East Carter Co. R-II School District
Course Scope and Sequence

Course: Pre-Algebra

# OF DAYS	TOPICS
12	Chapter 1: Equations Major Topic: Understand Solving Equations Concepts: Solve linear equations with rational number coefficients. Expand expressions using the distributive property and combining like terms Show that a linear equation in one variable has one solution, infinitely many solutions, or no solutions by transforming the equation into simpler forms. Rewrite equations and formulas to solve for one variable in terms of the other variable(s).
19	Chapter 2: Transformations Major Topic: Understand Transformations Concepts: Identify and use congruent figures corresponding angles and sides. Verify the properties of translations, reflections, and rotations. Describe translations, reflections, rotations, and dilations using coordinates. Understand that figures are congruent (or similar) when they can be related by a sequence of translations, reflections, rotations, and dilations. Describe a sequence that exhibits congruence or similarity between two figures.
13	Chapter 3: Angles and Triangles Major Topic: Understand Angles and Triangles Concepts: Demonstrate the sum of the interior angle measures of a triangle are 180°. Find unknown measures of angles and the sum of the angles of polygons. Classify and determine the measures of angles created when parallel lines are cut by a transversal. Use indirect measurement and similar triangles to solve problems that include height and distance.

19	**Chapter 4: Graphing and Writing Linear Equations** Major Topic: Understand Graphing and Writing Linear Equations Concepts: Understand that lines represent solutions of linear equations. Use similar triangles to explain why the slope is the same between any two points on a line. Identify parallel and perpendicular lines. Graph proportional relationships, interpreting the unit rate as the slope. Compare proportional relationships represented in different ways. Write and graph linear equations in slope-intercept, standard, and point-slope form. Derive $y = mx$ and $y = mx + b$.
13	**Chapter 5: Systems of Linear Equations** Major Topic: Understand Solving Systems of Linear Equations Concepts: Solve multi-step equations. Show that a linear equation in one variable has one solution, infinitely many solutions, or no solution by transforming the equation into simpler forms. Understand that the solution of a system of two linear equations in two variables corresponds to the point of intersection of their graphs. Solve systems of linear equations in two variables graphically and algebraically. Solve real-world mathematical problems leading to systems of two linear equations in two variables.
14	**Chapter 6: Functions** Major Topic: Understand Functions Concepts: Understand the definition of a function. Use mapping diagrams to determine if a relation is a function. Compare and write functions represented in different ways (words, tables, graphs). Understand that $y = mx + b$ is a linear function and recognize nonlinear functions. Interpret the rate of change and initial value of a function.
15	**Chapter 7: Real Numbers and the Pythagorean Theorem** Major Topic: Understand Real Numbers and the Pythagorean Theorem Concepts: Write repeating decimals as fractions. Understand that every rational number has a decimal expansion that terminates or repeats. Understand that numbers that are not rational are irrational. Compare irrational numbers using rational exponents. Evaluate square roots and cube roots, including those resulting from solving equations. Explain a proof of the Pythagorean Theorem and its converse. Use the Pythagorean Theorem to find missing measures of right triangles and distances between points in the coordinate plane. Approximate values of expressions involving square roots and irrational numbers.

13	Chapter 8: Volume and Similar Solids
	
	  Major Topic: Understand Volume and Similar Solids
	
	  Concepts: Describe a sequence that exhibits similarity between two figures.
	        Know and apply the formulas for the volumes of cones, cylinders, and spheres.
	        Understand the relationship between surface areas or volumes of similar solids.

12	Chapter 9: Data Analysis and Displays
	
	  Major Topic: Understand Data Analysis and Displays
	
	  Concepts: Construct and interpret scatter plots.
	        Find and assess lines of fit for scatter plots.
	        Use equations of lines to solve problems and interpret the slope and the y-intercept.
	        Use two tables.
	        Choose appropriate data displays.

18	Chapter 10: Exponents and Scientific Notation
	
	  Major Topic: Understand Exponents and Scientific Notation
	
	  Concepts: Use the properties of integer exponents to generate equivalent expressions.
	        Use scientific notation to estimate very large or very small quantities.
	        Perform operations with numbers expressed in scientific notation and other forms.
	        Interpret scientific notation that has been generated by technology.

Course Description

In this course, students will be taught the Missouri Learning Standards for Mathematics. We will use a balance of procedural fluency, conceptual understanding, and real-life applications. Students develop conceptual understanding through exploration (inquiry-based learning), continue that development in lessons while gaining procedural fluency during concept and skills practice, and tie it all together with real-life examples. Every lesson set reflects this balance, giving students the rigorous practice they need to be college- and career-ready.