

Cycle 1

Unit 1 (2 Weeks)

How are numerical and categorical variables determined and recognized?

How are graphs interpreted?

How are the probabilities of events identified?

What do good math students do?

How are medians and modes determined?

How can problems be solved differently?

Unit 2 (2 Weeks)

How do big numbers have relationships?

How are big numbers ordered and compared?

What patterns are represented in large numbers?

What do problem solvers do?

- A. Number and Operations
- B. Algebra
- E. Data Analysis and Probability

- A. Number and Operations
- B. Algebra
- D. Measurement
- E. Data Analysis and Probability

- A. Choosing appropriate methods and tools to calculate
- A. Choosing to find an estimate or an exact answer
- B and E. Collecting organizing graphing and analyzing data
- B. and E. Using numerical variables
- B. and E. Translating between graphs and real world events
- B. and E. Making and interpreting bar graphs
- E. Predicting populations characteristic from samples
- E. investigating the concept of average
- E. Finding the median
- E. Finding the mode
- E. Finding the probability of an event based on collected data
- A. Self-assessing the multiplication and division facts
- A. Maintaining fluency with the multiplication and division facts with the 5's and 10's
- A. Reading and writing large numbers
- A. Comparing and ordering large numbers
- A. Using estimation to place large numbers on a number line
- A. Developing number sense for large numbers
- A. Rounding large numbers
- A. Understanding place value
- A. Translating between different representations of large numbers
- A. Multiplying whole numbers using paper and pencil
- A. Estimating products
- A. Multiplying numbers with ending zeros

Populations and Samples

- Unit 1
- (Lessons 1, 3,4,5, and 6)
- Average
- Categorical variable
- Data
- Average
- Median
- Mean
- Mode
- Numerical variable
- Population
- Probability
- Rubric
- Sample
- Values
- Variable

- Big Numbers
- Unit 2
- (Lessons 1, 2, 5, 6, and 8)
- Base
- Billion
- Convenient number
- Digit
- Divisor
- Estimate
- Expanded form
- Exponent
- Fact families
- Factors
- Million
- Place Value
- Power
- Product
- Rounding
- Quotient
- Scientific notation
- Standard form
- Value
- Word Form

Cycle 1

Unit 3 (2 Weeks)

How can models be used to represent fractions?

How are models used in fractions differently?

How are fractions identified?

How do lines help interpret graphs?

How are ratios used to solve problems?

- A. Number and Operations
- B. Algebra
- C. Measurement
- D. Data Analysis and Probability

multiplication and division

A. Using exponents

A. Reading scientific notation

B. Using patterns in data to make predictions and solve problems

B. Using turnaround facts

B. Using Exponents

D. Measuring length in centimeters

E. Using patterns in data to make predictions and solve problems

E. collecting and analyzing data

A. Defining the numerator and the denominator

A. Representing fractions using pattern blocks, number lines, and symbols

A. Writing improper fractions and mixed numbers and mixed numbers as improper fractions

A. Fining equivalent fractions

A. Comparing and ordering fractions using benchmarks of 0, $\frac{1}{2}$, and 1

A. Writing number sentences using fractions

A. Using words, pictures, tables, graphs, and fractions to express ratios

A. Choosing appropriate methods and tools to calculate

A. Solving problems involving fractions

B. Using numerical variables

B. Using rations to solve problems

B. Using words, pictures, tables graphs, and fractions to express ratios

B. Drawing and interpreting best fit lines

B. Analyzing a situation with a constant rate of change

Ratios

Unit 3

(Lessons 1, 2, 3, 4, 5, and 6 optional)

Best-fit line

Denominator

Equivalent

Fractions

Fixed variable

Improper fraction

Mixed number

Numerator

Proper fraction

Ratio

Speed (optional lesson)

Cycle 1

variable relates to a change in a second variable

B. Using patterns in data to make predictions and solve problems

D. Measuring length in yards and feet

D. Defining speed as a ratio

D. Converting between feet and yards

E. Using data to solve problems

E. Using words, pictures, tables, graphs and fractions to express ratios

Cycle 2

Unit 4 (2 weeks)

How are mean and median determined?

How is area measured?

What does division mean?

What do good math students do?

