

**7th Grade Standards**

**Mathematics 7A**

**Course Overview:** In this course, you will learn to use new models and methods to think about problems as well as solve them. You will be developing powerful mathematical tools and learning new ways of thinking about and investigating situations. You will be making connections, discovering relationships, figuring out what strategies can be used to solve problems, and explaining your thinking. Learning to think in these ways and communicate about your thinking is useful in mathematical contexts, other subjects in school, and situations outside the classroom. The mathematics you have learned in the past will be valuable for learning in this course.

**Bold standards are essential standards that all students will learn as they complete the course.**

**Unit 1 Introduction, Simplifying with Variables and Solving Inequalities (16 days)**

**Description:** In this unit, students will understand what a variable is, write and simplify algebraic expressions, compare two complicated algebraic expressions, solve for a variable if you know that two expressions are equal, simplify and compare two algebraic expressions, and write and solve algebraic inequalities.

**Standards**

1. The students will write algebraic expressions.(7.EE.4a)
2. **The students will write and solve algebraic equations(8.EE.7a)**
3. The student will solve multi-step equations.(8.EE.7a, b)
4. **The students will solve one variable inequality. (7.EE.4)**

**Unit 2 Equations and Multiple Representations (14 days)**

**Description:** In this unit, students will understand what if means if something is to be the solution to an equation and what it means for an equation to have no solution, and determine the number of solutions to an equation, change any representation of data to another representation.

**Standards**

1. **The students will interpret the meaning of y=mx +b. (8.F.3)**
2. The students will measure growth and connect to slope. (8.F.4)
3. The students will graph a line without an x-y table.(8.4.F)
4. The students will solve equations using the distributive property.(8.EE7b)

**Unit 3 Systems of Equations (14 days)**

**Description:** In this unit, students will solve multi-variable equations for one of the variables, solve equations with fractional coefficients, find the point where two lines intersect, and use the connections between graphs, tables, rules, and patterns to solve problems.

**Standards**

1. The students will evaluate systems of equations using graphs.(8.EE.8a,c)
2. **The students will solve systems of equations using the equal values method.(8.EE.8b, c)**
3. The students will understand the possible solutions to a system of equations.(8.EE.7a, c)

**Unit 4 Proportions and Percents (16 days)**

**Description:** In this unit, students will solve problems involving distance, rate, and time, solve equations that have fractional or decimal coefficients, find the whole amount if you only know a percentage of it, calculate simple interest, and set up and solve proportional equations.

**Standards**

1. The students will make tables, graphs, and rules relating distance to time. (7.RP.3)
2. The students will use multiplication to scale a quantity. (7.RP.3) (7.EE.2)
3. **The students will solve percent discount and increase problems. (7.RP.3) (7.NS.3) (7.EE.2) (7.EE.3)**
4. The students will learn multiple ways to solve equations with fractional coefficients and decimal coefficients. (7.RP.3) (7.NS.3) (7.EE.2)
5. **The students will be able to calculate simple interest over time. (7.RP.3**)

**Unit 5 Statistics and Angle Relationships (16 days)**

**Description:** In this unit, students will describe, analyze, and compare sets of data using measures of central tendency, attempt to find random and representative samples to complete a survey, identify angles by their characteristics, and construct triangles and quadrilaterals with given side lengths and/or angles and predict if they will be unique shapes.

**Standards**

1. The students will analyze methods of sampling and critique it. (7.SP.1)
2. The students will use random sampling to draw inferences. (7.SP.1) (7.SP.2) (7.SP.4)
3. The students will measure a length using two different measuring tools and generate two sets of data and compare the two sets of data. (7.SP.3)
4. The students will draw geometric shapes. (7.G.2)
5. The students will construct geometric shapes. (7.G.2) (7.G.4)
6. **The students will classify angles. (7.G.5)**

**Unit 6 Circles and Volume (18 days)**

**Description:** In this unit, students will calculate the circumference and areas of circles, find the areas of shapes made up of special quadrilaterals, circles, and triangles, calculate the volumes of some three-dimensional shapes, and find the surface area and volumes of rectangular prisms.

**Standards**

1. The students will describe a two dimensional shape. (7.G.3)
2. The students will graph the relationship between circumference and diameter. (7.G.4)
3. **The students will find area of a circle, rectangle, and triangle. (7.G.4) (7.G.6)**
4. **The students will find volume of different prisms. (7.G.6)**

**Unit 7 Transformations and Similarity (16 days)**

**Description:** In this unit, students will transform shapes by flipping, turning, and sliding them on a coordinate graph, describe movement on a graph using coordinates and expressions, and compare shapes and use similarity to find missing side lengths of polygons especially triangles.

**Standards**

1. **The students will understand rigid transformations (8.G.1)**
2. The students will compare similar/congruent figures. (8.G.3)
3. **The student will integrate the properties of similar figures with their knowledge of proportions to solve for unknown length, perimeter, area, and dilation. (8.G.4)**

**Unit 8 Slope and Association (18 days)**

**Description:** In this unit, students will create scatterplots that show the relationship between two variables, identify associations between sets of data and represent the relationship with a trend line, measure the steepness of a line by using slop, find the slope of a line given its equation, its graph, or any two points on the line, and find the equation of a trend line to fit linear data.

**Standards**

1. **Students will organize and interpret various scatterplots. (8. SP.1).**
2. The students will describe association in scatterplots (positive, negative, clusters, outliers, linear, and non-linear) (8.F.5).
3. **The students will connect rate to slope and apply to y=mx + b.(8.EE.6)**

**Unit 9 Exponents and Functions (18 days)**

**Description:** In this unit, students will calculate compound interest, determine whether a relationship grows linearly or exponentially, rewrite expressions using exponents and scientific notation, perform operations with numbers written in scientific notation, and determine if a relation is a function by looking at its table or graph.

**Standards**

1. **The students will examine and write equations for exponential growth. (8.EE.1).**
2. The students will understand the rules of exponents. (8.EE.1)
3. **The student will represent numbers in scientific notation.(8.EE.4)**
4. The students will compare relations and functions (8.F.1)

**Unit 10 Angles and the Pythagorean Theorem (18 days)**

**Description:** In this unit, students will find the measurements of missing angles made by a line that intersects parallel lines, find unknown angles inside and outside of triangles, determine if two triangles are similar by looking at their angles, find missing side lengths of right triangles using the Pythagorean Theorem, find the square root of a number and identify irrational numbers, and convert terminating and repeating decimals to fractions.

**Standards**

1. **The students will identify angle pair relationships (AI, Corr, Sup, Comp, Adj, Ver) (8.G.1)**
2. The students will identify similar triangles by AA similarity. (8.G.5)
3. **The students will approximate and compute square roots. (8.NS.2)**
4. The students will develop and apply the Pythagorean. (8.G.6, 8.G.7)
5. **The students will compute the distance between two points using the Pythagorean theorem. (8.G.8)**

**Unit 11 Surface Area and Volume (14 days)**

**Description:** In this unit, students will find the cube root of a number, find the surface areas of cylinders and pyramids, and find the volume of non-rectangular shapes, including cylinders, pyramids, cones, and spheres.

**Standards**

1. **The students will evaluate the cubed root of a number. (8.EE.2)**
2. The students will calculate the surface area of a cylinder. (7.G.6)
3. **The students will calculate the volume of cylinders, cones, pyramids, and spheres. (8.G.9)**
4. The student will apply volume to real world problems. (8.G.9)