Dream Home

Lesson Summary

This lesson reviews the geometric concepts of area and perimeter while reinforcing the Second Step concept of handling emotions by staying calm. Students will review the formulas used to find area and perimeter while designing a home. They'll need to consider the size of the entire home, how many rooms they want, and the room sizes. They'll also need to include spaces specifically for calming down.

Objectives

Academic Objectives

By the end of this lesson, students will be able to:

- Demonstrate the ability to calculate area
- Demonstrate the ability to calculate perimeter
- Solve for a real-world mathematical problem involving area and perimeter

Second Step Objectives

By the end of this lesson, students will be able to:

- Identify calming-down strategies that work for them
- Analyze methods of relaxation to cope with stress and frustration

Second Step Connections

- Grade 6, Lessons 17 and 18
- Grade 7, Lessons 17 and 18
- Grade 8, Lessons 17 and 18

Materials

- 1 copy of the Example Floor Plans per student
- 1 copy of the Dream Home Checklist per student
- 1 copy of the Assessment Rubric per student
- Lined paper or drawing paper
- Graph paper
- Rulers
- Pencils with erasers
- Calculators

Bold—Teacher's script
Italics—Anticipated student responses

Preparation

1. This is a culminating practical project and review lesson based on the geometric concepts of area and perimeter. Students will need to have previous knowledge of geometric terms such as length, width, height, area, and perimeter. They will also have to be familiar with area and perimeter formulas.
2. Before you begin, determine what scale students should use in their floor plans based on the size of the squares on your graph paper.
3. This activity will take two or three class sessions.

Part 1: Setting Up the Lesson

1. Explain the activity: **You're finally going to build your dream home—a place that allows you to practice your calming-down strategies and focus on your values. Money is no object. Your dream home will have everything you need to calm down when you're experiencing a strong emotion**. **Start by writing down (or drawing) the things that help you calm down or feel relaxed.**
2. For about five minutes, have students write about or draw the things that help them calm down and feel relaxed.
3. Below their writing or drawing, have students list some of their values that are reflected in those activities. (*Basketball could reflect consistency and fairness or hard work. Art could reflect beauty or freedom. Talking with friends could reflect honesty and respect.*)

Part 2: Building Knowledge

1. Say: **Now your task is to think like an architect. You're going to design a home that has what you need to calm down and relax, and also has all the things every home needs, like a kitchen and a bathroom. You'll make a floorplan and supply all the measurements for each space.**
2. Distribute Example Floor Plans to students and say: **Turn and tell a partner what you notice about these plans.**
3. After students have discussed with their partners, remind them what scale is, and explain that it's used to represent objects that are too large (or too small) to draw in actual size.
4. Tell students what scale they'll be using on the graph paper, and model the equations and drawing on graph paper if necessary.

Part 3: Applying Knowledge

1. Distribute copies of the Dream Home Checklist, graph paper, and rulers to each student.
2. Have students sketch a first draft or rough outline of their Dream Home floorplan, based on what they need for relaxation. Before they start, say: **Your home has to have at least 5 rooms, but no more than 10. It has to include a kitchen, bathroom, bedroom, living room, hallways connecting the rooms, and spaces or rooms for doing things that help you relax and stay calm, such as a basketball court, swimming pool, video game room, or library. Use the Dream Home Checklist to help you.** If necessary, remind students what scale to use on their graph paper.
3. When students have finished their drafts, have them find the area and perimeter of each room (or hallway) and label the space on their floor plans.
4. Have students find the area and perimeter of the whole home and write it on their floor plans, too. They'll need to do the calculation on a separate sheet of paper.
5. (Optional) Collect the first drafts as a formative assessment. Give students back their drafts with feedback during the same class session or the next day.

Part 3: Applying Knowledge (cont.)

6. Have students reflect on the values and calming-down strategies based on what they included in their rough drafts.
7. Have students turn and tell a partner what they included in their Dream Homes and, using their Dream Home Checklists, explain how these spaces will help them with their calming-down strategies. Have them ask each other these questions:
    - What helps you relax?
    - What type of room could you have in your home to achieve this?
    - How much space will you need?
    - Where should it be in the home?
    - How should the room be configured? A concrete example, such as an indoor basketball court, could be useful here. How big does a court need to be? What needs to be in it? Where should you put it?
8. Give students time to finalize their floor plans based on this feedback and reflection.
9. Have students share their floor plans with the class.
10. (Optional) Distribute the Assessment Rubric and have partners peer edit each other's work.

