**Math 4**

**Diagnostic Formative Assessment**

**Unwrap a Standard: *What do students have to know and be able to do?***

**Domain: Measurement & Data** and Geometry

**Domain Weight:** 7% - 11% of items, **18.5% of standards**

**Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**

***Standard:******4.MD.A.3*** **Apply** the area and perimeter formulas for rectangles in *mathematical problems* and problems in *real-world contexts* including problems with unknown side lengths.

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| **Emerging (1)** | **Developing (2)** | **Proficient (3)** | **Distinguished (4)** |
| I can **identify** the area and perimeter for rectangles in *mathematical problems*. | I can **identify** the area and perimeter for rectangles in *mathematical problems* and problems **in *real-world contexts***. | I can **apply** the area and perimeter formulas for rectangles in *mathematical problems* and problems in *real-world contexts* **including problems with unknown side lengths**. | I can **explain** the difference between the area and perimeter formulas for rectangles. **Use** the area and perimeter formulas to **determine** unknown side lengths of a rectangle.  *I can* ***create******real-world applications of area and perimeter****. \** |
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| **Building Background Knowledge and skills: Flashback Standard**  **3.MD.C.6 Measure** areas by **counting** unit squares (e.g., square cm, square m, square in, square ft, and improvised units. | | | |
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| **Extending Knowledge and skills: Preview Standard**  **5.MD.C.4 Measure** volumes by **counting** unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. | | | |

**Arizona Performance Level Descriptors MD.A.3** (EQR, GRR, MSR)

*\*Rigor increased by author from state PLD (high expectations).*

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| **Essential Knowledge/Concepts**  ***What Do Students Need to Know/Understand?***  **List the underlined nouns.**  Area Perimeter Rectangle  Area Formula Perimeter Formula  Unknown side length Square Unit  Unit (centimeter, meter, inch, foot)  **FBS**  Area Unit Squares  **PRS**. Volume Unit Cubes | **Essential Skills**  ***What Do Students Need to Be Able to Do?***  **List the circled (or *italicized*) verbs.**  **Identify Apply Explain**  **Use Create Determine**  **FBS Measure Count**  **PRS Measure Count** |
| **DOK Level**  **Level of content complexity rather than content difficulty.**  DOK 1 DOK 2 DOK 3 *DOK 4\** |
| **Essential Questions**  ***How can we capture student wonder?***  **\*Including open-ended and ‘second’ questions**  How would you describe the perimeter of a computer screen?  What is the same and what is different about the area and perimeter of a rectangle?  How can you decide whether a question involves the perimeter or area of a rectangle?  Create a situation that would involve finding the area of a rectangle. | **Essential Vocabulary**  ***What Do Students Need to Comprehend?***  **List all key vocabulary**  Side Length Area Unit Square  Perimeter Unit Side  Formula Two-dimensional    Three-Dimensional  **FBS**  **PRS** Volume Unit Cubes |
| **Learning Objectives aligned to the Standard**  ***What ‘I can’ statement(s) will clarify the objective for students?*** | |
| **Evidence of Student Mastery?**  ***How will we know when they know it?*** | |
| **Specific Instructional Framework?**  ***What will we do to help them know/understand/can do it?***  ***What will we do for students who still don’t know it?***  ***What will we do for students who already know it?*** | |

**My Learning Intention and Success Criteria *4.MD.A.3* Individual Component Version**

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| **My Learning Intention:** I am learning to apply the area and perimeter formulas for rectangles in *mathematical problems* and problems in *real-world contexts* including problems with unknown side lengths. | | |
| **My Success Criteria** | **Post** | **Why am I learning this?** |
| I can demonstrate my understanding of the concepts of area and perimeter. | 🥳  🙂  🤔 |  |
| I can accurately calculate the area and perimeter of rectangles using the appropriate formula. | 🥳  🙂  🤔 |
| I can apply the formulas correctly in mathematical problems involving rectangles. | 🥳  🙂  🤔 |
| I can apply the formulas in real-world contexts, such as calculating the area of a room for carpeting or determining the perimeter of a garden. | 🥳  🙂  🤔 |
| I can solve problems with unknown side lengths by setting up and solving equations based on the given information. | 🥳  🙂  🤔 |
| I can show consistency in using the formulas accurately in creating and solving various problem-solving scenarios related to rectangles. | 🥳  🙂  🤔 |
| What do I want to remember? | | |

