

## **Lesson Plan: Area and Perimeter Dream Home**

### **Katherine Naughton**

**Objectives:** Student will be able to create a hand-drawing and digital form of a “Dream Home” using area and perimeter formulas. (This lesson is intended for after the basic introduction to the area and perimeter formulas lesson.)

**Grade Levels:** 3<sup>rd</sup>-4<sup>th</sup>

#### **Standards:**

CCSS.MATH.CONTENT.3.MD.C.7.B

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

CCSS.MATH.CONTENT.3.MD.C.7.D

Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

CCSS.MATH.CONTENT.3.MD.D.8

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

#### **Introduction:**

- Have students brainstorm, with a partner, when they will use area and perimeter in the real world. Have a brief whole class discussion and introduce architecture (if not mentioned by a student).
- Pass out examples of blue prints to the student pairs. Give 5-10 minutes for student to examine and discuss what they **see, think, and wonder** about the blue prints. Whole class discussion-Draw student’s attention toward the area and perimeter of the blue print.
- Introduce the activities

#### **Activities:**

- Hand drawing of student’s dream home
  - Students create their own blue print using 1 cm grid paper (1cm=1 foot in the home)
  - Students must record the area and perimeter of each room on a separate sheet of paper (3.MD.C.7.B). Once they are finished with the house, they must find the total area and perimeter of the house (3.MD.C.7.D) (3.MD.D.8).
  - Student then color their blue print, using colored pencils

- Digital form of students dream home
  - Students create their own 3D blue print using homestyler.com
  - Once on the website- click 3D floor planner. At the planner, drag and drop rooms onto the plan to create the floor plan. Program allows you to experiment with windows, doors, and appliances to create a realistic version of the house. (All of the directions as clearly stated on the website, making the program very practical and user friendly).
  - Have students use their hand-drawing to replicate their dream home digitally. Students must manipulate the rooms to create the same area and perimeter of their hand drawing (Although this is not a standard, this provides a create opportunity for students to learn a new form of technology and have an experience as an architect).
  - Students print their floor plan when finished.

**Themes:**

**Connections:**

- Intellectual- Students connect with architecture or blue prints from pervious background/ knowledge
- Emotional-Students may know an architect, making it emotional

**Imagination:**

- Interactive- Students interact with the material (paper and technology) to create their own imagined dream home

**Sensory Experience:**

- See- Student examine a realistic blue print and examine what a 3D blue print looks likes
- Touch- Students touch and hold blue prints while examining

**Perceptivity:** Students evaluate a blue print for 5-10 minutes to look more deeply at blue prints. Time allows student to perceive information and detail of blue prints rather than recognizing a blue print. Also incorporating I see, I think, I wonder, allows for a more in-depth perception of blue prints.

**Active Engagement:**

- Both activities allow for constant active engagement. Students have an opportunity to work in multiple medias to experience the practical application of area and perimeter.

**Time Line:**

Lesson 30 Minutes

Independent work time: 2 days

**Materials:**

1 cm grid paper--(<http://www.greatlittleminds.com/pdfs/graph-paper-to-print/graph-paper-1cm-sq.pdf>)

Colored pencils

Multiple copies of blue prints— (<http://www.olirip.com/wp-content/uploads/2015/03/cheap-blueprints-of-houses-with-photo-of-blueprints-of-painting-on-home-design-gallery.jpg>)  
[www.homestyler.com](http://www.homestyler.com)  
(<http://www.cobblearning.net/coardes/files/2015/01/House-blueprints-102-1u74o7m.gif>)

Website for digital blue print--[www.homestyler.com](http://www.homestyler.com)

### **Adaptations:**

#### Extension

- If students work fast, ask them to make a two-story home.
- 4<sup>th</sup> grade extension- Have students find how much it would cost to add flooring to their house. For example hard wood floor costs \$4.00/ square foot. If their room is 42 square feet then it would cost \$168.00 (42 square feet x \$4.00/square foot).

#### Modifications

- Provide a graphic organizer for students to solve and record area and perimeter calculations

### **Evaluation:**

Observation from class discussion

Both forms of dream homes

Assess student's calculation of area and perimeter on the floor plan