

St. Mark Evangelical Lutheran Church and School

Wisconsin Evangelical Lutheran Synod



Math Curriculum Guide

Philosophy of Math

Mathematics is included in the curriculum of St. Mark Lutheran School because it is really a study of God's creation. As God created the world with order, so we use mathematics to put aspects of his creation in order. Every concept reveals more about that order he used at creation. Our mathematics curriculum at St. Mark focuses on three areas. First, our school will teach the procedures in mathematics that involve the four operations: addition, subtraction, multiplication, and division. Second, our school will teach problem solving strategies that allow students the ability to solve higher level word problems. Third, our school will cover the concepts that teach geometry.

Assessment

Each grade has specified grade level objectives designed to promote the students' academic growth and achievement. Teachers will assess the students as they master these objectives through various formative and summative assessments. Assessments include daily work, quizzes, tests, daily assignments, classroom discussion, group work, math activities and games. These assessments assure that each student is learning the objectives outlined in this curriculum guide.

Exit Goals for Graduation

By the end of 8th grade students will be able to...

1. Will appreciate that God created the world with order. The various concepts taught and learned in math help us understand his order.
2. Understand that mathematics teaches important skills for a person to use in daily life.
3. Will master the four methods of operation: addition, subtraction, multiplication, and division.
4. Will display appropriate methods to use the four methods of operation while doing fractions and decimals.
5. Will be able to measure in both customary units and metric units in the following ways: length, volume, weight/mass, and temperature.
6. Will know how to properly use a ruler, protractor, and compass when measuring and sketching.

7. Will know how to properly use technology (calculator and computer applications) to assist them with the four methods of operation and necessary graphing skills when performing algebra.
8. Will use various problem solving strategies (make an organized list, guess and check, set up an equation, solve a simpler problem, draw a diagram, act it out, work backwards, look for a pattern, make a table) when solving story problems.
9. Will understand and use basic geometry concepts and terms.

Preschool Math Objectives

Knowledge Objectives

1. Students will understand that numbers represent the quantity of objects.
2. Students will understand one-to-one correspondence and be able to count objects.
3. Students will understand the concept of position in a sequence. (e.g. first, second, last etc.)
4. Students will understand common language for comparing quantity of objects. (e.g. “more than,” “less than”)
5. Students will understand that a whole object can be separated into halves.
6. Students will understand that numbers are used in real-world situations. (e.g. In play, calendar work, phone numbers, addresses etc.)
7. Students will understand that the quantity of objects can change by adding or taking away objects.
8. Students will understand basic concepts of time (e.g. Today, tomorrow, morning, evening) and the sequence of varying events. (e.g. What comes after lunch)
9. Students will understand the common language of measurement. (e.g. Big, little, long, short, light, heavy.)
10. Students will understand how to order objects qualitatively by measurable attributes. (e.g. smallest to largest, lightest to heaviest, shortest to longest.)
11. Students will understand that quantities can be estimated in real-world situations.
12. Students will understand that different sized containers will hold more or less volume.

Attitude/Belief Objectives

1. Students will have the attitude and belief that God has given us the ability to use and understand mathematical concepts.
2. Students will believe that mathematical concepts are useful and necessary in their earthly life.

Skill/Behavior Objectives

1. Students will identify and write numbers 0-10.
2. Students will count by ones to 20 or higher.
3. Students will use common language for comparing quantity of objects. (e.g. “more than,” “less than”)
4. Students will separate whole objects and fold paper into halves.
5. Students will use numbers in real-world situations. (e.g. play, calendar work, phone numbers, addresses etc.)
6. Students will use basic vocabulary for concepts of time in conversation and in class.
7. Students will use the common language of measurement in conversation and in class.
8. Students will order objects or pictures qualitatively by measurable attributes.
9. Students will estimate objects. (e.g. candies, blocks, people)
10. Students will experiment with volume using different sized containers with solids and liquids.

Kindergarten Math Objectives

Knowledge Objectives

Students will...

Number Sense:

1. Count by 1s, 2s, 5s, and 10s
2. Identify, read, write, and compare numbers to 30
3. Identify numbers on a hundred number chart
4. Order one and two digit numbers
5. Identify and describe the order and position of objects and numbers using terms
6. Use a number line to 20
7. Recognize odd and even numbers
8. Identify ordinal position

Concepts of Whole Number Operations:

9. Work on addition and subtraction situations
10. Solve division problems
11. Identify one more and one less than an object
12. Identify doubles

Fractions:

13. Identify and compares fractions

Money:

14. Identify pennies, nickels, dimes, quarters, and one dollar bills
15. Find the value of a set of coins

Patterns, Algebra, and Functions:

16. Identify various patterns
17. Identify the missing shape, number, or design in a repeating pattern or sequence

Geometry:

18. Describe compare, and order concrete objects by relative position and attributes
19. Identify one and two dimensional geometric shapes in concrete objects
20. Identify similar shapes
21. Identify lines of symmetry and symmetrical designs
22. Identify right and left
23. Identify geometric solids including cones, cubes, spheres, and cylinders

Measurement:

24. Identify and describe yesterday, today, and tomorrow
25. Identify and describe days of the week and months of the year
26. Identify seasons

Temperature:

27. Identify hot and cold objects
28. Compare differences in seasonal temperatures

Linear Measure:

29. Compare and order concrete objects by length and/or height

Weight:

30. Compare and order objects by weight

Capacity: (mass)

31. Compare and order objects by capacity

Area:

32. Compare and order objects by area

Data Analysis and Statistics:

33. Identify most, fewest, and same on a graph

Skill Objectives

Students will....

Number Sense:

1. Estimate and count collections of concrete objects to 100
2. Put number cards in order to 20
3. Use terms as before, after, and between; greatest and least; inside and outside; and more, same, and less
4. Locate points and counts forward and backward on a number line

Concepts of Whole Number Operations:

5. Use concrete objects and pictures to model and solve addition and subtraction problems
6. Divide a set of concrete objects

Fractions:

7. Divide a shape in half
8. Separate a whole into equal halves

Money:

9. Count pennies, nickels, dimes, quarters, and one dollar bills
10. Write money amounts to \$1.00 using dollar and cent symbols
11. Select coins for a given amount

Patterns, Algebra, and Functions:

12. Make predictions about, and creates patterns of color, shape, sound, and movement
13. Use manipulatives to make different patterns

Geometry:

14. Describe, sort, and compare one and two dimensional geometric shapes in concrete objects
15. Explore transformations: slides, turns, and flips
16. Create lines of symmetry and symmetrical designs
17. Solve spatial problems using manipulatives
18. Make and cover designs using pattern blocks
19. Make and copy designs on a geoboard
20. Make and cover designs using tangrams

Measurement:

21. Sequence daily events
22. Read a calendar and identify the date
23. Tell and show time to the hour

Linear Measure:

24. Estimate and measure lengths using nonstandard units
25. Estimate and measure distance using nonstandard units
26. Measures length using customary units (inches)

Weight:

27. Estimate weight

Capacity:

28. Measure capacity using nonstandard units

29. Measure to follow a pictograph

Developing Skills for Problem Solving:

32. Make predictions

Strategies for Problem Solving:

33. Act out or models a problem

34. Draw a picture

35. Guess, check, and revise

36. Look for a pattern

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.

