean, median, mode, and range to analyze and describe the distribution of a given data set.	65, 70 Averages 55, 120	Activity 10, 14 Averages 47, 89, 138
PO 4. Compare two or more sets of data by identifying trends.	2, 8, 40, 65, 94, 100	Activity 10, 11
Concept 2: Probability		
PO 1. Use data collected from multiple trials of a single event to form a conjecture about the theoretical probability.	34, 69, 70, *97, *98, *133, 150	138, 146, 147
PO 2. Use theoretical probability to <ul style="list-style-type: none"> • predict experimental outcomes, • compare the outcome of the experiment to the prediction, and • replicate the experiment and compare results 	34, 69, 70, *97, *98, *133, 150	138, 146, 147
PO 3. Determine all possible outcomes (sample space) of a given situation using a systematic approach.	8, 34, 69, 70, *97, 150	19, 34, 40, 41, 50, 79, 97, 146, 147
Concept 3: Systematic Listing and Counting.		
PO 1. Build and explore tree diagrams where items repeat.	*8, *34, *40, *150	19, 34, 40, 41, 50, 75, 79, 97, *81, 141, 146, 147
PO 2. Explore counting problems with Venn diagrams using three attributes.	45, 56	33, 43, 52

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Concept 4: Vertex-Edge Graphs		
PO 1. Investigate properties of vertex-edge graphs <ul style="list-style-type: none"> • Hamilton paths, • Hamilton circuits, and • shortest route. 		Activity *8
PO 2. Solve problems related to Hamilton paths and circuits.		Activity *8

Strand 3: Patterns, Algebra, and Functions

Concept 1: Patterns		
PO 1. Recognize, describe, create, and analyze a numerical sequence involving fractions and decimals using all four basic operations.	40, 73 Whole Numbers 2, 8, 84, 100, 149 Objects 21, 33	12, 26, 93, 104 Whole Numbers 13, 15, 24, 30, 80, 81, 99, 139, 140, 141 Objects 109, 119, 121, 131, 151

Concept 2: Functions and Relationships		
PO 1. Recognize and describe a relationship between two quantities, given by a chart, table, or graph, using words and expressions.	2, 8, 49, 70, 72, 84, 100, 114, 115	11, 13, 16, 17, 21, 26, 33, 75, 81, 91

Concept 3: Algebraic Representations		
PO 1. Use an algebraic expression to represent a quantity in a given context.	1, 2, 9, 40, 43, 54, 55, 69, 72, 89, 92, 100, 114, 115, 117, 133, 151	1, 9, 16, 17, 21, 22, 26, 31, 37, 41, 42, 46, 47, 48, 49, 50, 54, 60, 63, 65, 68, 69, 75, 76, 81, 82, 89, 91, 101, 123, 124, 138, 150, 154
PO 2. Create and solve two-step equations that can be solved using inverse properties with fractions and decimals.	1, 3, 9, 40, 69, 117, 133, 151 Whole Numbers 43, 54, 55, 72, 89, 92, 96, 100, 114	9, 17, 21, 22, 26, 31, 37, 41, 42, 46, 47, 48, 49, 50, 68, 69, 91, 101, 124, 138, 150, 152 Whole Numbers 54, 60, 63, 65, 75, 76, 81, 82, 89, 123, 126, 138, 154
PO 3. Translate both ways between a verbal description and an algebraic expression or equation.	1, 2, 9, 40, 43, 54, 55, 69, 72, 89, 92, 100, 114, 115, 117, 133, 151	1, 9, 16, 17, 21, 22, 26, 31, 37, 41, 42, 46, 47, 48, 49, 50, 54, 60, 63, 65, 68, 69, 75, 76, 81, 82, 89, 91, 101, 123, 124, 138, 150, 154
PO 4. Evaluate an expression involving the four basic operations by substituting given fractions and decimals for the variable.	48, *69, *133, 148, 151 Whole Numbers 3, 40, 91, 100, 114	26, 46, 49, 50, 68, 69, 96, 110, 138 Whole Numbers 5, 8, 22, 54, 81, 87, 102, 115, 130



