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Dear Parents:

In order to provide parents with a summary of what knowledge will be taught and learned, the staff has organized the math curriculum according to each grade level for each month. The curriculum for other subject areas will be finalized and communicated to you in subsequent years.

Each skill listed is important for your child to know and be able to use in order to be successful. The area of study goes beyond the skills listed, and the timeline may be adjusted based on the progress of the students. The math main concepts are defined as follows:

- **Number Sense**: Indicates a student's ability to understand numbers, understand the meaning of arithmetic operations and compute numbers.
- **Measurement**: Indicates a student's ability to understand measureable attributes of objects and to apply units, systems and processes to measure and understand the value of these attributes.
- **Algebra**: Indicates a student's ability to understand patterns and use symbols to represent and analyze mathematical situations.
- **Geometry**: Indicates a student's ability to understand characteristics and properties of two-and three-dimensional shapes and explain geometric relationships.
- **Data Analysis & Probability**: Indicates a student's ability to analyze data, make predictions based on data and apply basic concepts of probability.

Feel free to contact your child's teacher throughout the year if you have any questions.

Sincerely,

*Jean Peterson*, Principal-Evergreen Elementary School

*Joe Salmieri*, Principal-Benjamin Middle School

*Mark Enright*, Assistant Principal-Evergreen & Benjamin Schools

# Benjamin School District 25

## KINDERGARTEN MATH

## September

### Algebra & Analytical Methods

- Calendar: Identify and extend an AB pattern
- Compare objects and describe how they are alike and different
- Identify, sort and classify objects by color, size, shape, and kind
- Develop and explain own rules for sorting
- Use logical thinking to solve sort problems
- Model, describe and extend rhythmic patterns
- Identify and extend patterns

### Geometry, Estimation & Measurement

- Identify and describe spatial relationships: top, middle, bottom, before, after, between, over, under, on, up, down, and on top of
- Compare and identify positions left, right, inside and outside

### Number Sense

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket

## October

### Algebra & Analytical Methods

- Calendar: Identify and extend a pattern
- Create and translate patterns
- Model, describe and extend growing patterns

### Number Sense

- At calendar time count how many days we have been in school and how many days have passed thus far in the month

- At calendar time group straws by ones and tens and place in the correct pocket
- Match objects one to one
- Match and identify equivalent sets of objects
- Identify and make sets that have more or fewer items than other sets

**Data Analysis & Probability**

- Collect and sort data to make graphs using concrete objects
- Sort objects by one attribute to make real graphs
- Sort objects by various attributes and make pictographs
- Gather and interpret data to answer questions

## November

**Algebra & Analytical Methods**

- Calendar: Identify and extend a pattern

**Number Sense**

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Model, count, draw, write, and read numbers zero through five
- Use ordinal numbers
- Solve problems using skills and strategies
- Model, count, draw, write, and read numbers six through ten

## DECEMBER

**Algebra & Analytical Methods**

- Calendar: Identify and extend a pattern
- Identify, extend and solve problems with simple number patterns
- Recognize examples of 0-12 and sort and classify by number

**Number Sense**

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Model, count, draw, write and read numbers eleven and twelve
- Recognize and represent numbers 0-12 in many different arrangements and parts
- Order number for sets of 0-12 objects

## JANUARY

**Algebra & Analytical Methods**

- Calendar: Identify and extend a pattern

**Geometry, Estimation, & Measurement**

- Identify and describe circles, rectangles, squares and triangles
- Identify and extend patterns with plane shapes in different positions
- Create symmetrical pictures and representations; identify symmetry

**Number Sense**

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Use more and fewer to compare sets of objects
- Make and recognize reasonable estimates for numbers twelve and less
- Solve a problem by acting it out to make and identify equal groups
- Identify and model halves and equal parts

**Data Analysis & Probability**

- Predict the likelihood of events occurring
- Predict and record outcomes of activities depending on chance

## FEBRUARY

### Algebra & Analytical Methods

- Calendar:  Identify and extend a pattern

### Geometry, Estimation, & Measurement

- Sort 3-dimensional shapes (stack, roll and slide)
- Identify and describe solid shapes
- Explore ways to build 3-dimensional shapes
- Match the surfaces of 3-dimensional shapes to plane shapes
- Combine and separate parts used in making a whole object (build with blocks)

### Number Sense

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Identify, represent and write numbers 10-20
- Use ten frames to represent numbers 10-20

### Data Analysis & Probability

- Count, compare and graph solid shapes

## MARCH

### Algebra & Analytical Methods

- Calendar:  Identify and extend a pattern
- Orally count by twos, fives and tens; recognize and describe number patterns
- Use number patterns to identify and write numbers missing from sequences

### Geometry, Estimation, & Measurement

- Use counted examples to estimate quantities of 20 and less
- Use logical thinking to estimate more or less than a given number

**Number Sense**

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Order numbers 10-20 and identify numbers missing from an order
- Use dimes and pennies to represent amounts of money to 19 cents
- Count, identify and write numbers 21-31
- Identify and write numbers in order 0-31

## APRIL

**Algebra & Analytical Methods**

- Calendar: Identify and extend a pattern

**Number Sense**

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Model addition as combining sets and adding to sets
- Add one to numbers 0-9
- Add two to numbers 0-8
- Solve addition problems using pennies
- Model and record addition sentences
- Identify, model and add doubles
- Use pictures to represent and solve addition problems
- Model subtraction as taking away from or separating sets of objects
- Model and record results of subtracting one from numbers 1-10

## MAY

### Algebra & Analytical Methods

- Calendar: Identify and extend a pattern

### Geometry, Estimation, & Measurement

- Ocean Unit: Measure a pineapple using unifix cubes, links and standard units of measurement

### Number Sense

- At calendar time count how many days we have been in school and how many days have passed thus far in the month
- At calendar time group straws by ones and tens and place in the correct pocket
- Model and record subtraction of two from the numbers 2-10
- Solve subtraction problems using pennies
- Model and record subtraction sentences
- Relate addition and subtraction as opposite operations
- Decide whether to add or subtract in problem situations

# Benjamin School District 25

## GRADE ONE MATHEMATICS

## SEPTEMBER

### Number Sense

1. Identify number and number words 0-20
2. Write numbers 0-20
3. Compare numbers 0-20
4. Order numbers 0-20 (after, before, between)
5. Recite numbers 0-20 (forward and backward)
6. Match items in sets to determine more/ greater than: fewer/less than; same/equal to
7. Locate numbers on a number line

## OCTOBER

### Number Sense

1. Demonstrate addition stories
2. Write addition facts using symbols (+,=)
3. Solve addition facts with 0 as an addend
4. Solve addition facts up to sums of eight
5. Write addition sentences in horizontal and vertical format
6. Recognize and solve turn around facts

## NOVEMBER

### Number Sense

1. Demonstrate subtraction stories
2. Write subtraction facts using symbols (-, =)
3. Solve subtraction facts with zero

### Data Analysis

1. Create a tally chart
2. Identify a pictograph
3. Develop a pictograph
4. Identify a bar graph
5. Develop a bar graph
6. Interpret a graph

## DECEMBER

### Number Sense

1. Solve subtraction sentences in horizontal format (with a number line)
2. Solve subtraction sentences in vertical format (with a number line)
3. Write and solve subtraction sentences from 8 or less
4. Identify and solve count on facts
5. Identify and solve doubles facts

## JANUARY

### Number Sense

1. Identify and solve count on facts
2. Identify and solve doubles facts
3. Identify and solve doubles plus one facts
4. Identify and solve count back facts
5. Show subtraction as comparison
6. Write a number sentence to solve a problem

## FEBRUARY

### Algebra

1. Solve addition and subtraction story problems
2. Identify which operation applies to a story problem
3. Draw a picture to solve a problem

### Geometry

1. Identify and sort basic plane shapes
2. Identify and sort basic solid figures
3. Compare and contrast plane and solid shapes
4. Identify faces, edges, sides, and corners of plane and solid shapes

### Number Sense

1. Solve addition and subtraction number sentences

## MARCH

### Algebra

1. Solve addition and subtraction story problems
2. Identify which operation applies to a story problem
3. Find a pattern to solve a problem

**Geometry**

1. Develop and use math vocabulary relating to spatial sense and patterns
2. Use position words to locate, arrange, and describe objects in space and locations on a grid
3. Identify transformations (flips, slides, and turns)
4. Identify lines of symmetry and make symmetrical figures
5. Describe, predict, extend, and create patterns
6. Identify congruent shapes