2. The students will understand that math teaches them how to solve problems in every day life.

3. The students will understand that they will build upon knowledge and skills they learn in order to develop and master new skills.

4. The students will think math can be fun!

1st Grade Objectives

Knowledge Objectives

Number Sense:

1. The children will compare and order numbers to 100 using objects, pictures and symbols.
2. The children will represent one-two-and three digit numbers using concrete objects and pictures.
3. The children will identify place value and demonstrate regrouping in numbers up to 1,000.
4. The children will estimate and count collections of concrete objects.
5. The children will write numbers using words.
6. The children will identify odd and even numbers.
7. The children will identify a dozen and half dozen.
8. The children will identify pairs.
9. The children will be able to locate numbers on a number line.

Concepts of Whole Number Operation

10. The children will show the meaning of addition and subtraction.
11. The children will show the meaning of addition and subtraction.
12. The children will identify addends and sums
13. The children will use the inverse relationship between subtraction and addition to check answers.

Whole Number Computation:

14. The children will use concrete objects or pictures to add single-object numbers.
15. The children will master addition facts to 18.
16. The children will identify one more than a number.
17. The children will identify ten more than a number.
18. The children will estimate a sum.
19. The children will estimate to round a number to the nearest tenth.
20. The children will add using mental computation.
21. The children will add three single-digit numbers.
22. The children will solve addition problems with two or three digit numbers.
23. The children will add two-digit numbers without regrouping.
24. The children will use concrete objects or pictures to subtract single-digit numbers.
25. The children will master subtraction facts to 18
26. The children will identify one less than a number.
27. The children will identify ten less than a number.
28. The children will subtract two-digit numbers without regrouping.

Fractions and Decimals:

29. The children will separate whole shapes into fractional parts.
30. The children will identify, know the value of, and count pennies, nickels, dimes, and quarters.

Money:

31. The children will identify, know the value of, and count pennies, nickels, dimes, and quarters.
32. The children will identify one, five, ten, and twenty dollar bills.

33. The children will read and write money amounts to \$1.00

Patterns:

34. The children will identify and create patterns of color, shape, and sound.

35. The children will identify the missing shape, number, or design in a repeating pattern.

Algebra:

36. The children will use comparison symbols.

37. The children will write and solve number sentences for problems involving addition and subtraction.

Shapes and Spatial Relationships:

38. The children will describe and identify two and three dimensional geometric figures.

39. The children will arrange and describe objects by positional words and phrases.

40. The children will identify first, last, between and middle position.

41. The children will identify left and right.

42. The children will identify and create lines of symmetry.

43. The children will identify and create congruent shapes, designs, and line segment.

44. The children will make and cover designs with pattern blocks and make and copy designs on a geoboard.

Time and Date:

45. The children will read and show time to the hour and half hour on analog and digital clocks

46. The children will identify dates on calendar.

47. The children will identify days of the week and months of the year.

48. The children will order events by time.

Temperature

49. The children will read a Fahrenheit thermometer to the nearest 10 degrees.

50. The children will identify cool, warm, and hot temperatures.

Linear Measure:

51. The children will compare and order objects by length and weight using comparison and nonstandard units.

52. The children will measure length using inch, foot, yard, and cm.

53. The children will draw line segments using inches and cm

Weight:

54. The children will estimate weight.

55. The children will compare objects by weight.

Capacity:

56. The children will identify and use measure cups, quarts, and gallons.

Data Analysis and Statistics:

57. The children will sort and classify objects by common attributes.

58. The children will to use tally marks and count them.

59. The children will learn to make and use bar graphs and pictographs.

Probability:

60. The children will identify steps in a process.

61. The children will categorize information.

62. The children will draw picture to solve a problem.

63. The children will look for a pattern.

64. The children will write number sentences.

Skill Objectives

Number Sense:

1. The children can put numbers in order from 1 to 100.
2. The children can tell the number that comes before and after a given number.
3. The children can match numbers to objects.
4. The children can arrange objects into ordinal positions.

Concepts of Whole Number Operations:

5. The children can write addition sentences.
6. The children can write subtraction sentences.

Whole Number Computation:

7. The children have learned and can say the “doubles rap”
8. The children can put the larger number of an addition sentence in their head and then count on the other number to add mentally.
9. The children can do mental subtractions by putting the number being subtracted in their head and then add or count on until they get the total and the number they count is the subtraction answer.

Fractions:

10. The children can draw the lines to divide a shape into fractional parts.
11. The children can look at an object divided into parts and tell what fraction is being shown.

Money:

12. The children can count pennies, nickels, dimes, and quarters, to pay for objects they buy in our classroom.
13. The children can give the correct paper money: 1’s, 5’s, and 10’s to buy items in our classroom.

Algebra:

14. The children can use the “greater than” and “less than” symbols to write mathematical sentences.
15. The children can sort pattern blocks by shape, color, and size.
16. The children can draw congruent shapes.

Time and Date:

17. The children can tell time by using both the analog and digital clocks.
18. The children can write the month, day, and year on their math lessons as well as which day of the week it is.
19. The children can write the correct number of tall marks on their math lesson to match the date that day.
20. The children can draw and read bar graphs and pictographs.

Strategies for Problem Solving:

21. The children can draw pictures for both addition and subtraction sentences.
22. The children can look for patterns to solve math problems.

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.

2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.

2nd Grade Objectives

The students will...

1. Read and identify numbers to 100
2. Identify right and left
3. Identify one more and one less than a number
4. Graph data on a graph
5. Tell and show time to the hour
6. Write numbers to 100
7. Addition facts: doubles with sums to 18
8. Identify the attributes of pattern blocks
9. Identify ordinal position to sixth
10. Create and read a repeating pattern
11. Identify and act out “some, some more” stories
12. Compare numbers to 50
13. Compare and order objects by size
14. Addition facts: adding 0 and adding 1
15. Identify addends, sums and commutative property of addition
16. Use logical reasoning to solve a problem
17. Solve a problem by acting it out
18. Cover a design using pattern blocks
19. Identify and act out “some, some went away” stories
20. Identify the time on hour ago and one hour from now
21. Number a clock face
22. Identify even and odd numbers
23. Identify ordinal position to twelfth
24. Addition facts: adding 2
25. Create and read a repeating pattern
26. Identify days of the week
27. Create and read a pictograph
28. Draw a pictograph
29. Identify polygons
30. Identify fractional parts of a whole
31. Adding 10 to single-digit numbers
32. Addition fact: adding 9
33. Use logical reasoning to solve a problem
34. Solve a problem by acting it out
35. Create a color pattern
36. Identify and sort common geometric shapes by attribute
37. Drawing pictures and writing number sentences for “some, some more” and “some, some went away” stories
38. Divide a shape in half
39. Shading one half of a shape
40. Identify if a fractional part of a whole is closer to 0, $\frac{1}{2}$, or 1
41. Divide a square in half two different ways

