ROBERTSON COUNTY BOARD OF EDUCATION

MASTERY GUIDE

SEVENTH GRADE

MATH

FIRST NINE WEEKS

Numbers and Operations

7.1.1a.	Recognize the place value of a given digit.
7.1.1b.	Develop meaning for perfect squares (e.g., 1, 4, 9, 16).
7.1.1c.	Develop meaning for square roots.
7.1.1d.	Use exponential notation.
7.1.1e.	Use a variety of models to demonstrate the relationships within the real number system (e.g., Venn diagrams, webs).
7.1.1f.	Represent equivalent numbers using a variety of forms (i.e., whole numbers, fractions, decimals, percents).
7.1.11g.	**Compare fractions, decimals**, percents, and integers **using the appropriate symbol (i.e., <,>,=).**
7.1.11h.	**Connect whole numbers, fractions, decimals**, percents, and integers **to locations on the number line.**
7.1.1j.	Understand and use ratios and proportions to represent quantitative relationships.
7.1.1m.	Apply number theory concepts to solve problems (e.g., divisibility, factors, multiples, composite numbers, prime factorization, relatively prime).
7.1.2a.	Understand the meaning and effects of arithmetic operations with fractions and decimals.
7.1.2c.	Apply the associative and commutative properties of addition and multiplication to simplify computations with integers, fractions, and decimals.
7.1.2d.	Apply order of operations when computing with whole numbers, decimals, and fractions.
7.1.2e.	Understand and use the inverse relationships of addition and subtraction and multiplication and division to simplify computations and solve problems.
7.1.3a.	**Select and use appropriate methods and tools for computing with whole numbers, fractions, decimals**, percents, and integers **in problem solving situations.**
7.1.3b.	**Analyze procedures for computing with fractions, decimals**, and integers.
7.1.3e.	**Solve two-step real-world problems involving whole numbers, fractions, decimals**, and percents.

7.1.3f.	Develop methods for solving problems involving proportions (e.g. scaling, finding equivalent ratios).

Algebra

7.2.2a.	Demonstrate understanding of different uses of variables.
7.2.2b.	Represent mathematical statements and real-world situations using symbols.
7.2.2c.	Translate one-variable and written expressions into algebraic expressions.
7.2.2d.	Evaluate algebraic expressions given the value of two or more variables.
7.2.2g.	Model algebraic equations with manipulatives, technology, and pencil and paper.
7.2.4b.	Use unit rates to solve problems (e.g., miles per hour, words per minute).

Probability

7.5.4a.	Connect the symbolic representation of a probability to an experiment.
7.5.4b.	Construct a tree diagram to determine all possible outcomes of a simple event.

SECOND NINE WEEKS

Numbers and Operations

7.1.1e.	Use a variety of models to demonstrate the relationships within the real number system (e.g., Venn diagrams, webs).
7.1.1f.	Represent equivalent numbers using a variety of forms (i.e., whole numbers, fractions, decimals, percents).
7.1.11g.	**Compare** fractions, decimals, **percents, and integers using the appropriate symbol (i.e., <,>,=).**
7.1.11h.	**Connect** whole numbers, fractions, decimals, **percents, and integers to locations on the number line.**
7.1.11i.	Develop meaning for percents greater than 100 and less than one.
7.1.1k.	Develop meaning for opposites, reciprocals, and integers.
7.1.1l.	Use concrete, pictorial, and symbolic representations for integers.
7.1.2b.	Use models to demonstrate meaning and effects of arithmetic operations with integers.
7.1.3a.	**Select and use appropriate methods and tools for computing with** whole numbers, fractions, decimals, **percents, and integers in problem solving situations.**
7.1.3b.	**Analyze procedures for computing with** fractions, decimals, and **integers.**
7.1.3e.	**Solve two-step real-world problems involving** whole numbers, fractions, decimals, and **percents.**

Algebra

7.2.2a.	Demonstrate understanding of different uses of variables.
7.2.2b.	Represent mathematical statements and real-world situations using symbols.
7.2.2c.	Translate one-variable and written expressions into algebraic expressions.
7.2.2d.	Evaluate algebraic expressions given the value of two or more variables.
7.2.2e.	Connect formal and informal methods to solve one-step linear equations.
7.2.2f.	Identify whole numbers that satisfy a given one-variable inequality.
7.2.2g.	Model algebraic equations with manipulatives, technology, and pencil and paper.
7.2.2h.	Solve real-world problems involving one-step linear equations.
7.2.2i.	Explore relationships between symbolic expressions and graphs of lines.
7.2.1d.	Apply and create function rules.