**Number Sense**

1. Solve addition and subtraction number sentences
2. Identify, name, and represent 1/2, 1/3, and 1/4 of a region
3. Identify, name, and represent 1/2, 1/3, and 1/4 of a set

**Data Analysis & Probability**

1. Identify the likelihood of a given situation (certain, impossible, and probable)
2. Use data to predict and record the outcome of an event

## APRIL

**Algebra**

1. Solve addition and subtraction problems
2. Identify which operation applies to a story problem
3. Use a table to solve problems about elapsed time

**Geometry**

1. Identify and count equal parts
2. Use fractions to name parts of a whole
3. Identify one half, one fourth, and one third of a whole
4. Identify and represent one half, one fourth, and one third of a set

**Measurement**

1. Organize events
2. Compare time
3. State time to the hour and half-hour using analogue and digital clocks
4. Fine elapsed time
5. Read a calendar to tell dates

**Data Analysis and Probability**

1. Predict and determine the probability of an event

## MAY

### Algebra

1. Solve addition and subtraction problems
2. Identify which operation applies to a story problem

### Number Sense

1. count and write tens
2. regroup ten ones as one ten
3. read and write numbers through 99
4. identify place value of numbers through 99
5. show numbers in different ways
6. identify numbers through 99
7. order numbers through 100
8. identify ordinal numbers from first through ten
9. estimate how many when using a group of ten
10. compare two numbers using greater than and less than
11. compare two digit numbers using < >

# Benjamin School District 25

## SECOND GRADE MATHEMATICS

### SEPTEMBER

**Number Sense**

1. Develop and use the order and zero properties to find the sum
2. Interpret a number line to count on to find the sum
3. Recognize doubles and doubles plus one to find the sum of whole numbers
4. Identify the sum of whole numbers by adding 10 to 1-digit numbers
5. Identify a way to make 10 to find sums to 18
6. Solve an addition fact with three addends
7. Create a picture to solve a problem
8. Recognize the identity property and subtract all or none to find the difference
9. Use a number line to show how to count back to find the difference of two whole numbers
10. Compare two sets using subtraction
11. Solve subtraction problems from numbers through 20 using addition
12. Identify and list addition and subtraction expressions that name the same number

### OCTOBER

**Number Sense**

1. Identify and write fact families
2. State the missing number in addition and subtraction sentences
3. Prepare number sentences to solve problems
4. Create a survey by recording data using tally marks. Compare data using tables
5. Interpret data in a pictograph
6. Produce and read a bar graph. Compare data on a bar graph
7. Locate and identify points on a coordinate grid
8. Determine range and mode
9. Determine if an event is more likely, less likely, or equally likely to happen
10. Predict and record the outcome of an event
11. Interpret a bar graph to solve problems and make predictions

### NOVEMBER

**Number Sense**

1. Count, read, and write numbers to 100
2. Identify and write 10's and 1's and the number
3. Recognize the value of a digit
4. Represent a number in words, models, and expanded form
5. Compare two-digit numbers using >, <, and =
6. Determine if an answer is reasonable and explain
7. Identify even and odd numbers

8. Skip count by 2's, 3's, 4's, 5's and 10's
9. Order two-digit numbers to 100
10. Use ordinal numbers to 20th; 100th
11. Extend, describe, and create repeating and growing patterns
12. Use patterns to solve problems

## DECEMBER

### Geometry

1. Identify and classify plane shapes
2. Identify and classify plane shapes by sides and vertices
3. Identify congruent plane shapes
4. Identify and draw lines of symmetry on plane shapes
5. Combine and separate plane shapes
6. Identify slides, flips, and turns of plane shapes
7. Identify and describe plane shapes by their attributes; identify curves and angles
8. Identify and create geometric patterns with plane shapes
9. Identify solid shapes
10. Identify and classify solid shapes by faces, edges, and vertices
11. Create plane shapes from the faces of solid shapes
12. Classify and compare solid shapes
13. Develop logical thinking to solve problems

## JANUARY

### Number Sense

1. Identify and write unit fractions
2. Identify and write non-unit fractions
3. Identify and write fractions equal to and more than a whole
4. Compare fractions
5. Identify and write fractions that represent part of a set
6. Solve problems using data from a picture

## FEBRUARY

### Number Sense

1. Apply basic addition facts to add multiples of ten
2. Interpret a hundred chart and count-on by tens to add
3. Apply regrouping strategy of ten ones as one ten to show a number in another way
4. Determine, when adding a two-digit number and a one-digit number, if the ones need to be regrouped
5. Combine a one-digit number to a two-digit number with and without regrouping
6. Combine two-digit numbers with and without regrouping
7. Identify unnecessary information in a problem and solve

8. Rewrite horizontal in vertical form
9. Analyze the sum of two-digit addends by rounding to the nearest ten (estimate)
10. Select an appropriate computation method
11. Combine three two-digit numbers

## MARCH

### Number Sense

1. Apply guess and check to solve problems
2. Identify basic facts to subtract tens
3. Interpret a hundred chart to subtract tens without regrouping
4. Demonstrate how to regroup one ten as ten ones
5. Determine when to regroup one ten as ten ones
6. Recognizing how to subtract one-digit from two-digit numbers with and without regrouping
7. Recognizing how to subtract two-digit numbers with and without regrouping
8. Interpret data from a table to solve problems

## APRIL

### Number Sense

1. Rewrite horizontal subtraction in vertical form
2. Solve two-digit subtraction with and without regrouping
3. Analyze differences by rounding to the nearest ten (estimate)
4. Choose different methods to subtract
5. Rewrite subtraction by using addition
6. Recognize when to use addition or subtraction to solve a problem

### Measurement

7. Analyze and measure length using nonstandard units
8. Analyze and measure length to the nearest inch
9. Analyze and measure length to the nearest inch or foot
10. Analyze and measure length to the nearest foot or yard
11. Analyze and measure in centimeters and meter
12. Identify the perimeter
13. Interpret models and grid paper to find area
14. Interpret a picture to solve problems

## MAY

### Measurements

1. Identify and measure capacity and identify equivalent measures with cups, pints, quarts and gallons

2. Analyze whether containers hold, more, less or about one liter and analyze liters to measure capacity
3. Analyze and measure the weight of objects using pounds and ounces
4. Analyze and measure the mass of objects using kilograms and grams
5. Interpret a Fahrenheit thermometer
6. Interpret a Celsius thermometer
7. Choose the best tool and unit to measure length, weight, capacity and temperature
8. Weigh if a measure is reasonable
9. Determine the value of a group of pennies, nickels and dimes by counting on
10. Identify a quarter and a half-dollar and determine the value of a group of coins by counting on
11. Determine the value of a group of coins
12. Identify coin combinations greater than, and equal to one dollar
13. Show equal amounts with different coin combinations
14. Create a list to solve problems
15. Select coins to show an exact amount of money
16. Compare amounts of money
17. Select the fewest coins to show an amount of money
18. Compare coins and decide if there is enough money to buy and item; estimate costs
19. Add and subtract money amounts
20. Count on to make change with pennies and nickels
21. Count on with nickels, dimes and quarters to make change
22. Use models to act out and solve problems
23. Understand and estimate lengths of time
24. Distinguish time to the hour and half-hour
25. Distinguish time to five minutes
26. Distinguish time to the quarter-hour
27. Determine how much time has passed
28. Explain and understand information on a calendar
29. Compare periods of time
30. Interpret a table to solve problems

# Benjamin School District 25

## THIRD GRADE MATHEMATICS

## SEPTEMBER

**Number Sense**

1. Recognize how numbers are used in different ways
2. Identify place values of numbers from 1-99
3. Relate one thousand to hundreds and tens
4. Identify the place value of numbers through 9,999
5. Solve problems finding a number pattern
6. Identify place value of numbers through 99,999
7. Identify place values of greater numbers
8. Compare numbers using number lines and place value
9. State the order of numbers using place value and number lines
10. Round numbers to the nearest 10 or 100
11. Round numbers to the nearest 1,000; 100 or 10
12. Solve problems using information in a bar graph

## OCTOBER

**Number Sense**

1. Recognize the value of dollars, dimes and pennies
2. Name and count coins and bills
3. Make change from a given amount
4. Compare amounts of money
5. Round money to the nearest dollar and ten dollar