42. Addition facts: doubles plus 1
43. Identify geometric shape pieces that differ in one way
44. Tell and who time to the half hour
45. Estimating temperature
46. Read a thermometer to the nearest 10 degrees
47. Counting dimes and pennies
48. Write addition and subtraction fact families
49. Addition facts: sums of 8 and 9
50. Drawing a picture to solve a problem
51. Looking for a pattern to solve a problem
52. Identify geometric shape pieces that are alike in only one way
53. Create and read a bar graph
54. Use tally marks
55. Count by 5's
56. Identify horizontal, vertical and oblique lines
57. Divide a whole into halves, fourths, and eighths
58. Compare halves, fourths, and eighths
59. Write a unit fraction using fraction notation
60. Addition facts: sums of 10
61. Weigh objects using nonstandard units
62. Comparing and ordering objects by weight
63. Add 10 to a multiple of 10
64. Find a missing number on a piece of the hundred number chart
65. Identify pairs
66. Divide a set of objects into groups of two
67. Identify tens and ones
68. Identify halves, fourths, and eighths of a whole
69. Creating and reading a bar graph
70. Addition facts: sums of 11
71. Make an organized list to solve a problem
72. Measure with one-inch color tiles
73. Name fractional parts of a whole
74. Compare fractional parts of a whole
75. Write a fraction using fraction notation
76. Trade pennies for dimes
77. Measure to the nearest inch
78. Add 10 to a two-digit number
79. Addition facts: sums of 12
80. Identify 1-cup and $\frac{1}{2}$ cup measuring cups, tablespoons, teaspoons, and $\frac{1}{2}$ teaspoons
81. Read a recipe
82. Identify similarities and differences among coins
83. Count nickels
84. Write the date using digits
85. Create and read a Venn diagram
86. Order two-digit numbers
87. Addition facts: sums of 13 and 14

88. Select the appropriate tool to measure capacity
89. Measure ingredients for a recipe
90. Counting dimes, nickels and pennies
91. Identify a line of symmetry
92. Create a symmetrical design
93. Add two-digit numbers using dimes and pennies
94. Addition facts: sums of 15, 16, 17, and 18
95. Measure to the nearest foot
96. Draw a number line
97. Draw line segments to the nearest inch
98. Locate points on a number line
99. Make polygons on a geoboard
100. Identify the angles of a polygon
101. Add three or more single-digit numbers
102. Identify the associative property of addition
103. Name a fractional part of a set
104. Subtract 0 facts
105. Draw a picture to solve a problem
106. Identify and create congruent shapes
107. Add two-digit numbers with regrouping ,using dimes and pennies
108. Use the addition algorithm
109. Subtracting 1 facts
110. Identify and create similar shapes and designs
111. Create and read a Venn diagram
112. Identify am and pm
113. Identify noon and midnight
114. Identify dozen and half dozen
115. Add three two-digit numbers
116. Read a thermometer to the nearest 2 degrees Fahrenheit
117. Subtracting 2 facts
118. Solve a problem using guess and check method
119. Use mental computation to subtract 10 from a two-digit number
120. Measuring and drawing line segments to the nearest half inch
121. Add two-digit numbers with a sum greater than 100
122. Represent numbers using base ten blocks
123. Ordering numbers using base ten blocks
124. Subtracting 3 facts
125. Identify gallon, half-gallon, quart, and liter containers
126. Estimating and finding capacity of containers
127. Identifying the place value
128. Writ a three-digit number for a model
129. Order three-digit numbers
130. Identify the median of a set of numbers
131. Tell and show time in five-minute intervals
132. Subtract 4 facts
133. Draw a picture to solve a problem

134. Using comparison symbols ($<$ $>$ $=$)
135. Read and draw a pictograph with a scale of 2
136. Write a fraction to show part of a set
137. Writing a number in expanded form
138. Subtracting 5 facts
139. Create a tangram
140. Write money amounts using dollar signs and cent symbols
141. Subtract two-digit numbers using dimes and pennies
142. Write a number sentence to show equal groups
143. Multiply by 10
144. Count quarters
145. Round to the nearest ten
146. Estimating and counting large collections
147. Finding one half of a set with even numbers/odd numbers
148. Estimate a sum
149. Measure using feet and inches
150. Make a table to solve a problem
151. Look for a pattern to solve a problem
152. Find the area of a shape using pattern blocks
153. Identify geometric solids
154. Select appropriate tool for measuring length
155. Identify metric units of length
156. Multiplying by 1
157. Multiplying by 100
158. Finding the perimeter
159. Write observations from a graph
160. Telling and showing time to the minute
161. Count quarters, dimes, nickels and pennies
162. Identify parallel lines and line segments
163. Multiplying by 5 facts
164. Draw pictures and write a multiplication number sentences to show equal groups
165. Make and organized list to solve a problem
166. Represent and write mixed numbers
167. Create and read a bar graph with a scale of 2
168. Identify right angles
169. Multiplying by 2 facts
170. Estimate area
171. Find area using a one-inch color tile
172. Write number sentences for “equal-group” story problems
173. Identifying intersecting lines
174. Identifying perpendicular lines
175. Estimating differences
176. Dividing a set of objects into equal groups
177. Multiplying by 3 facts
178. Predict the outcome of a probability experiment
179. Making and labeling an array

180. Write number sentences for arrays
181. Telling and showing time to the quarter hour
182. Identifying and showing transformations
183. Multiplying by 4 facts
184. Choosing a survey question and choices
185. Locating and graphing points on a coordinate graph
186. Showing and counting back change for \$1.00
187. Dividing by 2
188. Find the area of a rectangle
189. Multiply by 0 facts
190. Identifying the multiples of 2,3,4, and 5
191. Making and using a multiplication table
192. Measuring weight (mass) using metric units
193. Doubling a number
194. Choose an appropriate method for finding the answer to a problem
195. Identifying acute and obtuse angles
196. Describing and classifying plane figures
197. Identifying pentagons

3rd Grade Objectives

The Students will...

