

Standards / Objectives	Excel Math Lesson Numbers	Stretch Lesson Numbers Activity Numbers
<b>Standard 1</b> <b>Students will expand number sense to include operations with rational numbers.</b>		
<b>Objective 1: Represent rational numbers in a variety of ways.</b>		
a. Recognize a rational number as a ratio of two integers, $a$ to $b$ , where $b$ is not equal to zero.	40, 66, 101(reciprocals), 107, *128	Activity 12
b. Change whole numbers with exponents to standard form (e.g., $24 = 16$ ) and recognize that any non-zero whole number to the zero power equals 1 (e.g., $90 = 1$ ).	*58, <b>77</b>	*76, 141
c. Write a whole number in expanded form using exponents (e.g., $876,539 = 8 \times 10^5 + 7 \times 10^4 + 6 \times 10^3 + 5 \times 10^2 + 3 \times 10^1 + 9 \times 10^0$ ).	*1, *24, *58, 77, 95 Roman Numerals: 54	74, *76, 141 Roman Numerals: 62, 86, 98, 113, 117, 133, 142, 155
d. Express numbers in scientific notation using positive powers of ten.	*24, *58, *77, *81, *95, *102, *107	*76
<b>Objective 2: Explain relationships and equivalencies among rational numbers.</b>		
a. Place rational numbers on the number line.	*27, *35, *44, *46, *48, 49, *53, *61, *73, <b>109, 119, 130</b> , 131	23, 29, 36
b. Compare and order rational numbers, including positive and negative mixed fractions and decimals, using a variety of methods and symbols, including the number line and finding common denominators	2, 22, 27, *44, *46, 47, 48, 53, 57, 61, 63, 73, 74, 81, 87, 90, 97, 99, 109, 110, 111, 113, 119, 123, 126, 129, 130, 135 Rounding 108, 123, 134	1, 3, 20, 32, 144 Activity 12
c. Find equivalent forms for common fractions, decimals, percents, and ratios, including repeating or terminating decimals.	*5, 18, 35, 44, 46, 52, 53, 57, 66, 67, 71, 74, 78, 90, 94, 97, 99, 105, 111, 113, 116, 126, 128, 129, 135	109, *119, *131, 144 Activity 12
d. Relate percents less than 1% or greater than 100% to equivalent fractions, decimals, whole numbers, and mixed numbers.	*44, *52, *67, *71, *97, *105, <b>111</b> , *116, <b>135</b>	
e. Recognize that the sum of an integer and its additive inverse is zero.	*38	

\*Gives opportunity to teach specific State Standard



## Utah 6<sup>th</sup> Grade Standards / *Excel Math* Correlation

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<b>Objective 3: Use number theory concepts to find prime factorizations, least common multiples, and greatest common factors.</b>		
a. Determine whether whole numbers to 100 are prime, composite, or neither.	50	72, 88
b. Find the prime factorization of composite numbers to 100.	50	*72, 88
c. Find the greatest common factor and least common multiple for two numbers using a variety of methods (e.g., list of multiples, prime factorization).	1, 9, 17, 26, 50, 56, 64, 103, 132	67, 90, 92, 99, 139
<b>Objective 4: Model and illustrate meanings of operations and describe how they relate.</b>		
a. Relate fractions to multiplication and division and use this relationship to explain procedures for multiplying and dividing fractions.	5, 19, 44, 46, 83, 85, 99, 101, <b>112</b>	
b. Recognize that ratios derive from pairs of rows in the multiplication table and connect with equivalent fractions.	40, *99, 148	Activity *12
c. Give mixed number and decimal solutions to division problems with whole numbers.	*13, *66, 83, 99, 128	
<b>Objective 5: Solve problems involving multiple steps.</b>		
a. Select appropriate methods to solve a multi-step problem involving multiplication and division of fractions and decimals.	Whole Numbers: 4, 6, 8, 9, 33, 41, 43, 55, 58, 89, 92, 96, 108, 134, 137, 141, 154  Fractions / Decimals: 5, 18, 19, 31, 39, 40, 42, 47, 67, 69, 72, 79, 86, 87, 94, 97, 99, 105, 110, 116, 117, 120, 126, 133, 151, 153  Deductive Reasoning: 7	Whole Numbers: 2, 3, 4, 6, 10, 12, 13, 15, 17, 18, 21, 24, 25, 26, 28, 30, 31, 32, 37, 39, 42, 48, 54, 60, 65, 69, 91, 120, 123, 132, 135, 139, 148, 149, 154  Fraction / Decimals: 7, 35, 38, 44, 50, 68, 82, 84, 85, 89, 92, 93, 101, 124, 143, 150, 152  Deductive Reasoning: 10, 105, 106, 107, 112, 114, 120, 122, 126, 134, 136, 137, 145, 153
b. Use estimation to determine whether results obtained using a calculator are reasonable.	4, 20, 31, 39, 40, 41, 42, 47, 55, 58, 67, 69, 72, 79, 86, 89, 92, 94, 96, 97, 105, 108, 110, 116, 120, 126, 133, 134, 137, 141, 154	1, 3, 4, 6, 7, 12, 13, 15, 17, 18, 21, 24, 25, 26, 28, 30, 31, 32, 35, 37, 38, 39, 42, 44, 48, 50, 54, 67, 69, 84, 89, 91, 101, 103, 120, 123, 124, 125, 132, 135, 139, 143, 148, 149, 152

