Connection Activity: Mapping

Estimated time: 45 minutes

Materials: Graph paper, markers, rulers.

Procedure:

1. Ask students to imagine themselves in the following situation: you are the architect of the Gami chamber, what do you think you would have to do first? Of course you have to draw a map in order to have a great design! Please consider that: "*The tunnel began to turn left and right, narrow and then wide, and back to narrow*", also the area of the chamber has to be 3 times larger than the area of the tunnel and you can choose any shape you want for the chamber.
2. Students work in pairs to draw their map.
3. Once they finish drawing the map they must calculate:

    - Total perimeter (tunnel + chamber) = _____
    - Area of tunnel = _____
    - Area of chamber = _____
    - Total area (tunnel + chamber) = _____

    Students will have to include in their worksheets the procedures used to calculate the results.

4. Have each group display their map on the wall. Ask the students if they can find a relationship between the area and perimeter of the different models each group has created. They can also observe if they have used the same shapes on their designs and the reasons why they chose a particular shape. How did they find the area of the tunnel with wide and narrow spaces?
5. Each student must describe in three or more sentences the procedure followed in order to design the tunnel and chamber with the given characteristics. After the writing activity it is important to have the students share with the class their final thoughts. This step will allow the teacher to identify those students who are counting unit squares to determine the area of their design. Then the teacher can guide the students to figure out an easier way to calculate the area, such as multiplication and eventually using formulas.
6. If there is a desire to expand this activity, students can be asked to calculate the volume of the tunnel and chamber. To achieve this task, students will have to think about the height of the ceiling, is it going to be the same height for both the tunnel and chamber? Students must explain their procedures.