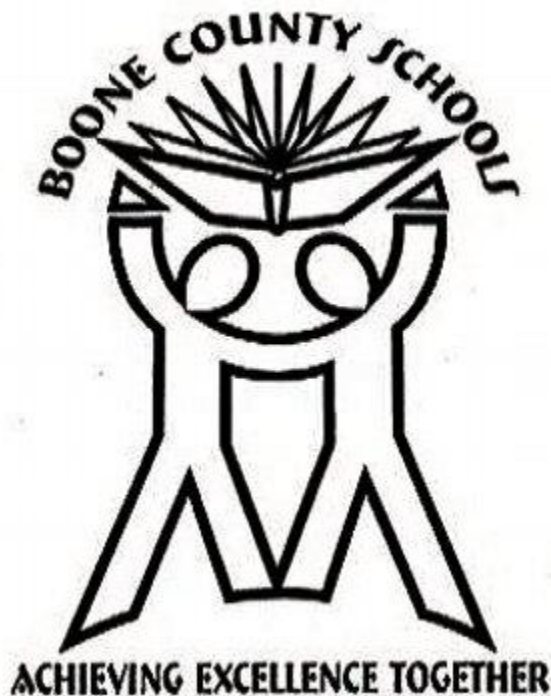


Grade 8 Math



Priority Standards and Instructional Units

Eighth grade Mathematics is the story of Linear relationships. Students build on their understanding of proportional relationships from seventh grade by applying their understanding of transformations. They use similarity to define slope as a property of linear relationships and transformations to relate proportional graphs to general linears expressed in tables, graphs and equations. They apply their understanding and skills with linear relationships to Statistics (scatterplots), Comparing linear and nonlinear functions, linear inequalities, and systems of equations. At the end of the year, they return to reasoning about triangles and the Pythagorean Theorem as it is used to analyze 3D figures.

Grade 8 Math



Priority Standards and Instructional Unit 1

8th Grade Math
Unit : 1 Transformations & Congruence (3 weeks)

KY.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections and translations. Given two congruent figures, describe a sequence that exhibits the congruence between them.	Priority Standard
KY.8.G.1 Verify experimentally the properties of rotations, reflections and translations: <ul style="list-style-type: none">● Lines are congruent to lines.● Line segments are congruent to line segments of the same length.● Angles are congruent to angles of the same measure.● Parallel lines are congruent to parallel lines.	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 2

8th Grade Math
Unit : 2 Transformations in the Coordinate Plane & Similarity
(2 weeks)

KY.8.G.3 Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates.	Priority Standard
KY.8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations and dilations. Given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	Supporting Standard
KY.8.G.5 Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal and the angle-angle criterion for similarity of triangles.	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 3

8th Grade Math

Unit : 3 Similarity & Slope (2 weeks)

KY.8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	Priority Standard
KY.8.EE.6 Use similar triangles to explain why the slope, m , is the same between any two distinct points on a non-vertical line in the coordinate plane; know the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .	Supporting Standard

Benchmark #1 (Units 1 - 3)

Grade 8 Math



Priority Standards and Instructional Unit 4

8th Grade Math
Unit : 4 Solving Linear Equations (3 - 4 weeks)

No change to this unit from 2019-2020 BCS alignment was recommended.

KY.8.EE.7 Solve linear equations in one variable.

- a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

**Priority
Standard**

KY.8.EE.7 Solve linear equations in one variable.

- b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.

**Priority
Standard**

Grade 8 Math



Priority Standards and Instructional Unit 5

8th Grade Math
Unit : 5 Functions, Models, & Graphs (4 weeks)

KY.8.F.4 Construct a function to model a linear relationship between two quantities. a. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph.	Priority Standard
KY.8.F.4 Construct a function to model a linear relationship between two quantities. b. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or table of values.	Priority Standard
KY.8.F.5 Use graphs to represent functions. a. Describe qualitatively the functional relationship between two quantities by analyzing a graph.	Supporting Standard
KY.8.F.5 Use graphs to represent functions. b. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	Supporting Standard
KY.8.F.2 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 6

8th Grade Math

Unit : 6 Properties of Functions (3 weeks)

KY.8.F.1 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Priority Standard
KY.8.F.3 Understand properties of linear functions. a. Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line	Supporting Standard
KY.8.F.3 Understand properties of linear functions. B. Identify and give examples of functions that are not linear.	Supporting Standard

Benchmark #2 (Units 1 - 6)

Grade 8 Math



Priority Standards and Instructional Unit 7

8th Grade Math
Unit : 7 Scatterplots & Linear Models (2 weeks)

KY.8.SP.2 Know that 2 lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a line and informally assess the model fit by judging the closeness of the data points to the line.	Priority Standard
KY.SP.1 Construct and interpret scatter plots for bivariate numerical data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association and nonlinear association.	Supporting Standard
KY.SP.3 Use the equation of a linear model to solve problems in the context of bivariate numerical data, interpreting the slope and intercept.	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 8

8th Grade Math
Unit : 8 Solving Systems of Equations (6 weeks)

<p>KY.8.EE.8 Analyze and solve a system of two linear equations.</p> <p>a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously; understand that a system of two linear equations may have one solution, no solution, or infinitely many solutions.</p>	Priority Standard
<p>KY.8.EE.8 Analyze and solve a system of two linear equations.</p> <p>b. Solve systems of two linear equations in two variables algebraically by using substitution where at least one equation contains at least one variable whose coefficient is 1 and by inspection for simple cases.</p>	Priority Standard
<p>KY.8.EE.8 Analyze and solve a system of two linear equations.</p> <p>c. Solve real-world and mathematical problems leading to two linear equations in two variables.</p>	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 9

8th Grade Math

Unit : 9 Properties of Exponents & Scientific Notation (2 weeks)

KY.8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions.	Priority Standard
KY.8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notation that has been generated by technology.	Supporting Standard
KY.8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 (Scientific Notation) to estimate very large or very small quantities and express how many times larger or smaller one is than the other.	Supporting Standard

Benchmark #3 (Units 1 - 9)

Grade 8 Math



Priority Standards and Instructional Unit 10

8th Grade Math
Unit : 10 Irrational Numbers & Roots (3 weeks)

KY.8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram and estimate the value of expressions.	Priority Standard
KY.8.NS.1 Understand informally that every number has a decimal expansion; the rational numbers are those with decimal expansions that terminate in 0s or eventually repeat. Know that other numbers are called irrational.	Supporting Standard
KY.8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that perfect squares and perfect cubes are rational.	Supporting Standard

Grade 8 Math



Priority Standards and Instructional Unit 11

8th Grade Math
Unit : 11 Pythagorean Theorem & Volume (3 weeks)

KY.8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	Priority Standard
KY.8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	Supporting Standard
KY.8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Supporting Standard
KY.8.G.9 Apply the formulas for the volumes and surface areas of cones, cylinders and spheres and use them to solve real-world and mathematical problems.	Supporting Standard