



Area and Perimeter: Farming Polyominoes on the Navajo Nation

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The focus of my curriculum unit was measurement. Particularly, I wanted to develop my students understanding of the concepts of area and perimeter. As the Dine, or Navajo, are currently and traditionally an agrarian society I felt that a practical and culturally relevant platform for exploring these concepts would be through the model of farming practices in our communities. By using the cultivation of our sacred plants- squash, beans and corn- to illustrate area and perimeter problems I will also be able to pose real-world questions to my students about being able to responsibly allocate crop space to produce enough yield to feed their families through the winter months.

I will use a variety of exercises using polyominoes, which are combinations of unit squares, to demonstrate increasingly complex area and perimeter problems. Using square inch tiles to generate, and then measure, increasingly complex polyominoes, students will be provided with a hands-on approach to increasingly difficult area and perimeter calculations. Eventually they will apply these strategies to a farm production problem with real world applications. I will provide them with the expected area of land required to cultivate individual corn, bean, and squash and squash plants as well as the crop yield which will be required to sustain both an individual and family unit through the harsh winter months. They will use their understanding of polyominoes and area and perimeter calculations to design farms which will most efficiently meet to supply needs set forth above.

(Developed for Mathematics, grades 3-5; recommended for Mathematics, Reteach, SPED, grade 6)

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