**Alignment to 4.MD.A.3.0** (Flashback to 3.MD.C.6) **(DOK 1)**

1. Count the boxes to find the area of rectangle A.

**A picture containing shoji, crossword puzzle, building

Description automatically generated**

**Area of rectangle A = \_\_\_\_\_\_\_**

**Alignment to MD.A.3.1 (DOK 1)**

1. **PART A.** Find the total distance around the rectangle.

**PART B.** Is this an example of area or perimeter?

**Shape

Description automatically generated**

**Alignment to MD.A.3.2 (DOK 2)**

1. Hilda is creating a frame to place around a rectangular painting. The painting is 12 cm long and 8 cm high.

A picture containing colorful

Description automatically generated

Circle the equation Hilda can use to design her frame?

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| **A = 12 x 8** |  | **P = 12 + 8** |  | **A = 12 x 8 + 12 x 8** |  | **P = 2 x 12 + 2 x 8** |

**Alignment to MD.A.3.2 (DOK 2)**

1. Maria is creating a rectangular garden for her mother. Her garden will be eight meters long and nine meters wide.

**PART A.** Draw and label a sketch of the garden.

**PART B.** Maria needs help finding the amount of space inside her garden. Find the area of the garden.

**Alignment to MD.A.3.3 (DOK 2)**

1. Find the length of the missing side in the given rectangle if the perimeter is 28 ft.

Shape, square

Description automatically generated

1. 3.5 ft.
2. 6 ft.
3. 20 ft.
4. 72 ft.

**Alignment to MD.A.3.3 (DOK 3)**

1. **PART A.** Draw a rectangle on the grid below with an area of 48 sq cm.

**PART B.** State the length and width of the rectangle.

Table

Description automatically generated

**Alignment to MD.A.3.4 (DOK 3)**

1. Think of a time when knowing how to find the area or perimeter of a rectangle would have solved a question.

**PART A.** Describe the problem. Include approximate measures in your story to make it realistic.

**PART B.** Make a labeled sketch to illustrate your situation.

**PART C.** Solve your story.

**Guided Group Lesson Date:**

**Standard:** **4. MD.A.3** **Apply** the area and perimeter formulas for rectangles in mathematical problems and problems in real-world contexts including problems with unknown side lengths.

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| Group Members | Emerging | Developing | Proficient | Distinguished |
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Warm-Up:

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Vocabulary

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| Emerging | Developing | Proficient | Distinguished |
| Lesson focus:  Cindy plans on painting a 12I by 8I rectangular accent wall in her home. She requests your help in determining whether she should use the area or perimeter formular to determine how much space she needs to paint. Use sentences and images to explain what you recommend. | Lesson focus:  Carlotta’s class is creating a rectangular garden on the school property. The vegetable plants they want in the garden require 36I square feet of space. Carlotta purchased 12I of fencing to enclose the garden. Does she have enough fencing to enclose the garden? Explain your thinking with pictures, equations, and sentences. | Lesson focus:  Carlos noticed perimeter of a rectangle is expressed in units. He also realized area of a rectangle is expressed in square units. Explain why the difference in expressing perimeter and area is important to apply to our solutions to mathematical problems. | Lesson focus:  Penny has been asked by her teacher to create two questions for the next quiz. She is tasked with creating a real-world area of a rectangle situation and a real-world perimeter of a rectangle situation. Inclue practical numbers to fit each real world situation. |

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| Observations: |  | Next Steps: |
| What you notice about your students during small group instruction. | What will you do with these students next? Change groups, repeat, etc. |