FLORIDA MATHEMATICS STANDARDS: GRADE 7

INSTRUCTIONS: At the end of your final 180 days of teaching, complete this checklist indicating a **mastered skill** by circling **M** or circle **W** for a **skill you are working on**. If you find a **skill you are not ready to tackle**, circle **NA**. Submit this checklist with a completed a Private School Covering Semester Report available at http://www.mycca.org/updates.htm. Completed checklists for subjects that students are taking through CCA group classes are not required.

Big Idea1: Develop an understanding of and apply proportionality, including similarity.			
STATUS			SKILL
M	W	NA	Distinguish between situations that are proportional or not proportional and use proportions to solve problems. *Remarks/Examples*: Example 1: Two snakes, Moe and Joe, are each measured at two points in time. The first time, Moe is 3 inches long and Joe is 4 inches long. One year later, Moe is 5 inches long and Joe is 6 inches long. Which snake grew more? Maria believes that both snakes grew the same amount. Tom believes that Moe grew more. Explain under what circumstances either explanation could be correct. (In absolute terms they grew the same amount, which is not a proportional relationship; in relative terms one grew more than the other, which is a proportional relationship.) Example 2: A recipe calls for 3 cups of flour and 2 eggs. If you wanted to increase the recipe and use 9 cups of flour, how many eggs would you need to use to keep the same ratio of flour to eggs?
M	W	NA	Solve percent problems, including problems involving discounts, simple interest, taxes, tips and percents of increase or decrease. *Remarks/Examples*: Example: A merchant buys CDs for $11 wholesale and marks up the price by 35%. What is the retail price? Example: You are at a party with 100 people. 99% of the people are FSU fans. Some of the FSU fans left the party and now 98% of the people are FSU fans. How many people are still at the party?
M	W	NA	Solve problems involving similar figures. *Remarks/Examples*: Example: Rectangle *A* and rectangle *B* are similar. The lengths of congruent sides of rectangles *A* and *B* are 6 in. and 5 in., respectively. If the perimeter of rectangle *A* is 30 in., then what is the perimeter of rectangle *B*?
M	W	NA	Graph proportional relationships and identify the unit rate as the slope of the related linear function. *Remarks/Examples*: In a linear relation, the vertical change (change in *y*-value) per unit of horizontal change (change in *x*-value) is always the same and this ratio ("rise over run") is called the slope of the function. Example: A babysitter earns $5 per hour. Draw a graph of money earned versus time. Find the numerical value of the slope and interpret it in words.
M	W	NA	Distinguish direct variation from other relationships, including inverse variation. *Remarks/Examples*: Direct variation between y and x is when y/x=k where k is a constant, or equivalently y=kx. Indirect variation is when xy=k where k is a constant, or equivalently y=k/x.
M	W	NA	Apply proportionality to measurement in multiple contexts, including scale drawings and constant speed. *Remarks/Examples*: The student might convert among different units of measurement to solve problems involving rates. Example 1: On a floor plan of your school, your classroom is 9 inches long and 6 inches wide. If the scale is 1 inch = 3 ft., what is the width of your classroom in feet? Explain your answer. Example 2: You have a 4 in. by 5 in. photograph and you want to enlarge it to an 8 in. by 10 in. photograph. Roberto thinks that the new picture is four times as big as the old one. Dora thinks that the new picture is twice as big as the old one. Explain their thinking.

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Big Idea2: Develop an understanding of and use formulas to determine surface areas and volumes of three-dimensional shapes.	
STATUS	SKILL
M W NA	Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones. *Remarks/Examples*: Students should be limited to prisms, pyramids and cylinders when calculating surface area, and prisms, pyramids, cylinders and cones when calculating volume.
M W NA	Use formulas to find surface areas and volume of three-dimensional composite shapes. *Remarks/Examples*: This extends the work of grade 5 to using general formulas to compute the solutions for a variety of shapes. The figure being composed or decomposed may include circles or parts of circles. Example: Given a 3-Dimensional "E" shaped figure with labeled side lengths, find the surface area of the figure.

Big Idea3: Develop an understanding of operations on all rational numbers and solving linear equations.	
STATUS	SKILL
M W NA	Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers. *Remarks/Examples*: Example: Mary was charged $25 each for 6 checks that bounced. Explain why the expression 6x(-25)= -150 describes the situation. Example: Mary had the problem of the bounced checks resolved and didn't have to pay a penalty of $25. She wrote (-6) x (-25)=150 to fix her checkbook. Explain why a negative number multiplied by a negative number gives a positive number in this situation
M W NA	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.
M W NA	Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients. *Remarks/Examples*:Example: It costs an initial fixed cost of $2 plus an additional $1.50 per mile to rent a taxi. Which equation represents the method for calculating the total cost of a taxi ride? What is the total cost for a 5-mile trip?
M W NA	Use the properties of equality to represent an equation in a different way and to show that two equations are equivalent in a given context. *Remarks/Examples*:Properties of equality explain the following results: · A balanced equation will remain balanced if you add, subtract, multiply or divide (excluding division by zero) both sides by the same number. · A quantity equivalent to another quantity can be substituted for it. Example 1: What is another way to express the following equation? 3x + 14 = x + 30 Example 2: Why is 2x + 4 = x + 6 the same as 2x = x + 2 ?