How is data collected, organized, graphed, and analyzed?

How does knowing your multiplication and division facts help in determining square numbers?

Unit 5 (3 weeks)

- Operations
- B. Algebra
- C. Geometry
- D. Measurement
- E. Data Analysis and Probability

- A. Number and Operations
- B. Algebra
- C. Measurement
- D. Data Analysis and Probability

- paper and pencil method with 1 digit divisors
- A. Estimating quotients
- A. and E. Comparing the mean and the median
- A. Using correct order of operations
- A. and E. Finding the median and mean
- A. Solving problems involving multiplication and division
- B. and C. Generalizing the area of a rectangle as length times width
- B. Using order of operations
- B. Translating between graphs and real world events
- B. using patterns in data to make predictions and solve problems
- C. and D. Measuring area
- C. and D. counting square centimeters to estimate the area of figures with curved sides
- C. Finding the area of polygons by counting square units
- D. Understanding the role of standard units in scientific measurement

- A. Defining the numerator and the denominator
- A. Representing fractions using pattern blocks, garboards, and symbols
- A. Finding equivalent fractions
- A. Finding a fraction for a given quantity for when unit whole is given
- A. Identifying the unit whole when a fractional part is given
- A. Adding and subtracting fractions using pictures, symbols, and manipulatives
- A. Comparing and ordering fractions using pictures and symbols

Unit 4

(Lessons 1, 3, 5, 8 and 7 optional)

Average

Area

Dividend

Divisor

Graduated

cylinder (optional lesson)

Length

Mean

Numerical expression

Quotient

Remainder

Square centimeter

Standard unit

(Optional lesson)

Variable (Optional lesson)

Width

How are fractions represented differently?

How are fractions expressed?

How is data collected, organized, graphed, and analyzed?

How do lines help interpret graphs?

How are ratios used to solve problems?

How is length measured in yards and feet?

What strategies and manipulatives are used when adding and subtracting fractions?

of fractions

A. finding common denominators using pictures and symbols

A. Writing number sentences using fractions

A. Using symbols and graphs to express ratios

A. and B. Using ratios to solve problems

A. solving problems involving fractions

A. and E. Choosing the mean and median

B. and E. Drawing and interpreting best fit lines

B. and E. Using the steepness of a line to compare ratios

B. and E. Using numerical variables

B. and E. Translating between graphs and real world events

B. Analyzing a situation with a constant rate of change

B. Investigating the change in one variable relates to the change in a second variable

D. Measuring length in yards and feet

D. Measuring time with a stop watch

D. Defining speed as a ratio

D. Comparing speeds

E. Collecting, organizing, graphing and analyzing data

E. Using patterns and data to make predictions and solve problems

Fractions

Unit 5

(Lessons 1, 2, 3, 4, 5, 6, and 7)

Common

denominator

Denominator

Equivalent

fractions

Fraction

Numerator

Speed

Velocity

Cycle 3

C. Geometry
D. Measurement

B. Expressing mathematical relationships using formulas
B. Identifying, extending, and making generalizations about geometric and number patterns

Cycle 3

What techniques are used for measuring angles?

What shapes and angles are drawn when given the measures?

How are 2-dimensional shapes used?

What is the difference between congruent and similar shapes and how are they identified?

How are geometric properties made and tested?

How are numerical variables used?

Unit 7 (2 Weeks)

How can decimals be represented differently?

How are fractions, decimals, and percents used to represent the same quantity?

A. Number and Operations
B. Algebra
D. Measurement
E. Data Analysis and Probability

benchmarks

C. Identifying angles with a protractor

C. Measuring angles with a protractor

C. Investigating properties of polygons

C. Identifying and describing 2-dimensional shapes

C. Investigating, describing, and reasoning about the results of subdividing polygons

C. Identifying congruent and similar shapes

C. Investigating tessellations

C. Describing and classifying 2-dimensional shapes

C. Constructing polygons with specific measures

C. Making and testing conjectures and geometric properties

C. Using geometric definitions

D. Estimating angles using benchmarks

D. Measuring angles with a protractor

D. Drawing angles of determined measures

D. Identifying acute, obtuse, and right angles

D. Constructing polygons with specific measurements

A. Using fractions, decimals, and percents to represent the same quantity

A. Representing decimals using place value charts, circles (centiwheels), and square grids

A. Translating between different representations of decimals

A. Understanding place value

A. Developing number sense for decimals

A. Rounding decimals

Unit 6

(Lessons 1, 2, 3, 4, 6, and 7 optional)