1. Apply addition properties to add
2. Estimate sums by rounding numbers
3. Regroup ones to add
4. Regroup both ones and tens to add
5. Apply the Guess and Check strategy to solve problems
6. Add three or more addends
7. Determine the sum of two four digit numbers
8. Solve problems by deciding the method to use
9. Solve problems after deciding if an estimate or exact answer is needed

## NOVEMBER

**Number Sense**

1. Apply subtraction rules to find differences
2. Relate addition and subtraction
3. Round numbers to estimate differences

4. Regroup tens as ones when subtracting
5. Regroup tens and hundreds when subtracting
6. Solve four digit subtraction problems
7. Solve subtractions problems containing zeros
8. Describe how to solve a problem

## DECEMBER

### Data Analysis & Probability

1. Develop a survey and record the results
2. Use models to find range, median, mode and mean of a set of numbers
3. Create and read and make a line plot
4. Solve a problem by constructing a table
5. Construct and read a pictograph
6. Construct a bar graph representing data
7. Use ordered pairs to locate points on a grid

1. Differentiate whether an event is impossible, certain, unlikely, or likely
2. Record and display the results of a probability experiment
3. Calculate the probability of an event
4. Use probability to decide if a game is fair or unfair
5. Use the results of experiments to predict outcomes

## JANUARY

### Measurement

1. Identify and compare lines, line segments, rays and angles
2. Identify & Describe Plane Figures
3. Identify, Describe, and Classify Different Triangles
4. Identify, Describe, and Classify 4 sided figures
5. Solve problems by solving and completing patterns
6. Identify, Describe, and Classify solid figures
7. Using models to relate solid to plane figures
8. Recognize figures that are the same size and shape
9. Identify figures that are similar
10. Recognize figures that have lines of symmetry
11. Identify flips, slides and turns
12. Solve problems using visual thinking

## FEBRUARY

### Measurement

1. Estimate and Measure the distance around a figure
2. Locate the distance around a figure
3. Estimate the area of a figure
4. Locate the number of square units that cover an area
5. Show what you know about area and perimeter to solve problems
6. Estimate the volume of a figure
7. Locate the volume of a figure

### Number Sense

1. Use repeated addition to model multiplication
2. Use arrays to multiply
3. Use different ways to multiply when 2,4,5,10,0,1 are factors
4. Construct an organized list

## MARCH

### Measurement

1. Recognize time to the hour, half hour and quarter hour
2. Recognize time to the 5 and 1 minute
3. Tell number of minutes before and after the hour
4. Use a clock to help tell when an activity will end or how long it will be
5. Read and use a calendar
6. Read and use a schedule
7. Read and thermometer in Fahrenheit and Celsius

### Number Sense

1. Use a multiplication table to find patterns
2. Use different ways to multiply when 3,6,7,8,9 are factors
3. Find patterns using a multiplication table
4. Arrange to group factors in any order to find the product of 3 or more factors
5. Solve problems that have more than one step

## APRIL

### Number Sense

1. Identify Fractions
2. Use Fractions to make part of a group
3. Locate fractional parts of a group
4. Solve problems using more than one step

5. Use different fractions to name the same amount
6. Identify Equivalent Fractions
7. Identify and Write Fractions greater than One
8. Compare fractions with like and unlike denominators
9. Analyze like and unlike fractions
10. Solve a problem using models to act it out
11. Add and Subtract fractions with like denominators

## MAY

**Number Sense**

1. Use models to explore two ways to think about Division
2. Use repeated subtraction to find quotients
3. Use arrays to relate multiplication and division
4. Use different ways to divide by 2,5 & 10
5. Decide what operations to solve a problem
6. Produce a number sentence to solve a number problem
7. Use Special Rules when you divide by zero and one
8. Use fact families to show how multiplication and division

1. Write fractions as denominators of 10
2. Write fractions as denominators of 100
3. Write decimals greater than 1
4. Decide whether an answer to a problem makes sense
5. Compare and order decimals and fractions
6. Relating money to fractions and decimals
7. Add and Subtract decimals
8. Solve problems by adding, subtracting, multiplying and dividing money

# Benjamin School District 25

## FOURTH GRADE MATHEMATICS

## SEPTEMBER

### Number Sense

1. Distinguish how a number is being used: to count, to measure, to label, or show position
2. Given a number through 999,999,999 the student will determine the value of any of the digits
3. Read numbers that are written in standard form, word form, short word form, or expanded form through 999,999,999
4. Write numbers through 999,999,999 in standard form, word form, short word form, or expanded form
5. Compare numbers up to nine digits
6. Order numbers up to nine digits
7. Count money to $100
8. Compare money amounts up to $100
9. Order money amounts up to $100
10. Count on to make change for amounts up to $50
11. Round whole numbers through 999,999,999 to the greatest place or to a specified place value
12. Round money amounts through $9,999. to the nearest dollar
13. Write the correct answer for 25 basic addition facts in one minute

## OCTOBER

### Number Sense

1. Identify the following properties of addition: zero property, commutative property, associative property
2. Identify the subtraction rule for zero
3. Use rounded numbers to estimate sums
4. Use rounded numbers to estimate differences
5. Decide whether an estimated or an exact answer is needed to solve a problem
6. Add numbers with up to 5 digits using regrouping
7. Subtract numbers with up to 5 digits using regrouping
8. Subtract numbers with up to 5 digits when some of the digits in the minuend are zero
9. Add and subtract whole numbers with up to 6 digits
10. Write the correct answer for 25 basic subtraction facts in one minute

## NOVEMBER

### Number Sense

1. Identify and use the following multiplication properties: commutative property, property of one, zero property, associative property
2. Identify and use the four division rules
3. Use multiplication facts to compute basic division fact
4. Write a fact family of two multiplication facts and two division facts when given two factors and a product
5. Use a multiplication table to find products and quotients for the basic multiplication and division facts
6. Use a multiplication table to find patterns in multiplication and division
7. Memorize the basic multiplication facts
8. Multiply three factors using the associative property
9. Use basic multiplication facts to divide when there is a remainder
10. Choose the correct operation to use when problem solving--addition, subtraction, multiplication, or division
11. Write the correct answer for 25 basic multiplication facts in one minute

## DECEMBER

### Number Sense

1. Use patterns for multiples of 10, 100, and 1,000 and basic facts to multiply mentally
2. Estimate products by rounding factors
3. Multiply up to five-digit numbers by one-digit numbers using regrouping when necessary
4. Use multiplication to solve word problems
5. Use a guess and check problem solving strategy to solve a problem
6. Write the correct answer for 25 basic multiplication facts in one minute

## JANUARY

### Number Sense

1. Multiply up to five-digit numbers by one-digit numbers using regrouping when necessary
2. Write the correct answer for 25 basic multiplication facts in one minute

### Geometry

1. Identify and label the following geometric figures: point, line segment, line
2. Label lines as parallel, intersecting, or perpendicular
3. Name rays and angles
4. Classify angles as right, obtuse, acute, or straight
5. Use a protractor to measure angles
6. Identify the following polygons: triangle, quadrilateral, pentagon, hexagon, octagon
7. Classify polygons as regular and irregular
8. Classify quadrilaterals as rectangle, square, trapezoid, parallelogram, or rhombus
9. Classify triangles by the length of their sides: equilateral, isosceles, or scalene
10. Classify triangles by the measures of their angles: right, obtuse, or acute
11. Identify the following parts of a circle: center, radius, diameter, chord

## FEBRUARY

### Number Sense

1. Use patterns and basic facts to multiply mentally
2. Use rounding to estimate products
3. Write the correct answer for 25 basic division facts

### Geometry

1. identify figures with the same size and same shape
2. distinguish between rotations, reflections, and translations
3. recognize figures with line symmetry and rotational symmetry
4. identify and draw lines of symmetry on a given figure
5. solve problems using visual thinking
6. find perimeters of polygons
7. find the area of a rectangle
8. find the area of figures that are not rectangles
9. identify and make solid shapes

## MARCH

### Number Sense

1. Estimate products using rounding
2. Multiply two-digit numbers
3. Solve problems by deciding which answer is reasonable
4. Multiply three-digit numbers by two-digit numbers
5. Multiply four- and five-digit numbers by two-digit numbers
6. Write the correct answer for 25 basic division facts in one minute

### Geometry

1. find perimeters of polygons
2. find the area of a rectangle
3. find the area of figures that are not rectangles
4. identify and make solid shapes
5. find the volume of a rectangular solid

## APRIL

### Number Sense

1. Find two-digit quotients with and without remainders
2. Interpret a remainder to find a reasonable answer
3. Regroup to divide two-digit numbers
4. Estimate Quotients
5. Use basic facts and patterns to divide mentally
6. Write the correct answer for 25 basic mixed facts in one minute