Knowledge Objectives

1. List the twelve months
2. Use counting Patterns
3. Use a number Line
4. Add and Subtract
5. Use Addition and Subtraction fact families to solve math problems
6. Solve for an unknown addend
7. Add three numbers
8. Interpret data on Pictographs and bar graphs
9. Identify Place Value
10. Add two-digit numbers
11. Subtract two-digit numbers
12. Round to the nearest ten and hundred
13. Add three-digit numbers
14. Compare and order numbers
15. Solve Some and some more stories
16. Subtracting three-digit numbers
17. Solve Some went away stories
18. Name dollars and cents
19. Add dollars and cents
20. Subtract three-digit numbers
21. Use columns to add
22. Count dollars and cents
23. Subtract dollars and cents
24. Subtract across zeros
25. Fractions of a dollar
26. Estimate sums and differences
27. Write directions
28. Solve Some and some more stories
29. Estimate lengths and distances
30. Solve stories about comparing
31. Solve for missing numbers in Subtraction
32. Solve Some went away story problems
33. Use a Scale Map
34. Model, Draw and Compare Fractions
35. Use fractions of a group
36. Work with probability
37. Find rectangle length and width
38. Rectangular grid patterns
39. Use multiplication as repeated addition
40. Know multiplication facts: 0s, 1s and 10s
41. Find perimeter

42. Know multiplication facts: 2s and 5s
43. Use equal Groups Stories
44. Find fractions Equal to 1
45. Equivalent Fractions
46. Finding fractions and mixed numbers on a number line
47. Compare fractions
48. Understand square numbers
49. Find area
50. Know multiplication facts: 9s
51. Work with parallelograms, polygons, congruent shapes, triangles and rectangular prisms.
52. Count with counting cubes
53. Find volume of simple objects
54. Weight: ounces, pounds and tons
55. Know multiplication Facts: 11s and 12s
56. Multiply three numbers
57. Multiply multiples of ten
58. Know length: centimeters, meters and kilometer
59. Know mass: grams and kilograms
60. Classify geometric solids
61. Multiply two-digit numbers
62. Find half of a number
63. Use manipulations to divide by a one digit number
64. Know multiplication and division fact families
65. Recognize even and odd numbers
66. Multiply three-digit numbers
67. Use parentheses
68. Use compatible numbers
69. Estimate products
70. Round to the nearest dollar
71. Understand the need for estimation
72. Multiply dollars and cents
73. Divide two-digit numbers
74. Sort and order numbers through 9,999
75. Find points on a grid

Skills Objectives

1. Create a calendar
2. Skip counting
3. Set a clock
4. Reading a Clock to the nearest five minutes
5. Read and record temperature
6. Tell time to fractions of an hour
7. Create pictograph
8. Create a bar graph
9. Money exchanges

10. Read and Write numbers through 999
11. Exchange pennies for dimes
12. Count dollars and cents
13. Create a class pictograph
14. Give directions to another student
15. Correctly read a clock to the nearest minute
16. Correctly read and write numbers through 999,999
17. Create a timeline
18. Measure inches, feet and yards
19. Use an inch ruler to the nearest quarter inch
20. Estimate and measure lengths
21. Create a scale map
22. Use fraction manipulatives
23. Comparing fractions
24. Probability demonstration
25. Equivalent fractions
26. Fractions on the number line
27. Rectangle list
28. Measuring length and width
29. Color rectangular grid patterns
30. Use a multiplication table to solve multiplication problems
31. Draw an array to show multiplication
32. Color squares on a grid to show square numbers
33. Estimate area in square feet
34. Draw angles
35. Create congruent shapes
36. Make equilateral and right triangles
37. Create flash cards for memory group multiplication facts
38. Create a symmetrical shape
39. Weigh objects in ounces and pounds
40. Create geometric solids from a template
41. Multiply three numbers to find volume
42. Measure in centimeters and meters
43. Weigh objects in grams and kilograms
44. Doubling money
45. Divide a group of objects into two equal groups
46. Measuring capacity
47. Use a multiplication table to divide by a one-digit number
48. Creating symmetrical figure
49. Draw lines of symmetry
50. Estimation by volume
51. Estimating by weight or mass
52. Evaluate estimates
53. Sort geometric shapes
54. Diagrams for sorting
55. Estimate area

56. Drawing an enlargement
57. Estimating area using a grid
58. Create a dot-to-dot design
59. Plan a design

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.
2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.

4th Grade Objectives

Knowledge Objectives

Working with Place Value:

1. The children will model the 10-1 relationship among place value positions.
2. The children will read and write whole numbers in standard form, word form and expanded form.
3. The children will compare and order whole numbers based on the values of the digits in each number.

4. The children will round a whole number to any place.
5. The children will rename whole number by regrouping.
6. The children will add whole numbers and determine whether solutions to addition problems are reasonable.
7. The children will subtract whole numbers and determine whether solutions to subtraction problems are reasonable.
8. The children will use the strategy of drawing a diagram to solve comparison problems with addition and subtraction.

Using Numbers and Operations

9. The children will relate multiplication equations and comparison statements.
10. The children will solve problems involving multiplicative comparison and additive comparison.
11. The children will multiply tens, hundreds, and thousands by whole numbers through 10.
12. The children will estimate products by rounding and determine if exact answers to multiplication problems are reasonable.
13. The children will use the Distributive Property to multiply a 2-digit number by a 1-digit number.
14. The children will use expanded form to multiply a multidigit number by a 1-digit number.
15. The children will use place value and partial products to multiply a multidigit number by a 1-digit number.
16. The children will use mental math and properties to multiply a multidigit number by a 1-digit number.
17. The children will use the draw a diagram strategy to solve multistep problems.
18. The children will use regrouping to multiply a d-digit number by a 1-digit number.
19. The children will use regrouping to multiply a multidigit number by a 1-digit number.
20. The children will represent and solve multistep problems using equations.
21. The children will use place value and multiplication properties to multiply by tens.
22. The children will estimate products by rounding or by using compatible numbers.
23. The children will use area models and partial products to multiply 2-digit numbers.
24. The children will use place value and partial products to multiply 2-digit numbers.
25. The children will use regrouping to multiply 2-digit numbers.
26. The children will choose a method to multiply 2-digit numbers.
27. The children will use the strategy draw a diagram to solve multistep multiplication problems.
28. The children will use multiples to estimate quotients.
29. The children will divide tens, hundreds, and thousands by whole numbers through 10.
30. The children will use the Distributive Property to find quotients.
31. The children will use partial quotients to divide.
32. The children will divide multidigit numbers by 1-digit divisors.

Using Number Theory

33. The students will find the factors of numbers.
34. The students will determine whether a number is a factor of a given number.
35. The students will understand whether number is a multiple of a given number.
36. The student will determine whether a number is prime or composite.

Working with Fractions and Decimals

37. The students will be able to write and identify equivalent fractions in simplest form.
38. The student use equivalent fractions to represent a pair of fractions as fractions with a common denominator.
39. The students will be able to compare, order and rename fractions.
40. The students will be able to add and subtract fractions and mixed numbers.
41. The students will write fractions as mixed numbers.
42. The students will multiply a fraction by a whole number to solve a problem.
43. The students will record tenths and hundredths as fractions and as decimals.

Geometry

44. The students will identify and draw points, lines, line segments, rays and angles.
45. The students will classify angles by the size of their angles.
46. The students will identify and draw parallel lines and perpendicular lines.
47. The students will sort and classify quadrilaterals.
48. The students will find and draw lines of symmetry.
49. The students will understand how degrees and fractional parts of circles are related.
50. The students will be able to join and separate angles.
51. The students will understand the relative sizes of measurement units.
52. The students will use models to compare basic units of length, weight and liquid volume.
53. The students will be able to compare the metric units of length, mass and liquid volume.
54. The students will understand and compare units of time and elapsed time.
55. The students will understand how to change measurements.
56. The students will use patterns to write number pairs for measurement units.

