7. INVESTIGATING POND PERIMETER AND AREA

Overview: This activity will give students experience determining perimeter and area of an irregular geometric shape.

Objective: Using methods of estimation, students will determine the perimeter and area of the Yuma Conservation Garden pond.

Time needed: 1-2 hours

Group Size: 2-3

Age appropriateness: 5th Grade and up

Site: Garden pond

Background: Most students get experience computing perimeter and area of regular shapes and often do not get experience measuring real objects when learning these concepts. This activity gives students real-life experience problem solving to compute an irregular shape. The perimeter and area of real objects often do not follow formulas and require some problem solving.

Materials:

Provided at the Garden
- Measurement tools
- Clipboards

Provided by the classroom teacher
- Outline maps of the pond
- Pencils and paper
- Additional measurement tools
- Calculators

Preparation: Make copies of outline map

Pre Activity: Students should have classroom experience finding perimeter and area through measurement and estimation of regular and irregular shapes using multiple methods. Practice estimating area and perimeter of objects around the classroom including the buildings on campus.

Procedure:

1. Walk students around the pond. Ask them what they just walked in geometric terms (perimeter).
2. Discuss possible suggestions on ways to measure the perimeter.
3. In groups, have students work on Problem # 1 on the following page. Give them a copy of the outline map for a reference.
4. After sufficient time has been given, hold a class discussion on their findings.
   - Did they all get the same numbers?
   - How far apart are the answers?
   - Talk about reasonableness of solutions.
   - Attempt to come to a consensus.

5. Following the same procedure, have the groups work on Problem # 2.
6. Discuss with the group the different methods of computation used. Which methods seem to be more accurate? How accurate do they need to be?

Modifications: When students go back into groups, you could rotate their groups so that they are working with a new perspective.

Extensions: In the classroom, students could work Problem # 3. Can they use the data gathered on Problems 1 and 2 to find the volume of the pond?

Reference List:

Math texts

Time of Year: any

**This activity was created by Karen Lang

Problem # 1

The Yuma Conservation Garden has a problem with stray cats. In order to keep them from attacking the ducks at the pond, the Garden Board decided to put up a fence that encircles the pond. The cost of the fence is $2.50 per meter (could substitute yard). The Garden can only spend $300 on the project. Will they be able to put up the fence? Justify your answer.

Problem # 2

The Garden Board did erect the fence, but the Site Stewards have found that the cats can climb over the fence. They have decided to cover the pond with fencing as well. If they could buy the fencing in one sheet, how much would they need to buy? If the sheet costs $1.80 per square meter (yard), what will the total cost be? Justify your answer.

Problem # 3

Brainstorm with your group to come up with a less expensive and more practical alternative for dealing with the feral cats.