## MAY

### Number Sense

1. Divide three, four, or five digit numbers by one digit numbers
2. Decide where to write the first digit of the quotient
3. Divide money amounts
4. Decide when to place zeros in the quotient
5. Work backward to solve a problem
6. Write the correct answer for 25 basic mixed facts

# Benjamin School District 25

## FIFTH GRADE MATHEMATICS-L

### SEPTEMBER

**Number Sense**

1. Rewrite numbers through hundred thousands in standard and expanded form,
2. Describe numbers through hundred billions in standard and expanded forms
3. Recognize place value in whole numbers
4. Name the rounding, comparing, and ordering of whole number
5. Rewrite and work problems involving addition and subtraction

### OCTOBER

**Number Sense**

1. Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers
2. Express knowledge of meaning for circle, bar, double bar, line, double line and pictographs
3. create a pictograph, bar graph, chart/table or line graph for a given set of data
4. Recognize the mode, range, mean, median for a given set of data or a graph
5. Locate, identify points, and describe paths using ordered pairs

### NOVEMBER

**Number Sense**

1. Create a pictograph, bar graph, chart/table or line graph for a given set of data
2. Recognize the mode, range, mean, median for a given set of data or a graph
3. Locate, identify points, and describe paths using ordered pairs

### DECEMBER

**Number Sense**

1. Express knowledge of meaning for circle, bar, double bar, line, double line and pictographs
2. create a pictograph, bar graph, chart/table or line graph for a given set of data
3. Recognize the mode, range, mean, median for a given set of data or a graph
4. Recognize, read, write, model and interpret numerical expressions from a given description or situation

## JANUARY

### Number Sense

1. Solve problems and number sentences involving addition, subtraction, multiplication, and division using whole numbers
2. Express knowledge of meaning for circle, bar, double bar, line, double line and pictographs
3. Create a pictograph, bar graph, chart/table or line graph for a given set of data
4. Recognize the mode, range, and mean, median for a given set of data or a graph
5. Recognize, read, write, model and interpret numerical expressions from a given description or situation

### Measurement

1. Identify perimeter of regular and irregular polygons
2. Apply formula of area for regular polygons (Square, rectangle

## FEBRUARY

### Number Sense

1. Solve problems involving addition and subtraction

### Geometry

1. Understand the difference between acute, straight and obtuse angles
2. Solve problems involving the perimeter and area of a triangle and rectangle
3. Construct squares and rectangles and found area and perimeter using geoboards

## MARCH

### Number Sense

1. Solve problems involving addition and subtraction
2. Solve problems involving division
3. Understanding Reading, writing, and recognizing, and modeling equivalent representations of fractions

## APRIL

### Number Sense

1. Solve problems involving division
2. Understanding reading, writing, and recognizing, and modeling equivalent representations of fractions
3. Identify prime and composite numbers
4. Identify and write the prime factorization of a number
5. Point out common factors and the greatest common factor of two numbers
6. point out common multiples and the least common multiple of two or more numbers

### Data and Analysis

1. Collect and organize data in plots and graphs
2. Find the mean, median, mode, and range
3. Draw conclusions and make predictions from data displays

## MAY

### Number Sense

1. Solve problems involving division
2. Understanding reading, writing, and recognizing, and modeling equivalent representations of fractions
3. Identify prime and composite numbers
4. Identify and write the prime factorization of a number
5. Point out common factors and the greatest common factor of two numbers
6. point out common multiples and the least common multiple of two or more numbers
7. Identify and express ratios using appropriate notation and identify equivalent ratios
8. understanding and applying basic concepts of probability
9. add and subtract fractions with like and unlike denominators

### Data and Analysis

1. collect and organize data in plots and graphs
2. find the mean, median, mode, and range
3. draw conclusions and make predictions from data displays

1. Identify prime and composite numbers
2. Identify and write the prime factorization of a number
3. Point out common factors and the greatest common factor of two numbers
4. point out common multiples and the least common multiple of two or more numbers

# Benjamin School District 25

## FIFTH GRADE MATHEMATICS

### SEPTEMBER

**Number Sense**

1. Identify and express place value through thousands
2. Show rounding of numbers
3. Identify and express place value through hundred millions
4. Compare values of numbers
5. Order numbers from least to greatest and greatest to least

### OCTOBER

**Number Sense**

1. Identify and express place value through thousandths
2. Show rounding of numbers through the thousandths
3. Compare values of decimals
4. Order numbers from least to greatest and greatest to least

### NOVEMBER

**Number Sense**

1. Multiply by one-digit numbers
2. Use mental math to multiply multiples of 10 by using a pattern
3. Multiply two digit numbers
4. Multiply decimals by whole numbers

### DECEMBER

**Number Sense**

1. Identify the estimated quotients using basic multiplication facts.
2. Divide by one-digit divisors
3. Divide by two-digit divisors

## JANUARY

### Data Analysis

1. Identify the different parts of the graphs (labels, scale, intervals, title)
2. Interpret graphs
3. Produce different types of graphs
4. Recognize why graphs may be misleading
5. Point out when and why certain types of graphs are used
6. Identify a point on a line graph using ordered pairs/ coordinates

## FEBRUARY

### Geometry

1. Find perimeter of regular and irregular polygons using a formula
2. Apply formula of area for regular and irregular polygon (square, rectangle, triangle, parallelogram)
3. Identify different characteristics of different polygons
4. Use a pattern to solve a problem

### Number Sense

1. Express the how and why of finding the area of regular and irregular shapes
2. Express the how and why of solving a problem with a variety of answers
3. Practice test taking skills using the Illinois Standard Achievement Test Sample Tests

## MARCH

### Geometry

1. Identify angles (right, acute, obtuse, reflex
2. Compare angles (larger or smaller)
3. Measure angles to the closest degree

## APRIL

### Number Sense

1. Read, write, recognize, and model equivalent fractions
2. Recognize and model mixed numbers and improper fractions
3. Find common factors of 2 numbers
4. Find the greatest common factor of 2 numbers

## MAY

### Number Sense

1. Add and subtract fractions including mixed numbers
2. Express the fraction in lowest terms
3. Show equivalent fractions
4. Explain and apply how to change a mixed number into an improper fraction
5. Explain and apply how to change an improper fraction into a mixed number

# FIFTH GRADE MATHEMATICS-HI

## SEPTEMBER

### Number Sense

1. Identify and express place values up to hundred billions
2. Show rounding of numbers through hundred billions
3. Compare values of numbers
4. Order numbers from least to greatest and from greatest to least
5. Recognize the base number and the exponent
6. Define base and exponent
7. Apply how to write different forms of whole numbers
8. Identify and express place values up to the thousandths
9. Show rounding of numbers through the thousandths
10. Compare values of decimals
11. Order decimals from least to greatest and from greatest to least

### Enrichment/Deductive Reasoning

1. Distinguish patterns of numbers

## OCTOBER

### Number Sense

1. Write and evaluate algebraic expressions
2. Identify the Properties of Multiplication (Commutative, Associative, Zero, and Identify) and the Distributive Property to evaluate numerical expressions
3. Choose a strategy and use data from an advertisement to solve problems
4. Evaluate multiplication expressions
5. Use mental math to multiply multiples of 10 by using a pattern
6. Multiply two digit numbers
7. Multiply decimals by whole numbers
8. Find the product of two decimals
9. Choose a value for each variable in an expression that will yield a given product
10. Identify data from a table and choose a computation method to solve problems
11. Decide whether an answer to a problem is reasonable

### Enrichment/Deductive Reasoning

1. Distinguish and analyze patterns of numbers

## NOVEMBER

### Number Sense

1. Use compatible numbers to estimate quotients up to six digit dividends by one digit divisors

2. Solve story problems by deciding which operation to use
3. Determine when to write zeros in the quotients as place holders
4. Organize their guesses in a table when using the guess and check method
5. Define the rules of divisibility for numbers 2, 3, 4, 5, 6, 9, and 10

**Enrichment/Deductive Reasoning**

1. Distinguish and analyze patterns of numbers

## DECEMBER

**Number Sense**

1. Identify compatible numbers to estimate quotients up to six digit dividends by one digit divisors
2. Solve story problems by deciding which operation to use
3. Distinguish when to write zeros in the quotients as place holders
4. Organize their guesses in a table when using the guess and check method