Using Algebra

57. The students will be able to find the perimeter and area of rectangles and combined rectangles.
58. The students will be able to find the perimeter or area of the unknown measure of a side of a rectangle.

Skill/Behavior Objectives:

Number Sense:

1. The children will use fraction manipulatives to illustrate fractions.
2. The children will write time measurements in different ways.
3. The children will draw diagrams to solve comparison problems.
4. The children will use singles, flats and longs to solve addition problems.
5. The children will convert fractions to mixed numbers.
6. The children will use numbers lines to compare and add numbers.
7. The children will use clocks to find the correct time.

Measuring:

7. The children will use rulers to measure rectangles to find perimeter and area.
8. The children will draw lines of symmetry.

Attitude Objectives:

1. The children will appreciate that math is useful and necessary in the world.
2. The children will understand that math is an ordered process in the world, and is taught so that they will understand our world more fully.

5th Grade Objectives

Knowledge Objectives:

Number Sense:

1. The children will identify and write numbers to the hundred billions and be able to identify the place value for each digit.
2. The children will identify and write numbers to the hundredths and thousandths and be able to identify the place value for each digit.
3. The children will learn to identify arithmetic sequences.
4. The children will learn to identify odd and even numbers.
5. The children will learn to compare whole numbers by using the greater than and less than symbols.
6. The children will learn to compare decimal numbers by using the greater than and less than symbols.
7. The children will better understand that percents are related to the cents in a dollar.
8. The children will round numbers to the nearest ten and nearest hundred.

Using Operations:

9. The children will learn to use fact families to add and subtract quickly.
10. The children will review addition and subtraction algorithms.
11. The children will learn to find a missing addend and missing numbers in subtraction.
12. The children will learn that multiplication is repeated addition.
13. The children will multiply a two digit number by a one digit number.
14. The children will multiply two digit numbers by two digit numbers using a multiplication algorithm.
15. The children will multiply three digit numbers by three digit numbers using a multiplication algorithm.
16. The children will learn that division is repeated subtraction.
17. The children will learn to do a division problem with a remainder.
18. The children will review the division algorithm.
19. The children will divide numbers and use a zero as a place value holder.
20. The children will divide numbers by a two digit divisor.
21. The children will learn the terms in a division problem: dividend, divisor, and quotient.

Number Theory:

22. The children will list the factors of whole numbers.
23. The children will identify and define prime numbers.
24. The children will identify the Greatest Common Factor of two numbers.
25. The children will identify the Least Common Multiple of two numbers.

Working with Decimals:

26. The children will round dollars and cents to the nearest dollar.
27. The children will convert hundredth decimals, hundredth fractions and percents.
28. The children will identify and write equivalent decimals.
29. The children will add and subtract decimals.
30. The children will learn to multiply decimals.
31. The children will learn to prepare two decimals so that a person can divide a decimal by a decimal.

32. The children will use mental math to multiply decimals by 10, 100, and 1000.
33. The children will learn to write a percent as a quotient of a division problem.

Working with Fractions:

34. The children will identify the fractions for a half, a fourth, and a tenth.
35. The children will understand that fractions can be shown by pictures either as a part of a whole or part of a group.
36. The children will round mixed numbers to the nearest whole number.
37. The children will convert percents to fractions.
38. The children will compare fractions by constructing illustrations.
39. The children will learn what a mixed number is and illustrate one through a drawing.
40. The children will learn to write a mixed number as a quotient of a division problem.
41. The children will add and subtract fractions that have common denominators.
42. The children will add and subtract fractions that have unlike denominators.
43. The children will change improper fractions to mixed numbers and mixed numbers to improper fractions.
44. The children will multiply fractions and reduce fractions by chopping down common factors before multiplying.
45. The children will multiply fractions and whole numbers.
46. The children will learn to write the reciprocal of a fraction.
47. The children will divide fractions by inverting the second number, reducing fractions by chopping down common factors before multiplying.
48. The children will reduce fractions by dividing the numerator and denominator by the Greatest Common Factor.
49. The children will identify and create equivalent fractions by multiplying or dividing.

Geometry

50. The children will learn to identify points, lines, and line segments.
51. The children will identify horizontal and vertical lines.
52. The children will identify and construct parallel, perpendicular, and intersecting lines.
53. The children will identify and construct acute, right, and obtuse angles.
54. The children will identify and name angles by using letters.
55. The children will identify and name the differing polygons: triangle, quadrilateral, pentagon, hexagon, and octagon.
56. The children will identify the parts of a circle: center, radius, diameter, and circumference.
57. The children will calculate the perimeter of a polygon and the circumference of a circle.
58. The children will calculate the area of a rectangle.
59. The children will make number lines and illustrate decimals to the nearest tenth.
60. The students will recognize and name the following solids: cube, rectangular prism, square pyramid, cylinder, sphere, and cone.

Extra Concepts:

61. The children will learn to chart information by using tally marks.
62. The children will be able to define the differing divisions of time: century, decade, year, month, week, day, hour, minute, and second.
63. The children will convert numbers in standard notation to expanded notation. They will convert numbers in expanded notation to standard notation.
64. The children will solve two step story problems.
65. The children will learn to find an average for a set of data.

66. The children will identify ratios.
67. The children will use ratios to express probabilities.

Skill / Behavior Objectives:

Number Sense:

1. The children will use money to illustrate place value.
2. The children will construct number lines as a visual way to illustrate the order of numbers and fractions.
3. The children will use fraction manipulatives to illustrate fractions.
4. The children will write money in two ways, both in terms of dollars and in terms of cents.

Using Operations:

5. The children will learn to “make a ten” to add more quickly.
6. The children will write numbers in word form to one hundred thousand. This will help them to write checks.
7. The children will memorize the multiplication facts from zero - ten.
8. The children will do the order of operations while using adding, subtracting, multiplying, dividing, and parenthesis.
9. The children will estimate answers for the four operations of mathematics: addition, subtraction, multiplication, and division.
10. The children will learn to use the learned concepts in math and apply them to solving one step story problems.

Measuring:

11. The children will read and write time on an analog clock.
12. The children will read bar graphs and line graphs and solve questions related to these graphs.
13. The children will read millimeters and centimeters while using a ruler. They will also read centimeters to the nearest tenth.
14. The children will read quarter, half, and whole inches while using a ruler.
15. The children will identify the four directions on a map: north, south, east, and west.
16. The children will convert inches, feet, yards, and miles interchangeably.
17. The children will convert fluid ounces, cups, pints, quarts, and gallons interchangeably.
18. The children will convert millimeters, centimeters, meters, and kilometers interchangeably.
19. The children will convert ounces, pounds, and tons interchangeably.
20. The children will convert milliliters and liters interchangeably.
21. The children will convert grams, kilograms, and metric tons interchangeably.

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.
2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.