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c. Use estimation or calculation to compute results, depending on the context and numbers involved in the problem.	4, 20, 31, 39, 40, 41, 42, 47, 55, 58, 67, 69, 72, 79, 86, 89, 92, 94, 96, 97, 105, 108, 110, 116, 120, 126, 133, 134, 137, 141, 154	1, 3, 4, 6, 7, 12, 13, 15, 17, 18, 21, 24, 25, 26, 28, 30, 31, 32, 35, 37, 38, 39, 42, 44, 48, 50, 54, 67, 69, 84, 89, 91, 101, 103, 120, 123, 124, 125, 132, 135, 139, 143, 148, 149, 152
d. Solve problems involving ratios and proportions.	*5, 8, 9, 40, *47, 66, 72, 97, 98, 148, 151, 152	17, 54, 84, 109, 119, 131  Activity 6
<b>Objective 6: Demonstrate proficiency with the four operations, with positive rational numbers, and with addition and subtraction of integers.</b>		
a. Multiply and divide a multi-digit number by a two-digit number, including decimals.	6, 9, 12, 16, 26, 31, 38, 41, 51, 52, 62, 71, 81, 82, 86, 89, 92, 94, 95, 96, 102, 103, 107, 122, 126, 128, 132, 134, 136, 138, 140, 147, 151, 152, 154	12, 28, 31, 38, 70, 76, 77, 78, 84, 87, 98, 102, 111, 115, 130, 143, 155
b. Add, subtract, multiply, and divide fractions and mixed numbers.	28, 39, 44, 46, 62, 78, 83, 85, 93, 95, 104, 106, 112, 116, 117, 118, 120, 126, 133, 142, 146, 151, 153	49, 96, 101, 104, 152
c. Add and subtract integers.	1, 98, 130, 131, 141, 143, 144 Multiply / Divide: 155	1, 9, 20, 41, 62, 66, 67, 75, 86, 91, 103, 113, 117, 124, 125, 126, 128, 133, 142, 153, 154
<b>Standard 2</b> <b>Students will use patterns, relations, and algebraic expressions to represent and analyze mathematical problems and number relationships.</b>		
<b>Objective 1: Analyze algebraic expressions, tables, and graphs to determine patterns, relations, and rules.</b>		
a. Describe simple relationships by creating and analyzing tables, equations, and expressions.	8, 37, 40, 69, 100, 114, 115, 116 Patterns: 21, 33, 84, 149	12, 13, 15, 21, 60, 81, 93, 110, 123, 141 Patterns: 26, 93, 151
b. Draw a graph and write an equation from a table of values.	8, 40, 69, 100, 114, 115	81, 110, 141
c. Draw a graph and create a table of values from an equation.	*8, 40, 69, 100, 114, 115	81, 110, 141
<b>Objective 2: Write, interpret, and use mathematical expressions, equations, and formulas to represent and solve problems that correspond to given situations.</b>		