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Concept 4: Analysis of Change		
PO 1. Determine a pattern to predict missing values on a line graph or scatterplot.	*8, *40, 70, *84, 100, 115	
Strand 4: Geometry and Measurement		
Concept 1: Geometric Properties		
PO 1. Define π (pi) as the ratio between the circumference and diameter of a circle and explain the relationship among the diameter, radius, and circumference.	60, 125 Basic Geometry 14, 15, 21, 25	55 Activity 1, 3 Basic Geometry 14, 45, 51, 53, 57, 58, 64, 71, 108, 109, 116, 118, 119, 129 Activity 5, 6, 7
PO 2. Solve problems using properties of supplementary, complementary, and vertical angles.	25, 33, 80, 88	Activity 2
Concept 2: Transformation of Shapes		
PO 1. Identify a simple translation or reflection and model its effect on a 2-dimensional figure on a coordinate plane using all four quadrants.	*23, *76, *145	*61 Activity 2
PO 2. Draw a reflection of a polygon in the coordinate plane using a horizontal or vertical line of reflection.	*23, *76, *145	*61 Activity 2
Concept 3: Coordinate Geometry		
PO 1. Graph ordered pairs in any quadrant of the coordinate plane.	32, 68, 76, 109, 115, 145	
PO 2. State the missing coordinate of a given figure on the coordinate plane using geometric properties to justify the solution.	36, 76, 115 (line), 145	

*Gives opportunity to teach specific State Standard



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CONCEPT 4: MEASUREMENT		
PO 1. Determine the appropriate unit of measure for a given context and the appropriate tool to measure to the needed precision (including length, capacity, angles, time, and mass).	10, 11, 13, 25, 29, 36, 41, 43, 92, 148	39, 44, 55, 137, 148 Activity 1, 9
PO 2. Solve problems involving conversion within the U.S. Customary and within the metric system.	10, 11, 13, 43, 126, 137, 141	39, 44, 74, 89, 111
PO 3. Estimate the measure of objects using a scale drawing or map.	*10, 11, 29	28, 39
PO 4. Solve problems involving the area of simple polygons using formulas for rectangles and triangles.	30, 124, 148	28, 39, 55, 56, 77, 84 Activity 3
PO 5. Solve problems involving area and perimeter of regular and irregular polygons.	30, 75	28, 39, 55, 63 Activity 3
PO 6. Describe the relationship between the volume of a figure and the area of its base.	59, 108, 139 Surface Area 100	39, 59, 63 Activity 5 Activity 4 (surface area) Activity 13 (Density) Activity 14 (Range / Velocity)
Strand 5: Structure and Logic		
Concept 1: Algorithms and Algorithmic Thinking		
PO 1. Analyze algorithms for multiplying and dividing fractions and decimals using the associative, commutative, and distributive properties.	*94, 151	152
PO 2. Create and justify an algorithm to determine the area of a given compound figure using parallelograms and triangles.	30, *75, *121, 124 , 139, 145, 148 Surface Area 100 Circle Area 125	28, 39, *55, *63, *118 Activity *2, 4 (Surface Area)



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Concept 2: Logic, Reasoning, Arguments, and Mathematical Proof		
PO 1. Analyze a problem situation to determine the question(s) to be answered.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 2. Identify relevant, missing, and extraneous information related to the solution to a problem.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 3. Analyze and compare mathematical strategies for efficient problem solving; select and use one or more strategies to solve a problem.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 4. Apply a previously used problem-solving strategy in a new context.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 5. Represent a problem situation using multiple representations, describe the process used to solve the problem, and verify the reasonableness of the solution.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153



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PO 6. Communicate the answer(s) to the question(s) in a problem using appropriate representations, including symbols and informal and formal mathematical language.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 7. Isolate and organize mathematical information taken from symbols, diagrams, and graphs to make inferences, draw conclusions, and justify reasoning.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 8. Make and test conjectures based on information collected from explorations and experiments.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153
PO 9. Solve simple logic problems, including conditional statements, and justify solution methods and reasoning.	1, 2, 4, 7, 8, 9, 13, 31, 39, 41, 43, 70, 72, 79, 89, 92, 96, 150, 152, 153	2, 4, 6, 7, 9, 10, 11, 12, 13, 15, 17, 18, 21, 24, 25, 26, 30, 31, 32, 33, 35, 37, 38, 39, 42, 43, 44, 46, 47, 48, 50, 52, 54, 65, 68, 69, 76, 79, 80, 81, 82, 85, 88, 90, 91, 92, 94, 95, 97, 100, 101, 105, 106, 107, 112, 114, 120, 122, 123, 124, 125, 126, 127, 134, 135, 136, 137, 138, 139, 140, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153