**Enrichment/Deductive Reasoning**

1. Distinguish and analyze patterns of numbers

## JANUARY

**Measurement**

1. Identify perimeter of regular and irregular polygons
2. Apply formula of area for regular polygons (square, rectangle)

**Enrichment/Deductive Reasoning**

1. Distinguish and analyze patterns of numbers

## FEBRUARY

**Geometry**

1. Find and use the formula to find the circumference of a circle
2. Find and use the formula to find the area of a circle
3. Identify, describe, and draw circles including labeling the radius, diameter, chord
4. Apply formulas of area for regular and irregular polygons (square, rectangle, triangle, parallelogram)

**Number Sense**

5. Express the how and why of finding the area of an irregular shape
6. Express the how and why of a fundamental counting principle in a simple problem
7. Express the how and why of using fractions to design a pattern
8. Express the how and why of solving a problem with a variety of answers
9. Practice test taking skills using the Illinois Standard Achievement Test Sample Tests

**Enrichment/Deductive Reasoning**

1. Distinguish and analyze patterns of numbers

## MARCH

**Number Sense**

1. Find prime and composite numbers from 1 to 100
2. Recognize and model equivalent fractions, percents, and decimals
3. Read, write, recognize, and model equivalent fractions
4. Recognize and model mixed numbers and improper fractions
5. Order and compare fractions

**Enrichment/Deductive Reasoning**

1. Distinguish and analyze patterns of numbers

## APRIL

**Number Sense**

1. Add and subtract fractions with like and unlike denominators including mixed numbers
2. Develop an understanding of fractions as parts of unit wholes
3. Find the product of two fractions
4. State the steps of multiplication and division of fractions

## MAY

**Number Sense**

1. Review adding and subtracting fractions

**Data Analysis**

1. Identify the different parts of graphs (title, labels, scale, intervals)
2. Interpret graphs

3. Point out and produce examples of different types of graphs from magazines, newspapers, etc.
4. Create each type of graph using a given set of data
5. Identify a point on a line graph using ordered pairs/coordinates
6. Determine the mode, range, median, and mean from a graph
7. Recognize and explain why graphs may be misleading

# Benjamin School District 25

## SIXTH GRADE MATHEMATICS

## SEPTEMBER

### Geometry

1. Define, use proper symbols for, and draw examples of point, line, line segment, ray, and angle
2. Define acute, obtuse, right, and straight angles including how many degrees are in each kind
3. Define complementary and supplementary angles and identify them in a diagram
4. Determine degrees of missing angles in a diagram
5. Measure angles using a protractor
6. Create angles using a protractor
7. Define a tessellation and apply concept to basic rules of geometry

1. Define parallel lines cut by a transversal
2. Define, locate, and compare interior, exterior, alternate interior, alternate exterior, corresponding, and vertical angles
3. Using a T-chart, provide statements and reasons behind determining missing angle measures in a parallel line/transversal diagram

1. Define a polygon
2. Name polygons from three to ten sides
3. Draw polygons from three to ten sides
4. Explain the difference between regular and irregular polygons
5. Define and identify quadrilaterals
6. Define a diagonal
7. Using the definition of a diagonal, determine the sum of the measures of all angles in advanced polygons (3-8)

1. Define a triangle
2 Identify kinds of triangles: according to angles (acute, right, obtuse) and according to sides (equilateral, isosceles, scalene)

## OCTOBER

### Geometry

1. Convert units of measure within the customary units
2. Define perimeter
3. Compute perimeters of many polygons
4. Produce missing sides of polygons when the perimeter is given

1. Develop formulas for finding the areas of squares, rectangles, triangles, and parallelograms.
2. Make sure that the students know that the units being counted, when finding areas, are actual unit squares
3. Compute the areas of squares, rectangles, triangles, and parallelograms
4. Find a missing side when a side and an area is given

1. Define a circle
2. Define and identify circle terms: radius, diameter, chord, central angle, arc
3. Determine the measure of a central angle and the measure of the arc it forms

1. Define circumference as being the distance around a circle (perimeter)
2. Define pi in three ways: as a mathematical symbol, as an irrational number, and as a shortened, usable number (3.14)
3. Using the formula that determines pi, determine the formula that determines circumference (2 * pi * r)

1. Define the area of a circle as being the space inside a circle
2. Develop the formula for the area of a circle (pi * r squared)
3. Determine the difference between the formula for area and the formula for circumference
4. Compute the area of a circle

**Number Sense**

1. Identify places from billions to millionths
2. Understand the relationship between decimals and powers of ten (10^0 = 1, 10^1 = 10, etc.)
3. Write numbers in standard and word form
4. Compare whole numbers and decimals using the "less than" and "greater than" symbols
5. Order numbers (and decimals) from greatest to least and least to greatest
6. Round numbers to a specific place and the greatest place

## NOVEMBER

**Number Sense**

1. Read decimals mathematically
2. Define decimals as another way to write a fraction
3. Compare decimals using "less than", "greater than", and "equal" symbols
4. Order decimals from least to greatest and vice versa
5. Round decimals to an indicated place or the greatest place
6. Demonstrate the ability to add and subtract decimals. Remember that the most important step is to line up the decimals
7. Demonstrate the ability to multiply and divide decimals
8. Recognize the difference between adding/subtracting decimals and multiplying/dividing them
9. Determine the correct spot for the decimal point after multiplying and dividing decimals
10. Remember that in order to divide decimals, the divisor must be a whole number

**Order of Operation**

1. Define order of operations as a specific way of solving a problem with multiple operations.
2. Define PEMDAS
3. Use an inverted triangle to organize steps in an order of operations problem
4. Use problems with a range of difficulty with all operations (adding, subtracting, multiplying, dividing, exponents, parentheses)

## DECEMBER

### Exponents

1. Define an exponent as a shortened way to write a multiplication problem
2. Define the parts of an exponential expression: base, exponent
3. Expand an exponent to make a multiplication problem and vice versa
4. Use variables to show exponents. Expand them and show that they are used in the same fashion as numbers
5. Scientific Notation

1. Define Scientific Notation as a shortened way to write a repetitive multiplication problem
2. Understand why powers of ten are used in scientific notation
3. Put large and small numbers into scientific notation and vice versa
4. Understand real-world scientific notation, such as 3.8 billion, 45.8 million, etc. and define "pleasing" scientific notation benchmarks

### Algebra

1. Define the following terms: number, variable, expression, equation, sum difference product, quotient

2. Translate an expression or equation into words and vice versa

3. Understand combining like terms

4. Understand inverse operations

1. Using inverse operations and combining like terms, solve basic algebraic equations using addition, subtraction, multiplication, and division

2. Understand importance of solving for the variable (x = whatever), and checking answers by "plugging in" answer for variable

## JANUARY

### Algebra

1. Define the goal of an equation: to isolate the variable

2. Understand "reverse order of operations" to correctly isolate the variable

3. Solve 2-3 step algebraic equations using combining like terms, reverse order of operations, and inverse operations

### Fractions

1. Define and find factors

2. Understand and find the GCF of pairs of numbers by listing all the factors and/or by making factor trees and using the prime factorization

3. Define and find multiples

4. Understand and find LCM and be able to find the LCD which is the least common multiple of the denominators

5. Define prime numbers and composite numbers noting that one and zero are neither

6. Expand exponential numbers for use in prime factorization

7. Compare and order fractions-by a common denominator, changing to decimals, and cross multiplying

8. Establish fraction sense. Determine whether a fraction is close to 0, 1/2, or 1

1. Demonstrate and be able to find equivalent fractions. (This includes reducing a)

2. Define simple, unit, improper, and mixed fractions

3. Distinguish the difference between a simple fraction and a fraction in its simplest form

4. Change an improper fraction to a mixed number and vice versa

## FEBRUARY

### Fractions

1. Demonstrate and be able to find equivalent fractions. (This includes reducing a fraction)

2. Define simple, unit, improper, and mixed fractions

3. Distinguish the difference between a simple fraction and a fraction in its simplest form

4. Change an improper fraction to a mixed number and vice versa

5. Add/subtract fractions:
   -the denominators must be the same
   -add/subtract only the numerators

1. Multiply fractions/mixed numbers:
   -there must be two fractions
   -multiply the numerator times the numerator and the denominator times the denominator

2. Model with illustrations why 1/2 X 3/8 equals 3/16

3. Defend and support with illustrations and the following of multiplication rules for fractions why mixed numbers must be changed to fractions before multiplying

