

# Math Instructional Unit 1

<b>Title</b>	<b>Exploring Area and Perimeter with Landscape Design</b>
<b>Time</b>	21 hours
<b>Purpose</b>	Introduce core concepts including exponents, proportional reasoning, and formulas through explorations of area and perimeter.
<b>Goals and Outcomes</b>	By the end of this unit, students will be able to apply their understanding of area, perimeter, and proportional reasoning to create a scale drawing of a backyard makeover.
<b>Priority CCR Standards</b>	<p>3.MD.5            3.MD.7            3.MD.8            2.NBT.1            4.NBT.5            4.MD.3            5.OA.1            5.OA.2            6.EE.1            6.EE.2            6.RP.1            6.G.1            7.G.1</p>
<b>Standards for Mathematical Practice</b>	<p>MP.1 Make sense of problems and persevere in solving them.            MP.2 Reason abstractly and quantitatively.            MP.3 Construct viable arguments and critique the reasoning of others.            MP.4 Model with mathematics.            MP.7 Look for and make use of structure.            MP.8 Look for and express regularity in repeated reasoning.</p>
<b>Key Resources</b>	EMPower Plus series <i>Everyday Number Sense: Over, Around, and Within – Geometry and Measurement</i>

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## ESSENTIAL QUESTIONS to Guide the Unit

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- What kinds of things do we measure and how do we measure them?
- What does it mean for things to be the same shape?

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## UNIT OBJECTIVES

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

- Visualize multiplication and explain how to decompose numbers to make multiplication easier
- Distinguish between area and length measurements and calculate both for rectangles and triangles with whole number side lengths.
- Apply basic properties of operations and use appropriate symbols to write and evaluate expressions.
- Use proportional reasoning to reason informally about similar figures and scale.

Other Academic Content or Digital Literacy Connections

- Word or other application whereby students can change the dimensions of shapes

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## ASSESSMENT

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### **Culminating Assessment**

**By the end of this unit, students will demonstrate their learning by...**

Creating a scale drawing of a backyard area

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**Students/the teacher will evaluate learning by ...**

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- HiSET® and GED® type questions
  - Check-ins
  - Informal Assessments
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## Suggested Flow of Lessons and Activities

### Lesson 1: Exploring Area and Perimeter of Rectangles

Using arrays to count with multiplication

Investigating area of rectangles informally

Investigating perimeter of rectangles informally



### Lesson 2: Using the Area Model for Multiplication

Decomposing numbers using place value and the distributive property to find area

Writing simple equations



### Lesson 3: Area and Exponents

Finding a formula for the area of a rectangle

Writing expressions using exponents

Finding a formula for the area of a square



### Lesson 4: Understanding Perimeter with Formulas

Finding a formula for the perimeter of a rectangle

Writing more simple equations



### Lesson 5: Same Shape - Different Size

Making scale drawings

Beginning proportional reasoning



### Lesson 6: Beyond Rectangles

Exploring area and perimeter with other shapes

Exploring the area of right triangles



### Lesson 7: Workforce Application Assessment

Designing a Backyard