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a. Solve single variable linear equations using a variety of strategies.	*3, *8, *32, 36, 40, 48, 57, 61, *68, 83, 91, 96, <b>100</b> , 114, 115, 116	46, 75, 81, 96, 110, <b>141</b> Patterns: 12, 13, 15, 24, 26, 30, 94, 104, 109, 121, 131, 140
b. Recognize that expressions in different forms can be equivalent and rewrite an expression to represent a quantity in a different way.	3, 6, 16, 36, 37, 40, 46, 48, 57, 61, 83, 91, 96, 100, 114, 115, 116	16, 69, 75, 96, 110, 123, 128, 132, 141
c. Evaluate and simplify expressions and formulas, substituting given values for the variables (e.g., $2x + 4$ ; $x = 2$ ; therefore, $2(2) + 4 = 8$ ).	3, 18, *37, 40, 48, 61, 83, *91, 100, 114, 115, 116 Union of Sets: 45	5, 8, 22, 27, 46, 73, 78, 81, 83, 87, 96, 102, 110, 115, 128, 130, 132, 141
<p><b>Standard 3</b></p> <p><b>Students will use spatial and logical reasoning to recognize, describe, and analyze geometric shapes and principles.</b></p>		
<p><b>Objective 1: Identify and analyze attributes and properties of geometric shapes to solve problems.</b></p>		
a. Identify the midpoint of a line segment and the center and circumference of a circle.	60, 125	55 Activity 1, 3
b. Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms.	25, 80, 88	Activity *2
c. Develop and use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle in a triangle or quadrilateral.	Defining Terms: 14, 15, 21 *25, 33, 80, *88, 148	14, 15, 53, 71, 77 Activity *2, 5 (3-dimensional), 8
<p><b>Objective 2: Visualize and identify geometric shapes after applying transformations on a coordinate plane.</b></p>		
a. Rotate a polygon about the origin by a multiple of $90^\circ$ and identify the location of the new vertices.	*23, *32, *36	51, 57, 58, 64
b. Translate a polygon either horizontally or vertically on a coordinate grid and identify the location of the new vertices.	*23, *32, *36, *68, *76, *145	
c. Reflect a polygon across either the x- or y-axis and identify the location of the new vertices.	*23, *32, *36, *68, *76, *145	*61

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**Standard 4**  
**Students will understand and apply measurement tools and techniques and find the circumference and area of a circle.**

**Objective 1: Describe and find the circumference and area of a circle.**

a. Explore the relationship between the radius and diameter of a circle to the circle's circumference to develop the formula for circumference.	60, 125	55 Activity 3
b. Find the circumference of a circle using a formula.	60, 125	55 Activity 3
c. Describe pi as the ratio of the circumference to the diameter of a circle.	60, 125	*55
d. Decompose a circle into a number of wedges and rearrange the wedges into a shape that approximates a parallelogram to develop the formula for the area of a circle.	60, *125 Area of Parallelogram: 121 Area of Triangle: 124	*55 Activity *3
e. Find the area of a circle using a formula.	*60, *125 Area / Perimeter of Polygon: 30, 75, 76	Polygons: 55, 56, 63, 77 Activity 3

**Objective 2: Identify and describe measurable attributes of objects and units of measurement, and solve problems involving measurement.**

a. Recognize that measurements are approximations and describe how the size of the unit used in measuring affects the precision.	10, 11, 13, 29	28, 39, *108, *116, *129
b. Convert units of measurement within the metric system and convert units of measurement within the customary system.	10, 11, 13, 29, 59, 126, 137, 141, 151, 152	39, 59, 74, 89, 111
c. Compare a meter to a yard, a liter to a quart, and a kilometer to a mile.	10, 11, 29, *126, *137, 141	39, 111
d. Determine when it is appropriate to estimate or use precise measurement when solving problems.	10, 11, 13, 29, 137	28, 39, 55
e. Derive and use the formula to determine the surface area and volume of a cylinder.	<b>139</b> Rectangular Prism: 59, 100, 108	*118 Prism Volume: 59 Activity 3 (area / perimeter), 4, 13 (Density), 14 (Range / Velocity)

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<p><b>Standard 5</b></p> <p><b>Students will analyze, draw conclusions, and make predictions based upon data and apply basic concepts of probability.</b></p>		
<p><b>Objective 1: Design investigations to reach conclusions using statistical methods to make inferences based on data.</b></p>		
a. Design investigations to answer questions.	65, 70, *94, 150	*4, *11, 33, 43, 52 Activity 9, 10, 11
b. Extend data display and comparisons to include scatter plots and circle graphs.	65, 70, 94, 150	33, 43, 52 Activity 9, 10, 11
c. Compare two similar sets of data on the same graph and compare two graphs representing the same set of data.	2, 65, 70, 150	Activity 9, 10
d. Recognize that changing the scale influences the appearance of a display of data.	2, 65, 70, 94, 150	Activity 9, 10
e. Propose and justify inferences and predictions based on data.	2, 65, 70, 94, 150 Averages: 55, 120 Mean, Median, Mode: 65	4 Activity 9, 10 Averages: 138
<p><b>Objective 2: Apply basic concepts of probability and justify outcomes.</b></p>		
a. Write the results of a probability experiment as a fraction between zero and one, or an equivalent percent.	34, 97, 99, 133, 150	138, 146, 147 Possibilities: 19, 34, 40, 79, 80, 97
b. Compare experimental results with theoretical results (e.g., experimental: 7 out of 10 tails; whereas, theoretical 5 out of 10 tails).	34, 97, 99, 133, 150	138, 146, 147
c. Compare individual, small group, and large group results of a probability experiment in order to more accurately estimate the actual probabilities.	34, 97, 99, 133, 150	138, 146, 147

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