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Native American Geometric Community

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Geometry has been a part of Native American history for centuries, and has been embodied in the architectural techniques of Native American dwellings. These dwellings are an important part of our heritage, a heritage that is fading from the memories of our youth. An approach to reconnecting students to their heritage is to embed cultural relevancy in the teaching of mathematics. This is also a recommended approach for closing the achievement gap. The objective of this unit is to teach some key topics in geometry using cultural relevancy to deepen the understanding of math concepts, and in the process passing on valuable components of cultural heritage. The key topics of geometry in this unit is the surface area of the three-dimensional shapes of cones, cuboids and hexagonal prism. These shapes are found in the architectural dwellings of Native American, which include the teepee from the nomadic tribes, the pueblo from the pueblo tribes and the hogan from the dine' tribe. The teepee is a conical shape, which is ideal for all weather and is easily transportable. The pueblo dwelling is cuboid shapes that are built adjacent to each other or on top of each other, for a family community of homes. The hogan is a hexagonal shape formed by stacked logs for easy assembly and withstands the desert weather. These homes were built with geometric mathematical skills using natural resources.

As part of our school district mandates, mathematics teachers are asked to seek activities that "model real-world phenomena to include cultural relevancy" and "to represent and analyze relationships using mathematical concepts, verbal rules, geometric strands, and common core standards". I intend to demonstrate how these types of activities can be incorporated into a geometry unit as a way of conveying that history can have a strong impact on motivating students in learning math. Students will examine the shapes of the homes in an and use their knowledge of shapes to find the surface area of cones, cuboids and hexagonal prism as they complete their architectural math activity project of a Native American Community.

(Developed for Math/Geometry, grade 8; recommended for Math/Geometry, grades 5-8)