CCGPS Unit Standards or Troup County Version (TCV):

- MAMDMN1. Students will extend the understanding of proportional reasoning, ratios, rates, and percents by applying them to various settings to include business, media, and consumerism
  
  a. Use proportional reasoning to solve problems involving ratios
  b. Understand and use averages, weighted averages, and indices
  c. Solve problems involving large quantities that are not easily measured
  d. Understand how identification numbers, such as UPCs, are created and verified

Prerequisites:

- Determining the number of possible outcomes using the fundamental counting principle
- Judging the reasonableness of numerical computations, and their results
- Solving problems involving real numbers, rational numbers, ratios, percents, and proportions in the context of a situation
- Estimating and finding solutions to application problems involving proportional relationships and percents
- Using the Pythagorean Theorem to solve real-life problems

Unit Length: 20 days
TCSS – Advanced Mathematical Decision Making
Unit 1

Concept 1: Estimate Large Numbers (MAMDMN1.c)

Essential Questions:
How can students use proportions and the fundamental counting principle to estimate large numbers?
How can students make simplifying assumptions about a real-world situation to formulate and solve a hypothetical mathematical problem?

Resources:
1. A Student Activity Sheet 1: Estimating Crowds
1. A Teacher Activity Sheet 1: Estimating Crowds
1. A Student Activity Sheet 2: Filling Your Classroom with Tennis Balls
1. A Teacher Activity Sheet 2: Filling Your Classroom with Tennis Balls
1. A Student Activity Sheet 3: Not Enough Numbers
1. A Teacher Activity Sheet 3: Not Enough Numbers

Concept 2: Using Ratios (MAMDMN1.a)

Essential Questions:
How can students understand and interpret aspect ratio in various settings?
How can students use proportional reasoning to solve problems involving ratios, such as changing tires and selecting televisions?

Resources:
1. B Student Activity Sheet 4: Ratios in the Media
1. B Teacher Activity Sheet 4: Ratios in the Media
1. B Student Activity Sheet 5: Changing Tires
1. B Teacher Activity Sheet 5: Changing Tires

Concept 3: Indices Using Weighted Sums and Averages (MAMDMN1.b)

Essential Questions:
How can students calculate and interpret weighted averages and weighted sums?
How can students use and calculate indices to understand and compare data?
How can students make decisions, predictions, and critical judgments based on data and numerical summaries such as weighted averages and weighted sums?
Concept 4: Validating Identification Numbers (MAMDMN1.d)

Essential Questions:
How can students determine the check digit of a Universal Product Cod (UPC) identification number or a credit card number?
How can students analyze errors in recording UPC identification numbers or credit card numbers detected by the check digit method?

Resources:

1.D Student Activity Sheet 12: Universal Product Codes
1.D Teacher Activity Sheet 12: Universal Product Codes
1.D Student Activity Sheet 13: Credit Card Numbers
1.D Teacher Activity Sheet 13: Credit Card Numbers