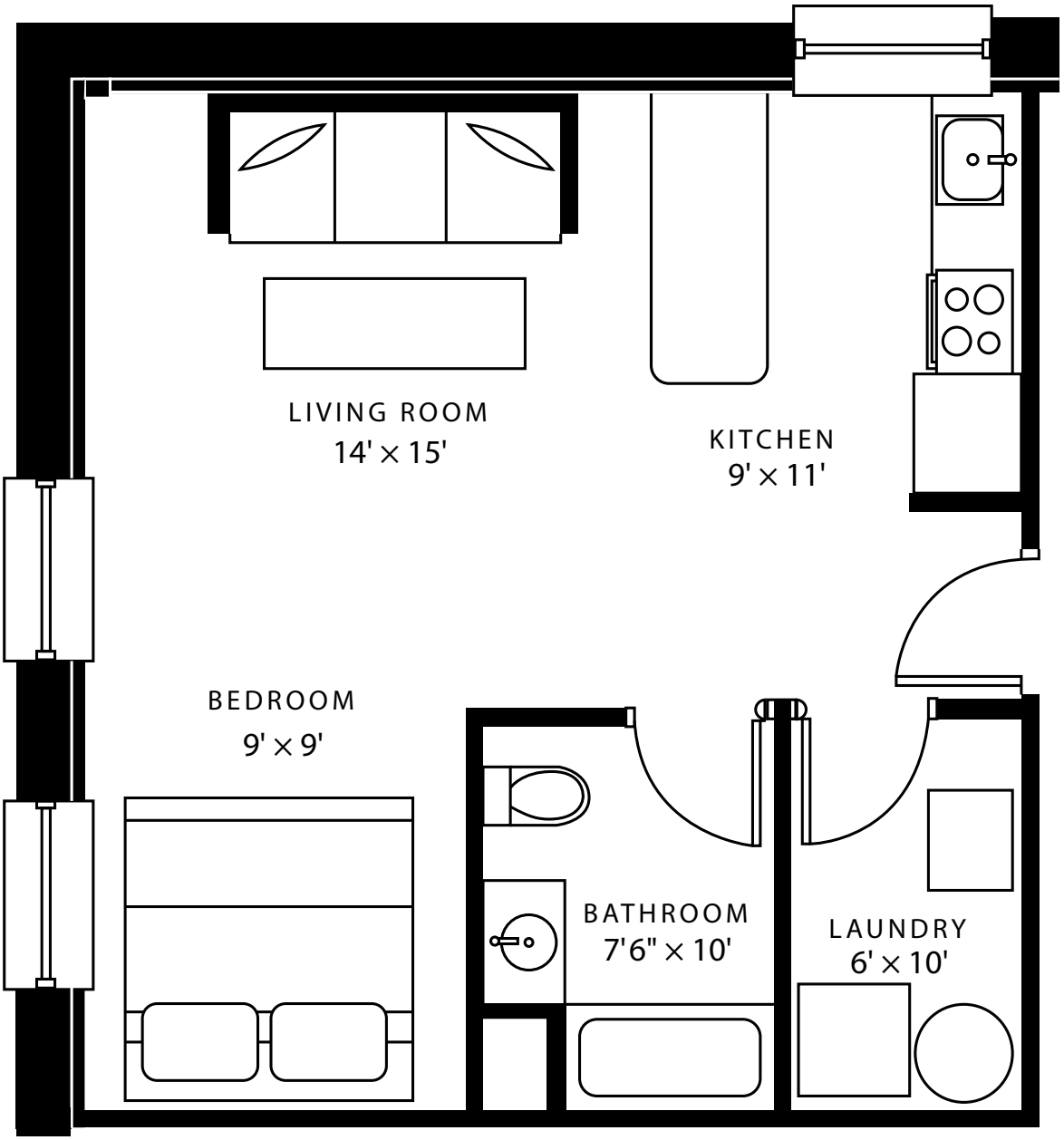
Part 4: Reflection

Have students reflect on the following prompts:

- **Your Dream Home has everything you need to relax and stay calm. What values are represented in this Dream Home? What activities will you be doing in this home?**
- **How do those activities help you calm down and relax?**
- **How could you make space for some of those things in your life?**

Part 5: Assessment

Evaluate the floor plans using the Assessment Rubric.