4. Use cancellation for expediency

## MARCH

### Fractions

1. Define and find reciprocals
2. Demonstrate using equivalent fractions, that any given division problems with fractions is equal to an equivalent multiplication problem. Hence, this explains the reason for inverting the second fractions and multiplying
3. Solve division of fraction problems including complex fractions

1. Convert fractions to decimals by changing to a denominator that is a power of ten or by dividing the numerator by the denominator
2. Convert decimals to fractions by correctly reading the decimal and then reducing the fraction if necessary
3. Distinguish the difference between terminating and non-terminating (some repeat, some don't) decimals
4. Demonstrate the use of the bar when writing repeating decimals

## APRIL

### Percent, Ratios, Probability

1. Define a percent (%) as a given amount compared to one hundred - a ratio, a fraction
2. Give examples of percents including percents greater than 100% and less than 1%
3. Convert from fraction to decimal to percent and vice versa
4. Using percents solve equations with missing factors or products. Example: "What is 5% of 13?" "17 is 14 3/7% of what?" “7 is what part or what % of 82?"
5. Apply the skill to solve story problems
6. Create a chart with most common conversions from fraction to decimals to percents and memorize it

1. Define a ratio as a fraction that describes two separate conditions or events
2. Define a proportion as two fractions (ratios) that are equivalent
3. Use proportions to convert between fractions, decimals, and percents

1. Illustrate that probability is what might be by letting students select marbles from a bag. From a good sample "guess" how many of the marbles are black and how many are white
2. Define that probability is a ratio - the number of good picks divided by the total number of equally possible picks
3. Demonstrate what may be done if the possible picks are not equal
4. Explore the probability when more than one pick is to happen. Differentiate between replacement and no replacement
5. Discuss, illustrate, and figure probabilities between dependent and independent events. Use tree diagrams to count equally likely outcomes

**MAY**

**Graphing**

1. Locate a point on the chalkboard. Where is it?

   - On the board, on the top half, on the right top half until a Cartesian graph is developed
2. Define a coordinate pair (3, 7) and graph it showing that it is not equal to (7,3)
3. Expand the graph to include the four quadrants. Name and locate them
4. Name and locate the origin (0,0)
5. Graph points and connect points according to directions
6. Graph linear equations using a table
7. Solve simple equations be graphing and interpreting the points of intersection
8. Create original designs using Cartesian pairs with directions

1. Define transformation, translation, reflection, rotation
2. Determine formulas for translations, reflections, and rotations
3. Apply formulas using points on a plane

1. Define and explain bar graphs, circle graphs, and line graphs
2. Explain the direct application of graphs to scientific experiments
3. Determine how data can be determined using graphs

4. Determine how a survey may be used to construct graphs, especially bar graphs and circle graphs

5. Take a survey and display results using graphing

# Benjamin School District 25

## SEVENTH GRADE MATHEMATICS

## SEPTEMBER

### Fractions

1. Convert mixed numbers to improper fractions and vice versa
2. Use a number line with proper intervals to plot a mixed number or improper fraction

1. Find multiple equivalent fractions for a given fraction by use of multiplication or division
2. Define and give examples of primes, factors, and composites
3. List examples of two prime numbers with a given sum
4. List all the factors of a given number and state the prime factors
5. Reduce fractions to lowest terms using GCF (Greatest Common Factor)
6. Understand and find the GCF for two or more numbers by making factor trees and using prime factorization
7. Understand and find the LCM (Least Common Multiple) for two or more numbers by making factor trees and using prime factorization

1. Convert fractions to decimals by dividing the numerator by the denominator
2. Show proper bar notation for writing repeating decimals
3. Distinguish the difference between terminating and non-terminating decimals

1. Compare fractions using a common denominator and cross multiplication
2. Order fractions from least to greatest and greatest to least using a common denominator or converting fractions to decimals

## OCTOBER

### Fractions

1. Determine the LCD (Lowest Common Denominator) for a pair of fractions
2. Reduce a fraction answer to lowest terms
3. Convert an improper fraction to a mixed number in the final step if necessary

1. Determine the LCD for a pair of fractions
2. Complete problems with and without borrowing and regrouping
3. Reduce a fraction answer to lowest terms
4. Convert an improper fraction to a mixed number in the final step if necessary

1. Convert mixed numbers to improper fractions in order to multiply
2. Solve problems using a cancellation method. (Find the GCF before you multiply)
3. Convert an improper fraction to a mixed number or whole in the final step if necessary

1. Convert mixed numbers to improper fractions in order to divide
2. Explain how to find a reciprocal and how to use it when dividing
3. Solve problems using a cancellation method. (Find the GCF before you multiply)
4. Convert an improper fraction to a mixed number or whole in the final step if necessary
5. Solve problems involving complex fractions

### Number Theory

1. Review rules for order of operations to find one correct answer when there are several operations present in one problem
2. Identify the correct placement of (), [], or {} in a PEMDAS (Parenthesis, Exponents, Multiply, Divide, Add, Subtract) problem
3. Create an original PEMDAS problem with multiple priority levels
4. Reinforce understanding of exponents-verify the difference between a base and an exponent

**Algebraic & Mathematical Expressions**

1. Define: expression, variable, algebraic expression, numeric expression
2. Write a word phrase for a variable expression
3. Write a variable expression for a word phrase that involves () or no ()

**Evaluating Algebraic Expressions**

1. Substitute given values for variables in an expression
2. Using order of operations simplify an expression
3. Discuss U.S. time zones and use of algebraic expressions and a spreadsheet

## NOVEMBER

**Equation**

1. Introduce and learn key vocabulary: additive inverse, zero pair, coefficient, inverse operation, opposites
2. Utilize a cancelling method to solve one step equations involving the four basic math operations
3. Solve multi step equations using order of operations rules
4. Recognize an equation with grouping symbols and solve it verbally or in writing
5. Create a multi step equation

**Graphing (circle graphs)**

1. Identify the number of degrees in a complete circle as 360
2. Determine the number of degrees a category occupies in a circle graph
3. Construct and label a circle graph with correct percentages and headings
4. Calculate the percent of a circle that each category occupies in a circle

## DECEMBER

### Number Theory

1. Plot integers and other rational numbers on a vertical or horizontal number line
2. Create a number line model for adding integers
3. Recognize the set of integers as part of the larger set of rational numbers
4. Complete problems with integers that involve adding, subtracting, multiplying, and dividing
5. Describe what absolute value is and use it to solve problems
6. Represent a given situation (i.e. temperature, altitude, sea level) using integers
7. Utilize Order of Operations when there are multiple operations within a problem

## JANUARY

### Proportions

1. Define ratio and rate
2. Find equivalent rates and ratios
3 Write ratios in different forms
4. Determine if two ratios form a proportion
5. Solve a basic (direct proportion) using the cross products method
6. Write and solve problems involving direct proportions
7. Determine the scale used in a scale drawing
8. Choose an appropriate scale and create a scale drawing
9. Prove that triangles are similar by identifying corresponding angles as congruent and the ratios of corresponding sides as proportional
10. Find a missing side in a triangle by using a proportion

## FEBRUARY

### Probability

1. Define probability
2. Determine the probability of a single event and write the answer as a fraction, decimal, and percent
3. Justify the reason that probability has to fall between 0-1 on a scale
4. State the probability of a compound event with independent and dependent events
5. Illustrate the possible outcomes for an event using a tree diagram or a sample space

## MARCH

### Fractions, Decimals, Percents

1. Convert fractions to decimal and percent form
2. Recognize common fraction and decimal equivalents
3. Use a shortcut strategy to convert a fraction to a percent if the denominator is a factor of 100
4. Change percents to fraction and decimal form
5. Utilize a percent formula to find a percent or part of a number
6. Write and solve a proportion to find a percent or part of a number
7. Find the original or starting number when a percent is known
8. Write and solve a proportion to determine percent or rate of increase or decrease
9. Problem-Solving with percentage formulas; use of formulas introduced to solve word and challenge problems

## APRIL

### Consumer Mathematics

1. Calculate the discount amount given a rate and original price
2. Utilize a sales tax table to determine tax for a given dollar amount