6th Grade Objectives

Knowledge Objectives:

Operations and Properties

1. Students estimate with whole numbers.
2. Students use the algorithm for division and interpret the quotient and remainder in a real-world setting.
3. Students represent numbers by using exponents.
4. Use a graphing calculator to evaluate two-step expressions.
5. Students use the order of operations.
6. Students use number properties to compute mentally.

Introduction to Algebra

7. Students identify and evaluate expressions.
8. Students translate between words and math.
9. Students write expressions for tables and sequences.
10. Use grid paper to model the perimeter and area of rectangles.
11. Students determine whether a number is a solution of an equation.
12. Students solve whole number addition equations.
13. Students solve whole number subtraction equations.
14. Students solve whole number multiplication equations.
15. Students solve whole number division equations.

Decimals

16. Students write, compare, and order decimals using place value and number lines.
17. Students estimate decimal sums, differences, products, and quotients.
18. Use decimal grids to model addition and subtraction of decimals.
19. Students add and subtract decimals.
20. Use decimal grids to model multiplication and division decimals.
21. Students multiply decimals by whole numbers and by decimals.
22. Students divide decimals by whole numbers.
23. Students divide whole numbers and decimals by decimal.
24. Students solve problems by interpreting the quotient.
25. Students solve equations involving decimals.

Number Theory and Fractions

26. Students write prime and factorizations of composite numbers.

27. Students find the greatest common factor (GCF) of a set of a number.
28. Using a graphing calculator to find the GCF of two or more numbers.
29. Students factor numerical and algebraic expressions and write equivalent numerical and

Algebraic expressions.

30. Students convert between decimals and fractions.
31. To use pattern blocks to model equivalent fractions.
32. Students write equivalent fractions.
33. Students convert between mixed numbers and improper fractions.
34. Students use pictures and numbers lines to compare and order fractions.

Fractions Operations

35. Students find the least common multiple (LCM) of a group of numbers.
36. Students add and subtract fractions with unlike denominators.
37. Students regroup mixed numbers to subtract
38. Students solve equations by adding and subtracting fractions.
39. Students multiply mixed numbers.
40. Use grids to model division of fractions.
41. Use fractions bars to model the divisions of fractions in word problems.
42. Students divide fractions and mixed numbers.
43. Students solve equations by multiplying and dividing fractions.

Data Collection and Analysis

44. Students find the range, mean, median, and mode of a data set.
45. Students learn the effect of additional data and outliers.
46. Students calculate, interpret, and compare measures of variation in a data set.
47. Students record and organize data in line plots, frequency tables, and histograms.
48. Students describe the frequently distribution of a data set and make a cumulative frequency table and histogram.
49. Use a survey to collect and display data.
50. Students describe and compare data distributions by their center, spread, and shape, using box-and-whisker plots or dot plots.

Proportional Relationships

51. Students write ratios and rates and find unit rates.
52. Students use a table to find equivalent ratios and rates.
53. Students graph ordered pairs on a coordinate grid.
54. Students graph equivalent ratios on the coordinate plane.
55. Use counters to model equivalent ratios.
56. Students write and solve proportions.
57. Students write percents as decimals and as fractions.
58. Students write decimals and fractions as percents.
59. Students find the percent of a number.
60. Students solve problems involving percents.

Measure and Geometry

61. Students convert customary units of measure.
62. Students convert metric units of measure.
63. Students estimate the area of irregular figures and find the area of rectangles and parallelograms.

64. Use grid paper to discover the relationship between the area of a square and its side length.
65. Students find the area of triangles and trapezoids.
66. Students break a polygon into simpler parts to find its area.
67. Use centimeter cubes to find the volume of prisms.
68. Students estimate and find the volumes of rectangular prisms and triangular prisms.
69. Use a net to build a three-dimensional figure.
70. Students find the surface areas of prisms, pyramids, and cylinders.

Integers and the Coordinate Plane

71. Students identify and graph and find opposites.
72. Students compare and order integers.
73. Students compare and order negative rational numbers.
74. Students locate and graph points on a coordinate plane.
75. Students draw polygons in the coordinate plane and find the lengths of their sides.
76. Students use translations, reflections, and rotations to change the positions of figures in the coordinate plane.

Functions

77. Students use data in a table to write an equation for a function and use the equation to find a missing value.
78. Students represent linear functions using ordered pairs and graphs.
79. Students identify the independent and dependent variables in a real-world situation.
80. Students find rates of change and slope.
81. Students read and write inequalities and graph them on a number line.

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.
2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.

7th Grade Objectives

Knowledge Objectives

Ratios and Proportional Relationships

1. Students will analyze proportional relationships and use them to solve real-world and mathematical problems.
2. Students will compute unit rates associated with ratios of fractions, including ratios of lengths, areas and others quantities measured in like or different units.
3. Students will recognize and represent proportional relationships between quantities.
4. Students will decide whether two quantities are in a proportional relationships.
5. Students will identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
6. Students will represent proportional relationships by equations.
7. Students will explain what a point on the graph of a proportional relationship means in terms of the situation, with special attention to the points
8. Students will use proportional relationships to solve multistep ratio and percent problems.

The Number System

9. Students will apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.
10. Students will apply and extend previous understandings of additions and subtractions to add and subtract rational numbers, represent addition, and subtraction on a horizontal or vertical number line diagram.

Expressions and Equations

11. Students will use properties of operations to generate equivalent expressions.
12. Students will solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Geometry

13. Students will draw, construct, and describe geometrical figures and describe relationships between them.
14. Students will solve real-life and mathematical problems involving angle measure, area, surface, and volume.

Statistics and Probability

15. Students will use random sampling to draw inferences about a population
16. Students will draw informal comparative inferences about two population
17. Students will investigate chance process and develop, use, and evaluate probability models.

Skills Objectives

Algebraic Reasoning

1. Students will be able to simplify numerical expressions involving order of operations and exponents

Integers and Rational Numbers

2. Students will be able to compare and order integers and rational numbers.

3. Students will be able to convert between fractions and decimals mentally, on paper, and with a calculator.

4. Students will be able to use models to add, subtract, multiply, and divide integers.

Applying Rational Numbers

5. Students will be able to use addition, subtraction, multiplication, and division to solve problems involving fractions and decimals.

6. Students will be able to solve equations with rational numbers.

Proportional Relationships

7. Students will be able to using divisions to find unit rates and ratios in proportional relationships.

8. Students will be able to estimating and finding solutions to application problems involving proportional relationships

9. Students will be able to using critical attributes to define similarity.

10. Students will be able to using ratios and proportions in scale drawings and scale models.

Graphs

11. Students will be able to plotting and identifying ordered pairs of integers on a coordinate plane.

12. Students will be able to graphing to demonstrate relationships between data sets.

13. Percents

14. Students will be able to modeling and estimating percents

15. Students will be able to writing equivalent fractions, decimals, and percents, including percents less than 1 and greater than 100.

