

## Math 6A

### SCOPE OF COURSE

This course is divided into two semesters of study (A & B) comprised of five units each. The first-semester (A) is a study of whole numbers and integers; rational numbers; statistics; probability and measurement; and geometric figures.

### SEQUENCE OF SKILLS

#### UNIT 1 – Whole Numbers and Integers

##### Working with Place Value

- Learn to read and write whole numbers to the trillions place

##### Integers and Absolute Value

- Understand what the set of integers is
- Place integers on the number line
- Find the absolute value of an integer

##### Addition and Subtraction with Integers

- Represent integer addition and subtraction on a number line and with “integer chips”
- Algebraically add and subtract positive and negative integers

##### Multiplication with Integers

- Represent integer multiplication with integer chips
- Algebraically multiply positive and negative integers

##### Dividing Integers

- Understand the concept of division
- Algebraically perform division of positive and negative integers

##### Exponents

- Understand the concept of exponents as repeated multiplication
- Evaluate integers with exponents of powers one, two, and three

##### Order of Operations

- Understand the importance of defining a particular order of math operations
- Use the correct order of operations in arithmetic expressions
- Begin to understand fractions as division

##### Properties of Addition and Multiplication

- Define and apply the commutative and associative properties of addition and multiplication
- Define and apply the distributive property of multiplication over addition

##### Special Properties

- Define and apply the inverse properties
- Define and apply the properties of zero

##### Prime Factorization

- Understand that any whole number can be written as a product of its prime factors
- Express a given whole number as a product of its prime factors, using exponents

##### The Least Common Multiple (LCM)

- Find the least common multiple of two numbers

##### The Greatest Common Factor (GCF)

- Find the greatest common factor of two numbers

##### Estimation and Mental Math

- Understand rounding to a place value
- Estimate multiplying large numbers by rounding to the tens place and hundreds place

##### Review and Problem Solving

- Solve applications involving algebraic properties and different whole number operations

## Math 6A

### SEQUENCE OF SKILLS

#### UNIT 2 – Rational Numbers

##### Rational Numbers: Fractions

- Understand fractions as rational numbers, and the meaning behind fraction notation
- Express relationships between fractions using equality and inequality symbols
- Use number sense to order fractions

##### Equivalent Fractions

- Understand the concept of equivalent fractions
- Be able to recognize equivalent fractions
- Express fractions in lowest terms

##### Addition and Subtraction with Fractions

- Understand the concept of adding and subtracting fractions
- Be able to add and subtract fractions with like and unlike denominators

##### Multiplication and Division with Fractions

- Understand the concept of multiplying and dividing fractions
- Understand division as the inverse of multiplication

##### Mixed Numbers

- Understand the relationship between fractions and mixed numbers
- Be able to convert between mixed numbers and improper fractions
- Order mixed numbers and fractions

##### Adding and Subtracting Mixed Numbers

- Understand the concept of addition and subtraction of mixed numbers
- Further understand whether to use a mixed number or improper fraction in any given situation

##### Multiplying and Dividing Mixed Numbers

- Understand the concept of multiplication and division of mixed numbers
- Be able to multiply and divide mixed numbers
- Further understand when to express in mixed number or as complex fraction form

##### Decimals

- Understand conceptually what decimal notation means
- Be able to convert from decimals to mixed numbers and fractions
- Order decimals, fractions, and mixed numbers

##### Converting Fractions to Decimals

- Understand how to represent fractions as terminating or repeating decimals
- Understand how to round decimals to given place values

##### Adding and Subtracting Decimals

- Understand decimal addition and subtraction
- Perform decimal addition and subtraction

##### Multiplying and Dividing Decimals

- Understand decimal multiplication and division
- Perform decimal multiplication and division

##### Scientific Notation

- Understand the concept of scientific notation
- Convert large whole numbers into scientific notation

##### Percentage

- Convert between decimals and percents
- Solve problems involving percents

##### Review and Problem Solving

- Solve applications involving rational numbers and scientific notation

## Math 6A

### SEQUENCE OF SKILLS

#### UNIT 3 – Statistics

##### Collecting Data

- Collect and organize data in a proper manner

##### Pie Graphs

- Interpret and read pie graphs
- Understand when pie graphs are used

##### Organizing Information: Frequency Tables

- Use tally to count frequency of data
- Organize data using a frequency table
- Interpret frequency tables
- Understand the concept of line plots

