Ricardi
Math-kitecture
Lesson Plan: Grade 8 and 9

Promoting Architecture in mathematics

Unit: Drawing a Floor Plan

How can we use the drawing of a floor to calculate its perimeter and area?

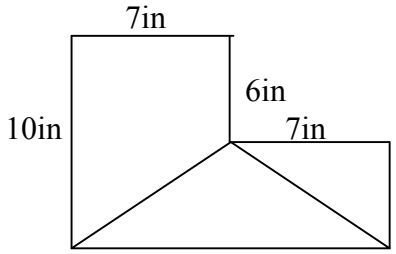
Prerequisite: Students should already know how to find perimeter and area of the basic geometric shapes (such as square, rectangle, triangle, parallelogram, and trapezoid).

Performance Standards
Geometry and measurement concepts
Communicate using mathematical terms.
Extend and create geometric patterns using concrete and pictorial models.
Relate to real world application.
Carry out proportional reasoning
Make and use rough sketches, precise scale diagrams.

Performance Objectives: Students will be able to
Identify different geometric shapes;
Use measurements, estimation, and unit of conversion;
Understand the concepts use by architects such as dimension and scaling;
Solve area and perimeter of irregular polygon;
Explain how the lesson can be applied to real world.

Material: Room, measuring device, graph or construction papers, pencils, and calculators, floor plan model.

Do Now: Find the perimeter and area of the figure below using a ruler and a calculator.
Given that 12in = 1foot, convert the perimeter and area found into feet.



Motivation:
How can drawing our classroom floor plan help us in finding its perimeter?
Development:
Use a floor plan model found in Charles Bender's Math-kitecture web site. Have students work in group to analyze and write a few sentences about what they see in the

chosen floor plan model (hint: shapes, words, numbers, and their meanings). The students should then discuss and debate their conjectures about the model. The teacher should then elaborate on their conjectures and elicit the need for measuring, labeling, and scaling. The teacher should also emphasize the importance of creating a floor plan as a framework for the next lesson.

Instructions:
Draw the floor plan of the classroom. The drawing should include your name, the date, the dimensions, the labels, and the scale use. Find the perimeter and the area of the floor drawn.

Students should work in pairs to measure the room using a measuring device.
Instruct them that they should each draw their own floor plan.
Remind them to label all parts of their drawing with a universal name.
Have all students draw a quick bird-view sketch of the classroom as a blueprint for their work.
Let them decide on whether they should measure the walls, the windows, and any other details included in their drawing.
Instruct them to use the scale 1/4 inch is equal to one foot. Tell them to round their measurement to the nearest whole number.
They should then use a strategy to calculate the perimeter and the area of their floor plan.

Conclusion:
What are the different shapes found in the drawing?
What was the most difficult part of the task?
Explain the steps used in finding the perimeter and the area?

Homework:
Student should reproduce the same drawing on graph paper. This drawing should include the desks, the chairs, and any other appliances all drawn to scale.