Study and Review guide for MATH UNIT 4 Test:

Standards and Elements:

Reason with shapes and their attributes

MGSE3.G.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

MGSE3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*

Represent and Interpret Data

MGSE3.MD.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

MGSE3.MD.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

Geometric Measurement: understand concepts of area and relate area to multiplication and to addition.

MGSE3.MD.7. Relate area to the operations of multiplication and addition.

a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

c. Use tiling to show, in a concrete case, that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

Geometric Measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures

MGSE3.MD.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Students should know how to:

- Recognize and name different categories of polygons and be able to describe their shared attributes.
- Be able to explain whether a specific polygon belongs to any subcategories of quadrilateral shapes.
- Draw and interpret data in a scaled picture graph, bar graphs and line plots.
- Measure to halves and fourths of an inch.
- Find the perimeter and area of a figure.
- Solve for the unknown when solving problems involving area and perimeter.
  - For example, given one side and area of a rectangle, students should be able to determine the length of the other sides.
- Be able to tile shapes to show the area of a rectangle.
- Be able to partition shapes into parts with equal areas.
  - Be able to express the area of each part as a unit fraction of a whole.
- Understand concepts of area and relate area to multiplication and to addition.
- Use distributive property to find area.
- Solve real world and mathematical word problems given information related to area and perimeter.
- Solve real world and mathematical word problems by understanding the operation(s) needed in order to arrive at a solution.