Acute angle

Angle

Congruent

Convex

Decagon

Degree

Diagonal

Dodecagon

Equilateral triangle

Endpoint

Hexagon

N-gon

Nonagon

Obtuse angle

Obtuse triangle

Octagon

Parallelogram

Pentagon

Polygon

Protractor

Quadrilateral

Ray

Right angle

Rectangle

Regular polygon

Rhombus

Septagon

Sides

Similar

Square

Straight angle

Trapezoid

Triangulating

Vertex

How are decimals read and written?

How are decimals calculated?

How is data collected, organized, graphed, and analyzed?

How are bar graphs made and interpreted?

What is the probability of an event when given a fraction or percent?

the thousandths

- A. Comparing ordering decimals
- A. Estimating sums, differences, and products involving decimals
- A. Finding the probability of an event
- A. Expressing probabilities as fractions, decimals, and percents
- A. Adding and subtracting decimals using pictures
- A. Adding and subtracting decimals using paper and pencil method
- A. Multiplying decimals using an area model
- A. Multiplying decimals using paper and pencil method
- B. and E. Collecting, organizing, graphing, and analyzing data
- B. Translating between graphs and real-world events
- B. and E. Making and interpreting bar graphs
- D. Finding the area of rectangles
- D. Finding the area by counting square centimeters
- E. Collecting and organizing data from a random process
- E. Understanding that random events are predictable "over the long run"
- E. Analyzing fair and unfair games
- E. Exploring probabilities involved in flipping a coin
- E. Finding the probability of an event
- E. Expressing probabilities as fractions, decimals, and percents
- E. Using probability to predict outcomes
- E. Describing events as likely, unlikely, certain, impossible, more likely, and less likely

Probability

Unit 7

(Lessons 1, 2, 3, 4, 5, 6, and 7)

Certain

Decimal

Equally Likely

Fraction

Hundredths

Impossible

Percent

Probability

Ten-thousandths

Tenths

Thousandths

*****Other

important words

Most likely

Least Likely

| | | | | | |
|--|--|--|--|--|--|
| | <p>What is division?</p> <p>How are remainders interpreted?</p> <p>How are quotients written differently?</p> <p>How is multiplication used to check division?</p> <p>What strategies are used when solving open response problems and how are solutions communicated?</p> <p>How are fractions written differently?</p> | <p>Operations</p> <p>B. Algebra</p> <p>C. Geometry</p> <p>D. Measurement</p> <p>E. Data Analysis and Probability</p> | <p>A. Dividing whole numbers using a paper and pencil method with 2-digit divisors</p> <p>A. Dividing whole numbers and money using calculators</p> <p>A. dividing whole numbers and money using calculators</p> <p>A. Estimating quotients</p> <p>A. Interpreting remainders</p> <p>A. Expressing a quotient as a mixed number</p> <p>A. Checking division using multiplication</p> <p>A. finding decimal equivalents for fractions</p> <p>A. Identifying repeating decimals</p> <p>A. Exploring different methods of paper and pencil methods</p> <p>A. Solving problems involving multiplication and division</p> <p>A. Developing number sense for large numbers</p> <p>B. Interpreting fractions as division</p> <p>C. Measuring area</p> <p>D. Measuring area</p> <p>E. Averaging</p> <p>E. Using data to solve problems</p> <p>E. Making predictions from samples</p> | | <p><u>Division</u></p> <p><u>Unit 9</u></p> <p>(Lesson 1, 2, and 4)</p> <p>Dividend</p> <p>Divisor</p> <p>Quotient</p> <p>Remainder</p> <p>Repeating</p> <p>Decimals</p> |
|--|--|--|--|--|--|

Cycle 4

How are negative numbers represented?

What strategies are used when solving problems using negative numbers?

How are ordered pairs plotted on a four-quadrant graph?

How are maps used?