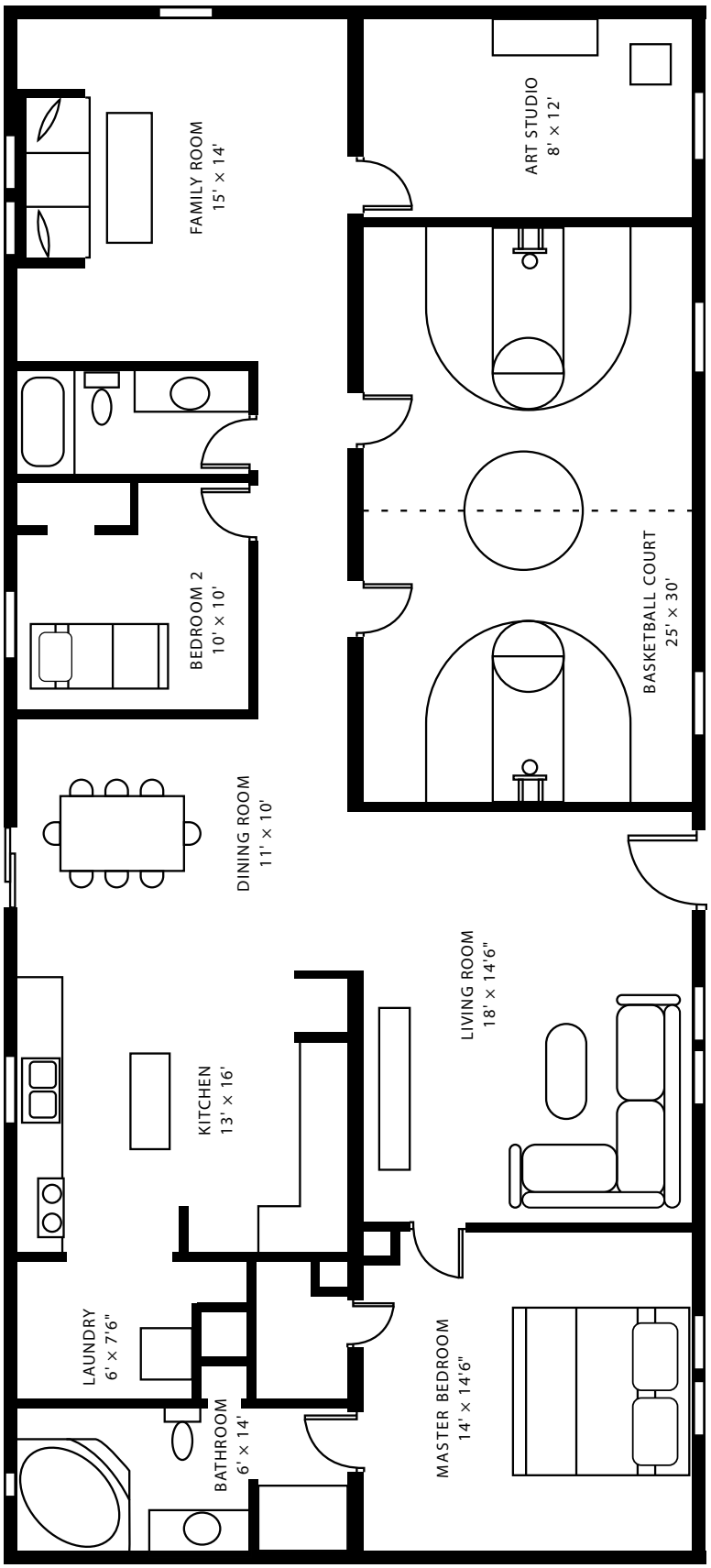


Note: This drawing is not to scale, and the measurements are not exact.

STUDIO APARTMENT

Room	Area (ft.^{2})	Perimeter (ft.)
Living Room	210	58
Bedroom	81	36
Kitchen	99	40
Bathroom	75	35
Laundry	60	32

Dream Home



Note: This drawing is not to scale and the measurements are not exact.

DREAM HOME

Room	Area (ft.²)	Perimeter (ft.)
Master Bedroom	203	57
Living Room	261	65
Basketball Court	750	110
Art Studio	96	40
Bathroom	84	40
Laundry	45	27
Kitchen	208	58
Dining Room	110	42
Bedroom 2	100	40
Family Room	210	58

Dream Home

Criteria	Very Evident (2)	Somewhat Evident (1)	Not Evident (0)
Kitchen			
Bathroom			
Bedroom(s)			
Living room			
Room(s) for relaxing and calming down			
Rooms have reasonable areas for their uses			
More than 5 rooms, but no more than 10 rooms			
Spaces are drawn on a consistent scale			
Title, area, and perimeter of each room are included			
Area and perimeter of whole home are included			

Dream Home

Objective	Beginning	Approaching	Achieving
Demonstrate the ability to calculate area	Some areas of Dream Home are correctly calculated or are to scale	Most or all areas and scales of Dream Home are correctly calculated with assistance	All areas and scales of Dream Home are correctly and independently calculated
Demonstrate the ability to calculate perimeter	Some perimeters of Dream Home are correctly calculated with assistance	Most perimeters of Dream Home are correctly calculated with assistance	All perimeters of Dream Home are correctly and independently calculated
Solve for a real-world mathematical problem involving area and perimeter	Dream Home project work reflects some understanding of applying mathematical principles of area, perimeter, and scale, with assistance	Dream Home project work reflects some understanding of applying mathematical principles of area, perimeter, and scale	Dream Home project work reflects strong understanding of applying mathematical principles of area, perimeter, and scale
Identify and analyze methods of relaxation to cope with stress and frustration	Student can articulate how Dream Home reflects understanding of coping methods within its designated spaces, when prompted	Dream Home reflects understanding of coping methods within its designated spaces	Dream Home reflects understanding of coping methods within its designated spaces

CCSS.MATH.CONTENT.6.G.A.1
Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

CCSS.MATH.CONTENT.7.G.A.1
Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

CCSS.MATH.CONTENT.7.G.A.2
Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

CCSS.MATH.CONTENT.7.G.B.6
Solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.