16. Students will be able to solving percent problems involving discounts, sales tax, tips, profit, and simple interest.

17. Students will be able to comparing fractions, decimals, and percents.

Collecting, Displaying, and Analyzing Data

18. Students will be able to choosing among mean, median, mode, or range to describe a set of data.

19. Students will be able to making inferences and convincing arguments based on analysis data

Geometric Figures

20. Students will be able to classifying pairs of angles as complementary or supplementary

21. Students will be able to graphing translations and reflections on a coordinate plane

22. Students will be able to using congruence and similarity to solve problems.

Measurement and Geometry

23. Students will be able to comparing perimeter and circumference with the area of geometric figures

24. Students will be able to finding the area of circles

25. Students will be able to finding the area of irregular figures

26. Students will be able to finding the volume of prisms and cylinders

27. Students will be able to using nets and formulas to find the surface area of prisms and cylinders.

Probability

28. Students will be able to finding experimental and theoretical probabilities, including those of dependent and independent events.

29. Students will be able to using lists and tree diagrams to find combinations and all possible outcomes of an experiment.
30. Students will be able to using the Fundamental Counting Principle and factorials to find permutations.

Multi-Step Equations and Inequalities

31. Students will be able to solving two-step and multi-step equations and equations with variables on both sides
32. Students will be able to reading, writing, and graphing inequalities on a number line.
33. Students will be able to solving one-step and two-step inequalities.

Attitude Objectives:

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2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.

8th Grade Objectives

Knowledge Objectives

Students will...

Rational Numbers

1. Write rational numbers in equivalent forms.
2. Multiply fractions, mixed numbers, and decimals.
3. Divide fractions and decimals
4. Add and Subtract fractions with unlike denominators.
5. Solve equations with rational numbers.
6. Solve two step equations.

Graphs and Functions

7. Write solutions of equations in two variables as ordered pairs.
8. Graph points on the coordinate plane.
9. Interpret information given in a graph and make a graph to model a situation.
10. Represent functions with tables, graphs, or equations.
11. Generate different representations of the same data.

Exponents and Roots

12. Evaluate expressions with negative exponents and evaluate the zero exponent.
13. Apply the properties of exponents.
14. Express large and small numbers in scientific notation and compare two numbers written in scientific notation.
15. Students operate with scientific notation in real-world situations.
16. Find square roots.
17. Estimate square roots to a given number of decimal places and solve problems using square roots. Determine if a number is rational or irrational.
18. Use Pythagorean Theorem to solve problems.
19. Use the distance formula and the Pythagorean Theorem and its converse to solve problems.

Ratios, Proportions, and Similarity

20. Work with rates and ratios.
21. Solve proportions.
22. Determine whether figures are similar and find missing dimensions in similar figures.
23. Identify and create dilations of plane figures.

Geometric Relationships

24. Classify angles and find their measures.
25. Identify parallel and perpendicular lines and the angles formed by a transversal.
26. Find unknown angles and identify possible side lengths in triangles.
27. Identify polygons and midpoints of segments in the coordinate plane.
28. Use proportions of congruent figures to solve problems.
29. Transform plane figures using translations, rotations, and reflections.
30. Identify transformations as similarity or congruence transformations.
31. Identify the image of a figure after a combined transformation is performed, and determine whether the final image is similar or congruent to the original.

Measurement and Geometry

32. Find the circumference and area of circles.
33. Find the volume of prisms and cylinders.
34. Find the volume of pyramids and cones.
35. Find the volume and surface area of spheres.

Multi-Step Equations

36. Combine like terms in an expression.
37. Solve multi-step equations.
38. Solve equations with variables on both sides of the equal sign.
39. Solve systems of equations.

Graphing Lines

40. Identify and graph linear equations.
41. Find the slope of a line and use slope to understand and draw graphs.
42. Use slopes and intercepts to graph linear equations.
43. Find the equations of a line given one point and the slope.
44. Recognize direct variation by graphing tables of data and checking for constant ratios.
45. Graph and solve systems of linear equations.

Data, Prediction, and Linear Functions

46. Create and interpret scatter plots.
47. Identify patterns in scatter plots, and informally fit and use a linear model to solve problems and make predictions as appropriate.
48. Identify and write linear functions.
49. Compare linear functions represented in different ways.

Skills Objectives

Students will...

Rational Numbers

1. Use a graphing calculator to add and subtract fractions.
2. Model and solve two-step equations

Graphs and Functions

3. Use a graphing calculator to plot points described by ordered pairs.
4. Use a graphing calculator to generate multiple representations of functions.

Exponents and Roots

5. Use a graphing calculator to multiply and divide numbers written in scientific notation.
6. Use base 10 blocks to explore cube roots.
7. Use a graphing calculator to evaluate expressions that have negative exponents.
8. Explore right triangles using Pythagorean Theorem.
9. Use Geometry software to explore the converse of Pythagorean Theorem.

Ratios, Proportions, and Similarity

10. Use a number cube and graph paper to explore similarity.
11. Use graph paper and a ruler to explore dilations of geometric figures.

Geometric Relationships

12. Use a compass and straightedge to bisect line segments and angles.
13. Use a geometry program to study the exterior angles of a polygon.

14. Explore congruence by seeing that slides, turns, and flips do not change the size or shape of a figure. Use a coordinate plane to explore compound transformations.

Measurement and Geometry

15. Use a ruler and string to measure circles.

16. Explore the volume of prisms and cylinders.

17. Use models to explore the relationship between the volumes of pyramids and prisms and the relationship between the volumes of cones and cylinders.

Multi-Step Equations

18. Model equations with variables on both sides.

Graphing Lines

19. Use points on the graph of a line and right triangles to explore the slope of a line.

Data, Prediction, and Linear Functions

20. Use a graphing calculator to graph equations in slope-intercept form.

21. Use a graphing calculator to make a scatter plot.

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.
2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.
3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.

Algebra I Math Objectives

Knowledge Objectives:

Expressions and Equations

1. The students will write mathematical expressions for verbal expressions and write verbal expressions for mathematical expressions.
2. The students will evaluate numerical expressions and algebraic expressions by using the order of operations.
3. The students will solve open sentence equations and inequalities.
4. The students will recognize and use the properties of identity and equality.
5. The students will use the Distributive Property to evaluate and simplify expressions.
6. The students will recognize and use the Commutative and Associative Properties to simplify expressions.
7. The students will identify the hypothesis and conclusion in a condition statement.
8. The students will use a counterexample to show that an assertion is false.
9. The students will find absolute values of rational numbers.
10. The students will graph rational numbers on a number line.
11. The students will add, subtract, multiply, and divide integers and rational numbers.
12. The students will find the probability and odds of a simple event.
13. The students will find square roots.
14. The students will classify and order real numbers.
15. The students will translate verbal sentences into equations and equations into verbal sentences.
16. The students will solve equations by using addition, subtraction, multiplication and division.
17. The students will solve equations involving more than one operation.
18. The students will solve equations with the variable on each side.
19. The students will solve equations involving grouping symbols.
20. The students will determine whether two ratios form a proportion and then solve the proportion.
21. The students will find percents of increase and decrease and then solve problems involving percents of change.
22. The students will solve equations for given variables.
23. The students will solve mixture problems and motion problems.