- operations
- B. Algebra
- C. Geometry
- D. Measurement

- A. Representing negative numbers using a number line
- A. Solving problems using negative numbers
- A. Plotting points using ordered pairs in the four quadrants
- B. and C. Using coordinates to locate an object in a room, find a location on a map, or plot points on a graph
- B. and C. Plotting points using ordered pairs in the four quadrants
- C. Graphing shapes in four quadrants
- C. using slides to move shapes about the coordinate system
- C. Determining the image of a slide
- C. Using flips to move shapes about the coordinates system
- C. Determining the image of a flip
- C. Using a scale map to find distances
- C. using tessellations to create art
- D. Using a scale map to find distances
- D. Measuring length in centimeters and meters

Coordinates

Unit 10

(Lessons 1, 2, 4, 5, 6, 7, and 8)

Axes

Cartesian

Coordinates

Flip

Line of Reflection

Negative Numbers

Ordered Pair

Origin

Positive Numbers

Quadrant

Tessellation

****Other

important words

Reflection (Flip)

Rotation (Turn)

Translation (Slide)

Cycle 5

What are the factors of numbers?

What strategies are used to identify prime, composite, and square numbers?

How is the prime factorization of a number determined?

How are fractions used?

How are variables used in formulas?

What strategies are used to identify and describe number patterns?

Operations
B. Algebra
E. Data Analysis and Probability

- A. Identifying prime, composite and square numbers
- A. Finding the prime factorization of a number
 - A. Using exponents
 - A. Identifying and describing number patterns
 - A. Using number patterns to solve problems
 - A. Finding common denominators
 - A. Comparing fractions
 - A. Reducing fractions to lowest terms
 - A. Adding and subtracting fractions using common denominators
 - A. Expressing a quotient as a mixed number
- C. Solving multistep word problems
 - A. Solving problems involving fractions
 - A. Choosing appropriate methods and tools to calculate (calculators, paper and pencil, or mental math)
- B. Making and interpreting point graphs
 - B. using variables in formulas
- B. Identifying and describing numbers patterns
 - B. Using number patterns to solve problems
 - B. Identifying, extending, and making generalizations about geometric and number patterns
- E. Making and interpreting point graphs
- E. Identifying and describing number patterns

Primes, and Fractions
Unit 11
(Lessons 1, 2, 3, 4, 5, and 6)
Common Denominator
Composite Exponent
Factor
Factor Tree
Formula
Lowest Terms
Prime
Prime Factorization
Reducing a fraction

Cycle 5

How are fractions modeled differently?

How are fractions used?

What are other names for fractions?

What methods are used for solving fraction problems?

How can problems be solved differently?

- Operations
- B. Algebra
- D. Measurement

- A. Reducing fractions to lowest terms
- A. Estimating sums of mixed numbers
- A. Adding mixed numbers using pattern blocks and paper and pencil method
- A. Adding fractions using pattern blocks and paper and pencil method
- A. Estimating products of fractions
- A. Multiplying a fraction and a whole number using diagrams, pattern blocks, and paper and pencil
- A. Choosing appropriate methods and tools to calculate
- A. Choosing to find an estimate or an exact number
- A. Solving multistep word problems
- A. Solving problems involving fractions
- B. Using patterns to build number sense
- D. Creating a time schedule

Unit 12
(Lessons 2, 3, and 4)
Ratio

Cycle 5

Unit 13 (2 ½ Weeks)

How can ratios be expressed differently?

How are ratios and proportions used to solve problems?

How is mass measured?

How can volume be measured by displacement?

How is data collected, organized, graphed, and analyzed?

How are lines used to interpret information?

How can problems be solved differently?

What do good math students do?

