**Chapter 9 Surface Area and Volume**

**Essential Questions:**

* How can you determine the intersection of a solid and plane?
* What is a solid? Give some examples.
* What is surface area of a solid? Explain how to find it and how it is labeled.
* How do you determine whether you should find the volume of surface area in a given situation? Give some real-life examples.

**9.1 Solid Figures (G-MG.1)**

* I can determine if a figure is a polyhedron or a solid and explain why or why not.
* I can identify all bases, faces, and edges of a solid.

**9.2 Surface Area of Prisms and Cylinders (G-GMD.4)**

* I can define a prism and determine the bases, lateral faces, lateral edges, and altitude.
* I can define lateral area and surface area of a prism and explain how to find each.
* I can calculate the area of the bases and lateral area for a prism, and thus find the surface area.

**9.3 Surface Area of Pyramids and Cones (G- GMD.3)**

* I can define a pyramid and determine the base, lateral faces, lateral edges, vertex, height, and slant height.
* I can explain the difference between height and slant height.
* I can define lateral area and surface area of a pyramid and explain how to find each.
* I can calculate the area of the base and lateral area for a pyramid, and thus find the surface area.
* I can define the lateral area and surface area of a cone and explain how to find each.
* I can calculate the area of the base and lateral area for a cone, and thus find the surface area.

**9.4 Volume of Prisms and Cylinders (G-GMD.3)**

* I can calculate the volume of a prism using the formula $V=Bh$ and the volume of a cylinder using the formula $V= πr^{2}h$.

**9.5 Volume of Pyramids and Cones (G-GMD.3)**

* I can explain that the volume of a pyramid is $\frac{1}{3}$ the volume of a prism with the same base area and height and that the volume of a cone is $\frac{1}{3}$ the volume of a cylinder with the same base area and height.
* I can determine the volume of a pyramid using the formula $V=\frac{1}{3} Bh$ and a cone using $V=\frac{1}{3} πr^{2}h$.
* I can apply the Pythagorean Theorem to help me determine the height of a cone when given the slant height.

**9.6 Surface Area and Volume of Spheres (G-GMD.3)**

* I can define a sphere, including its center, radius, diameter, great circle, and circumference.
* I can find the surface area and volume of a sphere.