3. Compute tip rates for given dollar amounts ranging from 15-20%

4. Discuss the benefits and challenges of working a job where a person is paid by commission

5. Calculate the commission based on total sales and percentage of commission

6. Determine simple interest using the formula I = prt

7. Calculate simple interest for a given number of days, months, or years

## MAY

**Perimeter & Area (Geometry & Measurement)**

1. Identify the parts of a circle: radius, diameter, chord

2 Explore the relationship between circumference & diameter in a circle

3. Use 3.14 and 22/7 as a representation of pi to find area and circumference of circles

4. Find a missing diameter or radius given circumference or area

5. Find perimeter and area of polygons

6. Use a shortcut strategy to find perimeter and area of regular polygons

7. Determine area of complex figures by breaking them into smaller parts

# Benjamin School District 25

## SEVENTH GRADE PRE-ALGEBRA

## SEPTEMBER

**Algebraic Expressions and Integers (Pre-Algebra and Analytical Methods)**

1. Identify correct order of operations
2. Solve problems involving order of operations (Insert grouping symbols when appropriate)
3. Identify the difference between equations and expressions
4. Write variable expressions
5. Evaluate variable expressions
6. Graph integers on a number line
7. Complete computation of integers with the 4 basic operations (addition, subtraction, multiplication, division)
8. Graph ordered pairs on a coordinate plane
9. Identify the quadrant or axis that an ordered pair lies in or on
10. Define and utilize key vocabulary

## OCTOBER

**Solving One-Step Equations & Inequalities (Pre-Algebra and Analytical Methods)**

1. Use the distributive property with rational numbers and variables
2. Simplify variable expressions using the ability to combine like terms
3. Solve one-step equations using the 4 basic operations
4. Graph inequalities on a number line
5. Identify the difference between a closed vs. open circle graph
6. Write an inequality based on a given graph

7. Solve one-step inequalities using the 4 basic operations
8. Define and implement key vocabulary

## NOVEMBER

**Decimals & Equations (Data Analysis)**

1. Determine the mean, median, and mode for a given set of data
2. Determine the best measure of central tendency for a set of data
3. Find the range and outliers in a set of data
4. Use perimeter, area, temperature, and distance formulas
5. Work with integers as well as decimals to solve equations
6. Understand and utilize key vocabulary

## DECEMBER

**Solving Multi- Step Equations and Inequalities**

1. Combine like terms to simplify an equation
2. Use the distributive property to simplify an equation
3. Write and solve equations involving consecutive integers
4. Graph solutions to equations & inequalities on a number line
5. Describe the process for reversing an inequality symbol
6. Graph compound inequalities on a number line with proper symbols
7. Find simple interest paid on investments or savings accounts in full year amounts, months, or days
8. Use calculator and paper pencil method to determine interest
9. Learn and implement key vocabulary

## JANUARY

### Factors, Fractions, and Exponents

1. Use divisibility rules for 2, 3, 4, 5, 6, 7, 8, 9, and 10
2. Find the prime factorization for composite numbers and write in exponent form
3. Determine the GCF for 2 or more numbers or variable expressions using exponent form
4. Simplify fractions using prime factorization as a strategy
5. Use rules for exponents to simplify expressions involving multiplication and division
6. Write expressions with and without negative exponents
7. Evaluate expressions with and without negative exponents
8. Write numbers in scientific notation using the adjustment strategy with powers of 10
9. Understand and apply key vocabulary

## FEBRUARY

### Operations with Fractions

1. Determine the LCM (Least Common Multiple) for a set of numbers or algebraic expressions
2. Compare fractions:
   a. using a Least Common Denominator (LCD)
   b. converting to decimal form
   c. by graphing on a number line
3. Write fractions in decimal form by hand and by use of a calculator
4. Describe and write the process for converting terminating and repeating decimals to fractions
5. Determine a common denominator for a pair of fractions or expressions and then add or subtract to obtain an answer
6. Utilize a cancellation method to simplify fractions and algebraic expressions and then multiply the remaining numerators and denominators to obtain an answer
7. Convert mixed numbers to fraction form in order to multiply
8. Rewrite division problems as related multiplication in which you multiply by the reciprocal of the divisor

9. Identify appropriate customary units for a given object
10. Convert from one unit to another in the customary system using a conversion factor
11. Learn and use key vocabulary

## MARCH

### Operations with Fractions

1. Solve equations with fractions by adding or subtracting
2. Solve equations with fractions by multiplying or dividing
3. Create an appropriate equation for a given word problem
4. Find powers of products using the rule $(a^m)^n=a^{mn}$
5. Determine powers of quotients using the rule $(a/b)^m= a^m/b^m$ for b not equal to zero
6. Apply rules of powers of products and quotients to solve abstract volume problems
7. Explain student errors or mistakes made in a given problem and give the correct answer

## APRIL

### Probability

1. Recognize and use the probability scale in fraction, decimal, and percent form
2 Explain the difference between independent and dependent events
3. Calculate the odds for a given situation
4. Utilize the counting outcomes process to determine the number of possible outcomes for an event
5. Calculate the theoretical probability for an event
6. Use experimental probability results to make predictions
7. Choose an appropriate sample for a survey of a population to ensure that you have a random sample
8. Make estimates about populations using results from random samples

**Linear Functions and Graphing**

1. Use the vertical line test to determine if a relation is a function
2. Create a table of values to show ordered-pair solutions for a linear equation
3. Identify a linear equation as a function
4. Using two points on a line, determine the slope using rise over run

## MAY

**Linear Functions and Graphing**

1. Determine the slope of a line given two points
2. Identify a slope as positive, negative, zero, or undefined by looking at a graph
3. Recognize special cases dealing with slope (horizontal line slope is 0, vertical line slope is undefined)
4. Name slope(m) and y-intercept(b) of a line when the equation is written in slope-intercept form
5. Using the slope and y-intercept write an equation of a line
6. Translate an equation from standard form to slope-intercept form
7. Graph a linear equation using slope and y-intercept to get a 2nd point
8. Utilize knowledge of equivalent fractions to spread points out on a line to obtain a more accurate graph (if a slope is 2/1 recognize that 4/2 is the equivalent value)
9. Solve a system of equations and determine the solution (ordered pair) of the system by graphing the lines in the same coordinate plane
10. Label a system of equations that are parallel lines as NS meaning there is no solution because the lines share no common points
11. Identify systems of equations that are the same lines as IMS meaning there are infinitely any solutions
12. Recognize (without graphing) when two or more equations in a system form parallel lines because there slopes are the same
13. Classify a system of equations (without graphing) as perpendicular lines if there slopes have a product of -1
14. Describe the differences and similarities between linear equations and linear inequalities

15. Illustrate a linear inequality with the proper boundary line (dashed or solid) and shaded region

16. Solve a system of linear inequalities through graphing

17. Show the solution of a system of inequalities through graphing and shading the appropriate overlapping region

**Polynomials**

1. Classify a polynomial as: monomial, binomial, trinomial

2. Identify the degree of a polynomial

3. Evaluate a polynomial for a given number or set of numbers

4. Write a polynomial in standard form

5. Add and subtract polynomials using the combining like terms strategy used throughout the year

6. Determine perimeter of a figure by adding polynomials

7. Find a missing length in a figure given the perimeter and essential side lengths

8. Solve problems where you multiply a polynomial by a monomial using the distributive property

9. Use the GCF (Greatest Common Factor) of terms in a polynomial to write an expression as the product of two factors

10. Multiply two binomials using the FOIL (First, Outside, Inside, Last) method

# Benjamin School District 25

## EIGHTH GRADE ALGEBRA

## SEPTEMBER

### Equations *(Algebra)*

1. Solve one-step addition and subtraction equations
2. Solve one-step multiplication and division equations
3. Solve two-step equations
4. Solve multi-step equations
5. Solve equations using the distributive property
6. Solving literal equations (formulas)

### Inequalities & Absolute Value *(Algebra)*

1. Solve inequalities
2. Solve multi-step inequalities
3. Solve Compound inequalities
4. Solve absolute value functions, equations, and inequalities

## OCTOBER

### Proportions *(Data Analysis, Statistics, Probability)*

1. Solve proportions
2. Solve percent problems using proportions
3. Apply Proportions and Similar Figures
4. Solve theoretical probability problems
5. Distinguish Percent of change
6. Applying Ratios to probability
7. Distinguish Percent Error
8. Infer Probability of compound events

### Banking

- Balancing a checkbook
- Solving everyday money scenarios

## NOVEMBER

### Linear Functions *(Algebra)*

1. Identify Functions and Relations
2. Relating Graphs to Events
3. Complete ordered pairs in functions
4. Identify Function Rules/Tables/Graphs
5. Analyze Direct Variation
6. Describing Number Patterns