- A. Number and Operations
- B. Algebra
- D. Measurement
- E. Data Analysis and Probability

- A. Using words, tables, graphs, fractions, and colon notation to express ratios
- A. Choosing appropriate methods and tools to calculate
- A. Reducing fractions to lowest terms
- A. Estimating sums of mixed numbers
- A. Adding fractions using pattern blocks and paper and pencil
- A. Adding mixed numbers using pattern blocks and paper and pencil
- A. Estimating products of fractions
- A. Multiplying a fraction and a whole number using diagrams, patterns blocks, and paper and pencil
- A. Multiplying fractions using pattern blocks, paper folding, and paper and pencil
- A. Choosing to find an estimate or an exact number
- A. Solving multistep word problems
- A. Solving problems involving fractions
- B. Using words, tables, graphs, fractions, and colon notation to express ratios
- B. Translating between different representations of ratios
- B. Using ratios and proportions to solve problems
- B. Drawing and interpreting best-fit lines
- B. Using numerical variables

Ratio and Proportion
Unit 13
(Lessons 1, 3, 4, and 5)

- Density
- Extrapolation
- Interpolation
- Proportion
- Ratio
- Unit Ratio

graphs to solve problems
B. Translating between graphs and
real-world events
D. Measuring mass
D. Measuring volume by displacement
D. Defining density as a ratio
D. Dealing with precision and accuracy
E. Collecting, organizing, graphing, and
analyzing data
E. Drawing and interpreting best-fit
lines
E. Using patterns in data tables and
graphs to solve problems

Cycle 6

What are the parts of a circle?

What is the relationship between circumference and diameter?

How are variables used in formulas?

How is data collected, organized, graphed, and analyzed?

How are ratios expressed?

How can fractions be expressed differently?

How can geometric figures be constructed?

How are circle graphs made and interpreted?

- Operations
- B. Algebra
- C. Geometry
- D. Measurement
- E. Data Analysis and Probability

- circumference to diameter
- A. Using words, tables, graphs and fractions to express ratios
- A. using fractions, decimals, and percents to represent the same quantity
- A. Choosing appropriate methods and tools to calculate
- B. Defining π as the ratio of circumference to diameter
- B. using variables in formulas
- B. Finding and expressing the relationship between the circumference and diameter of circles: $C = \pi \times D$
- B. Drawing and interpreting best-fit lines
- B. Translating between graphs and real-world events
- C. Identifying the parts of a circle
- C. Finding and expressing the relationship between the circumference and diameter of circles
- C. Finding the circumference of a circle
- C. Drawing circles using rulers, protractors, and compasses
- C. Constructing simple figures with rulers, protractors, and compasses
- C. making and interpreting circle graphs
- D. Measuring length in centimeters
- D. Dealing with precision and accuracy
- D. Finding the circumference of a circle
- E. Collecting, organizing, graphing and analyzing data

Unit 14 (Lessons 1, 2, 3, 4 and 5)

- Arc
- Center
- Central angle
- Chord
- Circle
- Circle graph
- Circumference
- Concentric circles
- Diameter
- Endpoint
- Equidistant
- Equilateral Triangle
- Extrapolation
- Formula
- Interpolation
- Intersect
- Line segment
- Parallelogram
- Perimeter
- Perpendicular
- Pi
- Radius
- Rhombus
- Vertex

Unit 15 (2 Weeks)

What are the properties of triangles?

How are the areas of shapes determined?

How are variables used in area and perimeter?

How is length measured using centimeters?

How are geometric concepts and skills used to solve problems?

What is the order of operations?

- A. Number and Operations
- B. Algebra
- C. Geometry
- D. Measurement

lines

E. Making and interpreting circle graphs

E. Translating between graphs and real-world events

- A. Using the correct order of operations
- A. Using exponents
- A. using fractions and decimals to find area and perimeter
- B. Developing formulas for finding the perimeters of rectangles and the areas of triangles
- B. and D. Finding the area of rectangles and triangles using formulas
- B. and C. Finding the perimeter of rectangles using formulas
- B. Using variables in formulas
- B. Solving multistep word problems
- C. Identifying the legs and hypotenuse of a right triangle
- C. Identifying the base and height (altitude) of a triangle
- C. and D. Finding the area of polygons by counting square units
- C. Developing formulas for finding the perimeter of rectangles and the area of triangles
- C. and D. Measuring the perimeter of polygons
- C. Using geometric concepts and skills to solve problems
- D. Measuring length in centimeters
- D. Finding the perimeter of rectangles using formulas

Formulas with Geometry

Unit 15

(Lesson 1, 2, 3, 4,

Acute Triangle
Area
Base
Congruent
Formula
Height (Altitude)
Hypotenuse of a right triangle
Length
Obtuse Triangle
Perimeter
Perpendicular
Right Triangle
Width

