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Time: 40-50 minute
Grade Level: 6

Background:
This lesson follows the Neolithic Settlement Activity.

Objective(s):
To draw and arrange the Tribe Group plots using the guidelines and measurements established by students in the Social Studies activity

Advanced Preparation:
Students need to complete the Neolithic Settlement Activity and bring their measurements to class.

Materials:
- Map of the settlement
- Graph paper with grid lines representing 1 sq. ft.
- Scissors and markers

Procedure:
1. Using the model proposed by the Family Groups, the students will discuss the area measurements of the settlement models within cooperative groups.
2. A minimum is established for each family consisting of:
   - 20 sq. ft. of land for farming
   - Each goat needs 3 sq. ft. of land for grazing
   - The housing minimum is 10 sq. ft.
3. The Tribe family groups will multiply for the area of their plot according to their family needs. The measurements will be made to accommodate as many families as possible within the settlement. The Tribe leader must approve each arrangement, as it will fit into the settlement.
4. Each family will draw their plot using the established areas, forming rectangular or square shapes.
5. Families will label and cut their areas from the graph paper and arrange the plots into a settlement model or map.
6. To close, discuss the following questions.
   - What was the best shape to obtain the greatest area?
   - What is the advantage of having the tribe members live in close proximity to each other?

Evaluation:
Students will be evaluated by discussion, participation, and the use of Area to the best advantage.

Extensions:
How realistic are the maps the students made? Subsistence farmers today produce only what is needed to feed themselves and do little to no trading or buying of goods. Subsistence farmers still exist in Sub-Saharan Africa, Southeast Asia and parts of South and Central America. They have the lowest land requirements of people today and probably have similar ecological footprints as people during the Neolithic Period. They use between 0.25 and 10 acres per person. If we pick the number 5 acres per person to represent what Neolithic people may have required, how much land would Neolithic people have needed for the same population size as your family group? What is that in square feet? 1 acre = 43,560 sq. ft. Based on these calculations, how realistic are the settlement maps? What land requirements may be missing from our maps?

Have students calculate how much land is available per person on this planet using the figures: 12 billion hectares of biologically productive land, 6.3 billion people living on the planet. How much land is available per person?

The average U.S. citizen has an ecological footprint of 10 hectares. If all 6.3 billion people lived like the average U.S. citizen, would there be enough land to support everyone?

Reference:

2004. *Teaching Green: The Middle Years*. Edited by Tim Grant and Gail Littlejohn, Gabriola Island, B.C., New Society Publishers.

Arizona Standards

Math
Number Sense and Operation
C2-GR6-PO1
C2-GR6-PO3
C3-GR6-PO4

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