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Supporting Idea4: Geometry and Measurement			
STATUS			SKILL
M	W	NA	Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and apply these relationships to solve problems. *Remarks/Examples*: The linear scale factor is 2. The areas of the two figures are related by a factor of 4 (2 squared). If this pattern was continued for a 3-dimensional figure, the volumes would be related by a factor of 8 (2 cubed). Students should encounter this concept in different contexts, and they should be encouraged to recognize the patterns themselves rather than be told about the relationship first. Example: You have two circles with circumference pi and 4pi. What is the ratio of the areas of the circles? What is the ratio of the diameters? What is the ratio of the radii?
M	W	NA	Predict the results of transformations and draw transformed figures, with and without the coordinate plane. *Remarks/Examples*: Students should recognize that reflections, transformations, and rotations result in congruent figures. Other transformations (such as dilations) may not preserve congruency. Example 1: Draw the triangle with vertices (0,0), (3,0), (0,4). Translate (slide) the triangle 2 units to the right. What are the coordinates of the vertices of the new triangle? Example 2: What happens to a figure drawn on a coordinate plane if each of its vertices' coordinates is multiplied by 2? What if they are multiplied by 1/4th? What about -2?
M	W	NA	Identify and plot ordered pairs in all four quadrants of the coordinate plane. *Remarks/Examples*: Quadrants 2, 3, and 4 are introduced for the first time in 7th grade.
M	W	NA	Compare, contrast, and convert units of measure between different measurement systems (US customary or metric (SI)), dimensions, and derived units to solve problems. *Remarks/Examples*: Example 1: You ride your bike from your house to the beach and home again. At the end of your trip, your bicycle odometer reads 8km. How many miles did you ride? Example 2: How many cm3 are in a 2-liter bottle of soda?

Supporting Idea5: Number and Operations			
STATUS			SKILL
M	W	NA	Express rational numbers as terminating or repeating decimals.
M	W	NA	Solve non-routine problems by working backwards. *Remarks/Examples*: Solving non-routine problems involves creativity and critical thinking. Solution methods for non-routine problems are not prescribed. They may involve multiple representations, and are challenging for the learner. Example: Alex had some marbles. On his birthday, his father doubled the number of his marbles. Alex gave 5 marbles to his best friend. Then he divided the remaining marbles into three equal groups and shared them with his two brothers. Each brother got 11 marbles. What was the original number of marbles that Alex had before his birthday? Did he make a good choice of sharing his marbles? What strategy would you use if you were Alex?

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Supporting Idea6: Data Analysis			
STATUS			SKILL
M	W	NA	Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population. *Remarks/Examples*: Example: You asked 10 of your classmates what is their favorite university in Florida. Five of them said Florida International University. Based on your sample, can we assume that FIU is the favorite university of approximately half of the students in your school? In your class?
M	W	NA	Construct and analyze histograms, stem-and-leaf plots, and circle graphs. *Remarks/Examples*: Students can represent the same data with different types of graphs and discuss the appropriateness of each graph based on the source of the data and the information required. An example of a stem-and-leaf plot for the data set (34, 30, 38, 42, 67, 68, 68, 56, 54, 34, 82, and 85) is as follows: Legend: 3| 234 means scores of 32, 33, and 34 **3 | 0,4,4,8** **4 | 2** **5 | 4,6** **6 | 7,8,8** **7 |** **8 | 2,5** What is the median of the data set? What is the mode of the data set?

Supporting Idea7: Probability			
STATUS			SKILL
M	W	NA	Determine the outcome of an experiment and predict which events are likely or unlikely, and if the experiment is fair or unfair. *Remarks/Examples*: The student will represent probabilities as fractions and decimals between 0 and 1 (inclusive), and as percentages between 0% and 100% (inclusive), and verify that the probabilities are reasonable. In 2007 mathematics standards, the concept of probability is introduced for the first time in 7th grade.
M	W	NA	Determine, compare, and make predictions based on experimental or theoretical probability of independent or dependent events, *Remarks/Examples*: Experiments could involve or not involve "replacement" of an event. Students must be able to distinguish between independent and dependent events. Example: Find the probability of choosing a red marble from a bag of 9 white marbles and 1 red marble, with or without replacement of each drawn marble. Students use manipulatives to obtain experimental results, compare results to mathematical expectations, and discuss the validity of the experiment.