##### Stem-and-Leaf plots

- Create Stem-and-Leaf plots
- Interpret Stem-and-Leaf plots

##### Bar Graphs

- Use data to make bar graphs
- Interpret bar graphs

##### Pictographs

- Use data to make a pictograph
- Interpret pictographs

##### Histograms

- Use data to make a histogram
- Interpret histograms

##### Range, Mode, Mean, and Median

- Analyze data sets by finding the mean, median, mode, and range

##### Box-and-Whisker Plots

- Construct box-and-whisker plots
- Interpret box-and-whisker plots

##### Graphing Coordinates

- Plot points on a set of axes
- Identify coordinates of a point on the axes

##### Line Graphs

- Connect plotting points to data measurements
- Construct and interpret line graphs

##### Scatter Plots

- Plot points for scatter plots
- Determine the best fit line for a scatter plot

##### Using the Appropriate Data Display

- Understand when to use the correct graph
- Develop an understanding of how statistics can be misleading

##### Review and Problem Solving

- Solve applications involving different data displays
- Solve word problems with mean median and mode

## Math 6A

### SEQUENCE OF SKILLS

#### UNIT 4 – Probability and Measurement

##### Sets and Sample Spaces

- Understand the concept of Sets and Sample Spaces
- Use the Venn diagram model for sets

##### Theoretical Probability: Simple Experiments

- Find the theoretical probability of simple experiments
- Begin to develop an understanding of theoretical versus experimental probability

##### Tree Diagrams

- Use tree diagrams to find the possible outcomes of an experiment
- Use tree diagrams to find the theoretical probability of an outcome

##### Compound Probabilities

- Understand how to find the probability of two or more independent events

##### This then That: Dependent Events

- Find the probability of dependent events

##### A Deck of Cards and Dice

- Understand the suits and numbers in a standard deck of cards
- Understand basic probability in a standard deck of cards
- Understand the probability of the sum of two dice

##### Theoretical vs. Experimental Probability

- Understand the difference between theoretical and experimental probability
- Create probability experiments and compare data to theoretical probability

##### Standard Measurement

- Identify customary units of length, capacity, and weight
- Develop personal references for each unit
- Convert between customary units

##### Metric Units

- Convert between different metric units
- Understand metric units and what they represent

##### Tools of Measurement

- Understand when and how to use appropriate tools of measurement

##### Units of Time

- Understand the different units for time
- Convert between seconds, minutes, hours, days, weeks, and years
- Read a clock

##### Introduction to Angles

- Understand what an angle is
- Measure angles with a protractor

##### Operations with Measurements

- Add, subtract, and multiply with units of measurement

##### Review and Problem Solving

- Solve word problems involving probability
- Solve word problems involving measurement

## Math 6A

### SEQUENCE OF SKILLS

#### UNIT 5 – Geometric Figures

##### Classifying Angles

- Understand the concept of angles and the different classifications of angles
- Identify the type of angle based on its measurement
- Understand and identify parallel and perpendicular lines

##### Properties of Parallel Lines

- Understand properties of parallel lines being cut by a transversal line

##### Quadrilaterals

- Understand what a quadrilateral is
- Distinguish between different types of quadrilaterals

##### Area and Perimeter of Quadrilaterals

- Understand the concepts of area and perimeter
- Begin to develop the concept of an unknown variable
- Derive formulas for, and be able to compute area and perimeter of a square, rectangle, and parallelogram

##### Triangles

- Understand what a triangle is
- Distinguish between different types of triangles

##### Area of Triangles

- Understand how to find the perimeter of different types of triangles
- Understand how to find the area of different types of triangles

##### Regular and Irregular Polygons

- Distinguish between different types of polygons
- Understand the concept of a regular polygon

##### Area and Perimeter of Polygons

- Find the perimeter of regular and irregular polygons
- Find the area of regular and irregular polygons

##### Congruent and Similar Polygons

- Determine which polygons are congruent
- Determine which polygons are similar

##### Introduction to Circles

- Understand the concepts of radius and diameter
- Determine the circumference of a circle

##### Circumference and Area

- Determine the area of a circle based on the diameter and radius
- Determine the circumference of a circle based on the diameter and radius

##### 3-Dimensional Shapes

- Classify different 3-dimensional solids
- Understand the parts that make a 3-dimensional solid

##### Volume and Surface Area

- Determine the Volume of various solids
- Determine the Surface Area of various solids

##### Review and Problem Solving

- Solve word problems involving area, circumference, and perimeter
- Solve word problems involving volume and surface area
- Develop problem solving skills by drawing pictures