**Banking**

- Balancing a checkbook
- Solving everyday money scenarios

## DECEMBER

**Linear Equations and Their Graphs *(Algebra)***

1. Define and Identify Slope
2. Compute slope using various methods
3. Compute rate of change from a graph
4. Write equations in slope-intercept form
5. Computing x- and y-intercepts
6. Write equation in standard form
7. Convert equations in standard form to slope intercept form and vice versa
8. Classify point-slope form and writing linear equations
9. Determine slope of parallel and perpendicular lines
10. Create and use scatter plots while interpreting equations of lines
11. Graphing Absolute Value Equations

**Banking**

- Balancing a checkbook
- Solving everyday money scenarios

## JANUARY

**Systems of Equations and Inequalities *(Algebra)***

1. Solving systems by constructing a graphing
2. Solving systems using substitution
3. Solving systems using elimination
4. Applications of linear systems (choose appropriate method)
5. Apply Linear Inequalities
6. Solve Systems of linear Inequalities
7. Solve two variable word problems using systems of equations

**Technology**

- Balancing a Checkbook
- Solving everyday money scenarios

## FEBRUARY

**Exponents and Exponential Functions *(Algebra)***

1. Identify Zero and Negative Exponents
2. Evaluating Exponential Expressions
3. Writing Numbers in Scientific & Standard Notation
4. Identify Scientific Notation
5. Multiplying Powers
6. Apply Scientific Notation
7. Raising a Power to a Power
8. Raising a Product to a Power
9. Dividing Powers With the Same Base
10. Raising a Quotient to a Power
11. Analyze Geometric Sequences
12. Solving the Geometric Formula
13. Evaluating Exponential Functions
14. Graphing Exponential Functions
15. Graph Exponential Growth
16. Graph Exponential Decay

**Technology**

- All basic math skills

## MARCH

**Polynomials and Factoring *(Algebra)***

1. Describing Polynomials
2. Adding Polynomials
3. Subtracting Polynomials
4. Distributing a Monomial
5. Factoring a Monomial from a Polynomial
6. Multiplying Two Binomials
7. Multiplying a Trinomial & a Binomial
8. Finding the Square of a Binomial
9. Finding the Difference of Squares
10. Factoring Trinomials

## APRIL

### Polynomials and Factoring Cont. *(Algebra)*

1. Factoring $x^2 + bx + c$ trinomials
2. Factoring $ax^2 + bx + c$ trinomials
3. Factoring perfect-square trinomials
4. Factoring the difference of squares
5. Factoring polynomials with four terms
6. Factoring trinomials by grouping

### Quadratic Equations and Functions

1. Graphing $y = ax^2$
2. Graphing $y = ax^2 + c$
3. Graphing $y = ax^2 + bx + c$
4. Graphing Quadratic Inequalities
5. Finding Square Roots
6. Estimating and Using Square Root

## MAY

### Quadratic Equations and Functions Contd. *(Algebra)*

1. Solving Quadratic Equations by Graphing
2. Solving Quadratic Equations by Using Square Roots
3. Solving Quadratic Equations by Factoring
4. Solving Quadratic Equations by Completing the Square
5. Solving Quadratic Equations by Using the Quadratic Formula
6. Solving Quadratic Equations Using the Best Method
7. Finding Number of Real Solutions of a Quadratic Equation
8. Choosing a Linear, Quadratic, or Exponential Model to Represent Data

## JUNE

### Radical Expressions and Equations *(Algebra)*

1. Simplifying Radical Expressions Involving Products
2. Simplifying Radical Expressions Involving Quotients
3. Solving Problems Using the Pythagorean Theorem

# Benjamin School District 25

## EIGHTH GRADE PRE-ALGEBRA

## SEPTEMBER

**Algebraic Expressions & Integers *(Algebra)***

1. Identify correct order of operations
2. Solve problems involving order of operations
3. Identify the difference between an expression and equation
4. Evaluating Expressions
5. Integers and Absolute Value
6. Inductive Reasoning
7. Adding & Subtracting Integers
8. Multiplying & Dividing Integers
9. Graphing ordered pairs on a coordinate plane

## OCTOBER

**Solving One-Step Equations & Inequalities *(Algebra)***

1. Distributive Property
2. Simplifying Variable Expressions
3. Variables & Equations
4. Solving Equations by Adding & Subtracting
5. Solving Equations by Multiplying & Dividing
6. Inequalities and their graphs
7. Solving inequalities by Adding & Subtracting
8. Solving inequalities by Multiplying & Dividing

**Banking**

- Balancing a checkbook
- Solving everyday money scenarios

## NOVEMBER

**Decimals and Equations/Analyzing Data *(Data Analysis, Statistics, Probability)***

1. Rounding and Estimating Decimals
2. Identify and compute measures of central tendency (mean, median, mode)
3. Evaluating Formulas
4. Solving Equations by Adding and Subtracting Decimals
5. Solving Equations by Multiplying and Dividing Decimals
6. Converting using the Metric System

**Banking**

- Balancing a checkbook
- Solving everyday money scenarios

## DECEMBER

**Number Patterns-Factors, Fractions, Exponents *(Number Sense)***

1. Use divisibility rules for 2, 3, 4, 5, 6, 7, 8, 9, 10
2. Find the prime factorization of a composite number
3. Identify Greatest Common Factors
4. Identify Least Common Multiple
5. Solve Powers (Exponents)
6. Simplifying Fractions
7. Multiplying Exponents
8. Dividing Exponents
9. Express numbers in scientific notation and standard notation

**Operations With Fractions *(Number Sense)***

1. Adding and Subtracting Fractions
2. Multiplying and Dividing Fractions
3. Solving Equations by Adding and Subtracting Fractions
4. Solving Equations by Multiplying and Dividing Fractions
5. Finding Powers of Products & Quotients

**Technology**

1. Balancing a Checkbook
2. Solving everyday money scenarios

## JANUARY

**Ratios, Proportions, Percents *(Number Sense)***

1. Writing and Simplifying Ratios
2. Finding Rates and Unit Rates
3. Solving Proportions
4. Using Proportions to Solve Problems
5. Using Similar Figures
6. Using Scale Drawings
7. Finding Probability
8. Finding Odds
9. Writing Percents as Fractions and Decimals

10. Writing Decimals and Fractions as Percents
11. Finding Part of a Whole and Percent
12. Finding a Whole Amount
13. Writing and Solving Percent Equations
14. Using Equations to Solve Percent Problems
15. Finding Percent of Increase & Decrease
16. Finding Markups and Discounts

**Technology**

- Balancing a Checkbook
- Solving everyday money scenarios

## FEBRUARY

**Area & Volume *(Geometry)***

1. Finding area of triangles
2. Finding area of trapezoids
3. Finding area of irregular figures
4. Finding surface areas of Prisms/cylinders
5. Finding surface areas of cones, pyramids & spheres
6. Finding volume of prisms
7. Finding volume of cylinders
8. Finding volume of Cones & pyramids
9. Finding volume of spheres

**Right Triangles in Algebra *(Geometry)***

1. Using the Pythagorean theorem
2. Identifying right triangles

## MARCH

**Spatial Thinking (Geometry)**

1. Identifying points, lines, & planes
2. Intersecting, parallel and skew lines
3. Adjacent & Vertical lines
4. Relating angles & parallel lines
5. Classifying triangles
6. Classifying quadrilaterals
7. Finding circumference of circles
8. Finding area of circles
9. Making circle graphs
10. Identifying congruent segments & angles
11. constructing bisectors
12. graphing translations

13. describing translations
14. identifying lines of symmetry
15. graphing reflections
16. graphing rotations
17. identifying rotational symmetry

## APRIL

**Data Analysis and Probability**

1. Using Frequency Tables to Display Data
2. Using Line Plots to Display Data
3. Making Box-and-Whisker Plots
4. Analyzing Box-and Whisker Plots
5. Counting Possible Choices
6. Counting Outcomes to Find Probability
7. Probability of Independent Events
8. Probability of Dependent Events
9. Permutations
10. Combinations
11. Finding Experimental Probability
12. Making Estimates About Populations
13. Simulating a Problem

## MAY

**Solving Equations and Inequalities**

1. Solving Two-Step Equations
2. Solving Multi-Step Equations
3. Solving Multi-Step Equations with Fractions and Decimals
4. Writing Equations by problems solving
5. Solving Equations with variables on both sides
6. Solving two-step Inequalities

## JUNE

**ILAR/Math Restaurant Project**

1. Using a Checkbook
2. Figuring Tip/Percentage
3. Bill Totals
4. Working With Money