Grade 6 Mathematics Georgia Performance Standards (GPS)
***Mastery* of Conceptual Skills Student Checklist**

NUMBER AND OPERATIONS **15% of CRCT**

M6N1. Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and will use these concepts to solve problems.

- ❑ Apply factors and multiples.
- ❑ Decompose numbers into their prime factorization (Fundamental Theorem of Arithmetic).
- ❑ Determine the greatest common factor (GCF) and the least common multiple (LCM) for a set of numbers.
- ❑ Add and subtract fractions and mixed numbers with unlike denominators.
- ❑ Multiply and divide fractions and mixed numbers.
- ❑ Use fractions, decimals, and percents interchangeably.
- ❑ Solve problems involving fractions, decimals, and percents.

MEASUREMENT **20% of CRCT**

M6M1. Students will convert from one unit to another within one system of measurement (customary or metric) by using proportional relationships.

M6M2. Students will use appropriate units of measure for finding length, perimeter, area and volume and will express each quantity using the appropriate unit.

- ❑ Measure length to the nearest half, fourth, eighth and sixteenth of an inch.
- ❑ Select and use units of appropriate size and type to measure length, perimeter, area and volume.
- ❑ Compare and contrast units of measure for perimeter, area, and volume.

M6M3. Students will determine the volume of fundamental solid figures (right rectangular prisms, cylinders, pyramids and cones).

- ❑ Determine the formula for finding the volume of fundamental solid figures.
- ❑ Compute the volumes of fundamental solid figures**,** using appropriate units of measure.
- ❑ Estimate the volumes of simple geometric solids.
- ❑ Solve application problems involving the volume of fundamental solid figures.

M6M4. Students will determine the surface area of solid figures (right rectangular prisms and cylinders).

- ❑ Find the surface area of right rectangular prisms and cylinders using manipulatives and constructing nets.
- ❑ Compute the surface area of right rectangular prisms and cylinders using formulae.
- ❑ Estimate the surface areas of simple geometric solids.
- ❑ Solve application problems involving surface area of right rectangular prisms and cylinders.

GEOMETRY **20% of CRCT**

M6G1. Students will further develop their understanding of plane figures.

- ❑ Determine and use lines of symmetry.
- ❑ Investigate rotational symmetry, including degree of rotation.
- ❑ Use the concepts of ratio, proportion and scale factor to demonstrate the relationships between similar plane figures.
- ❑ Interpret and sketch simple scale drawings.
- ❑ Solve problems involving scale drawings.

M6G2. Students will further develop their understanding of solid figures.

- ❑ Compare and contrast right prisms and pyramids.
- ❑ Compare and contrast cylinders and cones.
- ❑ Interpret and sketch front, back, top, bottom and side views of solid figures.
- ❑ Construct nets for prisms, cylinders, pyramids, and cones.

ALGEBRA **30% of CRCT**

M6A2. Students will consider relationships between varying quantities.

- ❑ Analyze and describe patterns arising from mathematical rules, tables, and graphs.
- ❑ Use manipulatives or draw pictures to solve problems involving proportional relationships.

Jeffrey Daughtry
Instructional Mathematics Coach
Henry County Middle School

- ❑ Use proportions (a/b=c/d) to describe relationships and solve problems, including percent problems.
- ❑ Describe proportional relationships mathematically using y = kx, where k is the constant of proportionality.
- ❑ Graph proportional relationships in the form y = kx and describe characteristics of the graphs.
- ❑ In a proportional relationship expressed as y = kx, solve for one quantity given values of the other two. Given quantities may be whole numbers, decimals, or fractions. Solve problems using the relationship y = kx.
- ❑ Use proportional reasoning (a/b=c/d and y = kx) to solve problems.

M6A3. Students will evaluate algebraic expressions, including those with exponents, and solve simple one-step equations using each of the four basic operations.

DATA ANALYSIS AND PROBABILITY **15% of CRCT**

M6D1. Students will pose questions, collect data, represent and analyze the data, and interpret results.

- ❑ Formulate questions that can be answered by data. Students should collect data by using samples from a larger population (surveys), or by conducting experiments.
- ❑ Using data, construct frequency distributions, frequency tables, and graphs.
- ❑ Choose appropriate graphs to be consistent with the nature of the data (categorical or numerical). Graphs should include pictographs, histograms, bar graphs, line graphs, circle graphs, and line plots.
- ❑ Use tables and graphs to examine variation that occurs within a group and variation that occurs between groups.
- ❑ Relate the data analysis to the context of the questions posed.

M6D2. Students will use experimental and simple theoretical probability and understand the nature of sampling. They will also make predictions from investigations.

- ❑ Predict the probability of a given event through trials/simulations (experimental probability), and represent the probability as a ratio.
- ❑ Determine, and use a ratio to represent, the theoretical probability of a given event.
- ❑ Discover that experimental probability approaches theoretical probability when the number of trials is large.

TERMS AND SYMBOLS

- ❑ positive rational numbers
- ❑ factors
- ❑ multiples
- ❑ decompose
- ❑ prime numbers
- ❑ prime factorization
- ❑ Fundamental Theorem of Arithmetic
- ❑ GCF
- ❑ LCM
- ❑ Evaluate
- ❑ surface area
- ❑ metric system of measurement
- ❑ customary system of measurement
- ❑ proportional relationships
- ❑ right rectangular prism
- ❑ cylinder
- ❑ pyramid
- ❑ cone
- ❑ geometric solid
- ❑ net
- ❑ geometric figures
- ❑ line symmetry
- ❑ rotational symmetry
- ❑ similar plane figures
- ❑ scale factor
- ❑ scale drawings
- ❑ relations
- ❑ varying quantities
- ❑ ratio
- ❑ direct proportion
- ❑ proportions
- ❑ proportional reasoning
- ❑ frequency distributions
- ❑ pictographs
- ❑ histograms
- ❑ bar graphs
- ❑ line graphs
- ❑ circle graphs
- ❑ line plot
- ❑ frequency table
- ❑ experimental probability
- ❑ theoretical probability
- ❑ sampling
- ❑ event
- ❑ random sample population
- ❑ non-routine word problems

Jeffrey Daughtry
Instructional Mathematics Coach
Henry County Middle School