Strand B: Measurement

Benchmark MA.B.3.2.1: The student solves real-world problems involving estimates of measurements, including length, time, weight, temperature, money, perimeter, area, and volume.

Benchmark MA.B.1.2.2: The student solves real-world problems involving perimeter, area, and volume using concrete materials or graphic models.

Grade Level Expectations: The student:

• knows how to estimate the area and perimeter of square and rectangular shapes using graph paper, geoboards, or other manipulatives.
• solves real-world problems related to area, perimeter, and volume using concrete materials or graphic models and communicates the appropriateness of the solution.

Overview:

The distance around a figure is called the perimeter. You can find the perimeter of any figure by adding the lengths of all the sides. Area is the number of square units needed to cover a figure. The units to measure area are based on units of length. Area can be measured in square units.

Materials:

• Lakeside Apartments Floor Plan Worksheet
• Floor Plan Grid Activity Sheet
• Furniture Sheet
• Sample Floor Plan Sheet
• Problem-Solving Questions for Apartment Design
• Rulers, Pencils, Erasers

Procedures:

1. Read Chickens on the Move by Pam Pollack and Meg Belviso.
2. Ask the students if they have ever seen a blueprint of an apartment. Give each student a copy of the Lakeside Apartments Floor Plan worksheet.
3. Tell students: You own a wonderful apartment overlooking the ocean on Miami Beach. You have decided to remodel your apartment. You are tearing down walls and rebuilding walls. However, you only have a certain area to work with. As an example, show students the Sample Floor Plan sheet.

4. Students will individually begin to design their apartment. However, there are a set of guidelines. They are as follows:
   - Your apartment must have an area of 550 square feet or less.
   - You must have at least 1 bedroom, a kitchen, a bathroom, and a living room. There must be walls and doors in the apartment.
   - You do not want to throw out any of the existing furniture. You must fit on the Furniture sheet all the furniture that has been supplied.

5. Distribute a copy of the Furniture sheet and the Floor Plan Grid activity sheet to each student. Also distribute rulers, pencils, and erasers.

6. Explain to the students that each square represents 1 square foot. Have the students design their apartment.

7. Have the students find the area of each room.

8. After the students have designed their apartments, distribute the problem-solving questions and have them answer the questions about their own apartment.

**Literature Connection:** *Chickens on the Move* by Pam Pollack and Meg Belviso (ISBN: 1-57565-113-0)

**Assessment:**
- Collect and assess the completed apartment drawing and problem-solving questions.

**Extension:**
- Have students complete the *Problem-Solving Questions for Apartment Design* worksheet.
Area of Kitchen

Area of Living Room

Area of Bedroom #1

Area of Bedroom #2

Area of Apartment
Floor Plan

Area of Kitchen

Area of Living Room

Area of Bedroom #1

Area of Bedroom #2

Area of Apartment
Problem-Solving Questions for Apartment Design

• If you put carpet in your living room and your bedroom(s), how many square feet of carpet would you need? Explain your answer.

• If carpet costs $9.00 per square foot, how much would the carpet cost for your living room? For your bedroom(s)? For both? Explain your answers.

• If you wanted to sell your apartment and the average cost of apartments was $60.00 per square foot, how much money could you expect to get for your apartment? Explain your answer.

• If the builder said it would take approximately 25 days to complete each room, how long will it take to complete the apartment you designed? Explain your answer.

• What is the total square footage of your living room and bathroom? Explain your answer.

• Which is the area with the largest square footage? Smallest?

EXTRA CREDIT:

• Since your apartment is on the 10th floor and it takes 15 seconds for the elevator to go up one floor, how long in minutes and seconds will it take to go up to the 10th floor? (Hint: The elevator starts at the 1st floor; 60 seconds equals one minute). Explain your answer.

• Your new apartment is 10 miles from your school. You will be driven by your mother to and from school, Monday through Friday. If gas cost $2.10 per gallon and your mother’s car gets 20 miles per gallon, how many gallons of gas will be used per week and how much will it cost? Explain your answer.