**Area and Perimeter**

**Level: A (GLE 1-4, CCRS A/B)
Anticipated Length of Time: 27 hours (3 hrs/week for 9 weeks)**

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| **Stage 1 – Desired Results** |
| **Goal/Learner Outcomes:****By the end of this unit, students will be able to apply an understanding of area and perimeter in order to compare apartments.** |
| **CCR Content Standard(s):*** Analyze, compare, create, compose shapes (K.G.4)
* Reason with shapes and their attributes (1.G.2, 2.G.1, 2.G.3)
* Measure lengths in standard units (2.MD.2, 2.MD.4)
* Solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit (given area, find length; given area, find possible perimeters) (4.MD.3)
* Understand concepts of area and relate to multiplication and addition (3.MD.5-7)
* Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures (3.MD.8)
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| **CCR Standard(s) for Mathematical Practice:**MP 1 (Make sense and persevere)MP 4 (Modeling)MP 5 (Use appropriate tools, ie, grid paper, rulers, multiplication charts) |
| **Understanding (s)**Students will understand… (concepts)* The characteristics of rectangles
* How to identify applications of area and perimeter
* The difference between linear and square units
* Why multiplication connects to arrays and therefore area
* How to compose and decompose shapes made of rectangles
* Why perimeter is linear and additive
* How the composition of rectangles affects area and perimeter
 | **Essential Question(s) (Big ideas)**What is area and why is it useful?What is perimeter and when is it useful?How are linear and square units similar and different? |
| **Student Knowledge and Skills**Students will know … (skills)* How to find the area and perimeter of a rectangle
* How to find the area and perimeter of a shape composed of rectangles

Students will be able to … (application)* Find the amount of cardboard used to make a box
* Compare two apartments based on their area and cost

**Other Integrated Math Content*** Names of common shapes
* Tactile experiences with common shapes
* Measuring to nearest inch and centimeter
* Benchmarks: Half the size / double the size with shapes
* Expressions (Possibly begin to use variables to represent well understood measurements, like l for length or w for width.)
* Number sense: Connection between repeated addition and multiplication
* Number sense: Commutative property of multiplication
* Test Strategies: Using a Process of Elimination
* Test Strategies: Drawing a picture
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| **Stage 2 – Assessment Evidence** |
| **Performance Task(s):**Students will use grid paper to determine the area of cardboard used in a box.Students will find the area of the classroom.Students will compare several apartment ads and determine which is the best deal, based on the cost and square footage of the apartment. | **Other Evidence:**Class check-insHiSet-like questionsInformal assessment |
| **Stage 3 – Learning Plan** |
| **Learning Activities***EMPower Over, Around, and Within* (OAW) Lesson 5 – Line Up by Size* Students use multiple methods to compare and order basic shapes according to area and perimeter
* Students find examples of area and perimeter in shapes and around the school

Tangram Puzzles (online, store bought)* Students find which shapes are half or double the area of another shape
* Students use tangrams to solve spatial reasoning puzzles

*EMPower OAW* Lesson 6 – Combining Rectangles* Students use arrays to connect multiplication to area of a rectangle
* Students create composite shapes and investigate what happens to area and perimeter.
* Students use grid paper to find the area of cardboard used in a box (pg 67)

*Investigations in Number, Data, and Space: Things that Come in Groups*Investigation 3, Sessions 3 and 4: Array games* Students use arrays to practice finding area of rectangles, to review multiplication facts, and to explore the commutative property of multiplication

*EMPower OAW* Lesson 7 – Disappearing Grid Lines* Students explore the relationship between missing dimensions, areas, and perimeters of rectangles

Test Strategies (use questions from pg 69 in *EMPower OAW*)* Students take notes on using a process of elimination and on questions that use “always” and “not” and practice these strategies with test practice problems about area and perimeter

Teacher generated* Students find the area of the classroom
* Students compare apartments from simple floor plans and advertisements
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