Mathematics Grade 7

Concepts and Principles of Measurement
1. Solve problems involving ratios, rates, and proportions.

Data Analysis, Probability, and Statistics
1. Collect, organize, and represent data sets with one or more variables.

Number and Operation
1. Add, subtract, multiply and divide rational numbers.
2. Convert fractions, decimals, and percents; know common conversions.
3. Understand and use scientific notation.
4. Understand and solve problems involving exponents, powers, and roots.
5. Know and use mathematical properties – identity, inverse, distributive, commutative, associative – to solve problems.
6. Simplify using exponents.
7. Use factors, multiples, and prime factorization to solve problems.

Concepts and Language of Algebra and Functions
1. Graph linear functions.
2. Plot the value of quantities whose ratios are always the same.
3. Solve simple linear equations and inequalities including two step problems in one variable, multi-step problems involving direct variation (rate, average speed, distance, time).

Concepts and Principles of Geometry
1. Compute the perimeter, area, volume of common geometric figures in two and three dimensions.
2. Know and use the Pythagorean Theorem.
3. Know and use the concept of congruence.

*Mathematical Reasoning (Not in Descartes)
1. Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns.
2. Determine when and how to break a problem into simpler parts.
3. Use estimation to verify the reasonableness of calculated results
4. Apply strategies and results from simpler problems to more complex problems
5. Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models to explain mathematical reasoning
6. Make precise calculations and check the validity of the results from the context of the problem
7. Evaluate the reasonableness of the solution in the context of the original situation
8. Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems
9. Develop generalizations of the results obtained and apply them in other circumstances