Linear Functions

24. The students will transform figures on a coordinate plane by using reflections, translations, dilations, and rotations.
25. The students will represent relations as sets of ordered pairs, tables, mappings, and graphs.
26. The students will find the inverse of a relation.
27. The students will use an equation to determine the range for a given domain.
28. The students will determine whether an equation is linear.
29. The students will determine whether a relation is a function.
30. The students will write an equation given some of the solutions.
31. The students will find the slope of a line.
32. The students will write, graph, and solve problems involving direct variation.

33. The students will write and graph linear equations in slope-intercept form.
34. The students will write an equation of a line given the slope and one point on a line.
35. The students will write an equation of a line given two points on the line.
36. The students will write the equation of a line in standard form and point slope form.
37. The students will write an equation of a line that passes through a given point and make it either parallel or perpendicular to a given line.
38. The students will solve linear inequalities by using addition, subtraction, multiplication, or division.
39. The students will solve linear inequalities involving more than one operation.
40. The students will solve linear inequalities involving the Distributive Property.
41. The students will solve compound inequalities containing the word *and* or *or* and then graphing their solution sets.
42. The students will solve absolute value equations and inequalities.
43. The students will graph linear inequalities on a coordinate plane.
44. The students will determine whether a system of linear equations has 0, 1, or infinitely many solutions.
45. The students will solve systems of equations by graphing, substitution, and elimination.
46. When solving systems of equations by using elimination, the students will use addition, subtraction, and multiplication.
47. The students will solve systems of inequalities by graphing.

Polynomials and Nonlinear Functions

48. The students will multiply and divide monomials.
49. The students will simplify expressions involving powers of monomials.
50. The students will simplify expressions containing negative exponents.
51. The students will express numbers in scientific notation and standard notation.
52. The students will find products and quotients of numbers expressed in scientific notation.
53. The students will find the degree of a polynomial.
54. The students will arrange the terms of a polynomial in ascending or descending order.
55. The students will add and subtract polynomials.
56. The students will find the product of a monomial and a polynomial.
57. The students will solve equations involving polynomials.
58. The students will multiply two polynomial by either using the FOIL method or the Distributive Property.
59. The students will find squares or the product of sums and differences.
60. The students will find the prime factorization and the greatest common factor of integers and monomials.
61. The students will factor polynomials by using the Distributive Property.
62. The students will solve quadratic equations of the form $ax^2 + bx + c = 0$
63. The students will factor trinomials of the form $x^2 + bx + c$ and will factor trinomials of the form $ax^2 + bx + c$.
64. The students will solve equations of the form $x^2 + bx + c = 0$ and will solve equations of the form $ax^2 + bx + c = 0$.
65. The students will factor binomials and solve equations involving the difference of squares.
66. The students will factor perfect square trinomials and solve equations involving perfect squares.
67. The students will graph quadratic functions.

68. The students will find the equation of the axis of symmetry and the coordinates of the vertex of a parabola.
69. The students will solve quadratic equations by graphing.
70. The students will solve quadratic equations by finding the square root, by completing the square, and by using the Quadratic Formula.
71. The students will use the discriminant to determine the number of solutions for a quadratic equation.
72. The students will graph exponential functions.
73. The students will find geometric means.

Radical and Rational Functions

74. The students will simplify radical expressions using the Product Property of Square Roots and the Quotient Property of Square Roots.
75. The students will add, subtract, and multiply radical expressions.
76. The students will solve radical equations and solve radical equations with extraneous roots.
77. The students will find the distance between two points on a coordinate plane.
78. The students will find a point that is a given distance from a second point in a plane.
79. The students will determine whether two triangles are similar.
80. The students will define the sine, cosine, and tangent ratios.
81. The students will graph and solve problems involving inverse variations.
82. The students will identify values excluded from the domain of a rational expression.
83. The students will simplify rational expressions.
84. The students will multiply and divide rational expressions
85. The students will divide a polynomial by a monomial and also divide a polynomial by a binomial.
86. The students will add and subtract rational expressions with like denominators and unlike denominators.
87. The students will simplify mixed expressions and complex fractions.
88. The students will solve rational equations.
89. The students will eliminate extraneous roots.

Data Analysis

90. The students will identify various sampling techniques.
91. The students will organize data in matrices and solve problems by adding or subtracting matrices or by multiplying by a scalar.
92. The students will interpret and display data in a histogram.
93. The students will find the range, quartiles, and interquartile range of a set of data.
94. The students will determine probabilities using permutations and combinations.
95. The students will find the probability of two independent events or dependent events.
96. The students will find the probability of two mutually exclusive or inclusive events.
97. The students will use random variables to compute probability.
98. The students will use theoretical and experimental probability to represent and solve problems involving uncertainty.

Skill / Behavior Objectives:

Expressions and Equations

1. The students will interpret and draw graphs of functions.

2. The students will analyze data given in tables and graphs (bar, circle, and line).
3. The students will determine if graphs (bar, circle, and line) can be misleading.
4. The students will interpret and create line plots and stem-and-leaf plots.
5. The students will analyze data by using the mean, median, and mode.
6. The students will solve problems by working backward.
7. The students will use formulas to solve real-world problems.

Linear Functions

8. The students will locate and graph points on a coordinate plane.
9. The students will know how to graph a linear equation.
10. The students will recognize and write formulas for arithmetic sequences.
11. The students will model real-world data with an equation in slope-intercept form.
12. The students will be able to interpret points on a scatter plot and write an equation for lines of fit.
13. The students will solve real world problems involving linear inequalities.
14. The students will solve real-world problems involving systems of equations.
15. The students will determine the best method for solving systems of equations.
16. The students will solve real-world problems involving systems of inequalities.

Polynomials and Nonlinear Functions

17. The students will estimate solutions of quadratic equations by graphing.
18. The students will identify data that displays exponential behavior.
19. The students will recognize and extend geometric sequences.
20. The students will solve problems involving exponential growth and exponential decay.

Radical and Rational Functions

21. The students will solve problems by using the Pythagorean Theorem.
22. The students will determine whether a triangle is a right triangle.
23. The students will find the unknown measures of sides of two similar triangles.
24. The students will use trigonometric ratios to solve right triangles.
25. The students will use dimensional analysis with multiplication and division.

Data Analysis

26. The students will recognize a biased sample.
27. The students will use probability distribution to solve real-world problems.
28. The students will organize and use data in box-and-whisker plots and parallel box-and-whisker plots.
29. The students will count outcomes using a tree diagram and the Fundamental Counting Principle.
30. The students will perform probability simulations to model real-world situations involving uncertainty.

Attitude Objectives:

1. God created the world with order. The various concepts taught and learned in math help us understand his order.
2. The children will appreciate that mathematics teaches important skills for a person to use in daily life.

3. The children will understand that mathematics continues to build upon learned knowledge. It is important to master basic skills in order to develop new skills.
4. The children will appreciate that advanced math skills are necessary for many differing majors of study.