Geometry

7.3.2a.	Plot a given set of points on the coordinate plane.

THIRD NINE WEEKS

Numeration

7.1.1e.	Use a variety of models to demonstrate the relationships within the real number system (e.g., Venn diagrams, webs).
7.1.1f.	Represent equivalent numbers using a variety of forms (i.e., whole numbers, fractions, decimals, percents).

Algebra

7.2.1a.	Represent, analyze, and extend geometric and numerical patterns.
7.2.1b.	Develop understanding for arithmetic sequences.
7.2.2b.	Represent mathematical statements and real-world situations using symbols.

Geometry

7.3.1a.	Determine congruence of line segments, angles, and polygons by direct comparison of given attributes.
7.3.1b.	Compare and classify triangles by angle size and length of sides.
7.3.1c.	Compare and classify polygons by properties.
7.3.1d.	Use appropriate mathematical language to describe similarity and congruence.
7.3.3a.	Relate symmetry and congruence to reflections about a line.
7.3.4a.	Use appropriate tools and methods to draw geometric objects with specified properties (e.g., side lengths, angle measure).
7.3.4b.	Build a three-dimensional object from a two-dimensional representation (net) of that object and vice versa.
7.3.4c.	Use visualization and spatial reasoning to solve real-world problems.

Measurement

7.4.1a.	Understand both metric and customary systems of measurement.
7.4.1b.	Convert from one unit to another within the same system.
7.4.1c.	Understand, select, and use units of appropriate size and type to measure angles, perimeter, areas, surface area, and volume.
7.4.2a.	Use a variety of strategies to estimate length, perimeter, circumference, area, and volume.
7.4.2b.	Select and apply techniques and tools to accurately measure length, perimeter, area, volume, and angles to appropriate levels of precision.
7.4.2c.	Develop and use formulas to determine the circumference of circles and the area of triangles, parallelograms, trapezoids, and circles.
7.4.2d.	Develop strategies to find area of complex shapes.
7.4.2e.	Develop strategies to determine the surface area and volume of selected prisms and cylinders.

FOURTH NINE WEEKS

Numbers and Operations

7.1.1e. Use a variety of models to demonstrate the relationships within the real number system (e.g., Venn diagrams, webs).

7.1.1f. Represent equivalent numbers using a variety of forms (i.e., whole numbers, fractions, decimals, percents).

7.1.3c. Use strategies to estimate the results of rational number computations in real-world situations.

7.1.3d. Judge the reasonableness of the results of rational number estimates and computations.

Algebra

7.2.2b. Represent mathematical statements and real-world situations using symbols.

7.2.1c. Use tables, graphs, and symbolic rules to generalize patterns in data.

7.2.3a. Create a scatterplot to represent data presented in tabular form.

7.2.3b. Describe the relationship between two quantities represented in a scatterplot.

7.2.4a. Describe how changes in one quantity or variable result in changes in another.

7.3.4c. Use visualization and spatial reasoning to solve real-world problems.

7.4.2f. Construct tables and graphs to represent rates of change.

Data Analysis and Probability

7.5.1a. Formulate questions, design studies, and collect real-world data.

7.5.1b. Construct, interpret, and use multiple-bar graphs, multiple-line graphs, and circle graphs displaying real-world data.

7.5.2a. Find, use, and interpret measures of center and spread (e.g., mean, interquartile range).

7.5.2b. Recognize misleading representations of data.

7.5.2c. Discuss and understand the relationship between data sets and their graphical representations (e.g., bar graphs, line graphs, circle graphs, histograms, stem-and-leaf plots, box plots, and scatterplots).

7.5.3b. Make conjectures to formulate new questions for future studies.

7.5.3a. Make conjectures and predictions based on data.