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 <u>area</u> and <u>perimeter formulas</u> for <u>rectangles</u> in *mathematical problems* and problems in *real-world contexts* including problems with <u>unknown side lengths</u>.

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

Emerging (1)	Developing (2)	Proficient (3)	Distinguished (4)
I can **identify** the <u>area</u> and <u>perimeter</u> for <u>rectangles</u> in *mathematical problems*.	I can **identify** the <u>area</u> and <u>perimeter</u> for <u>rectangles</u> in *mathematical problems* and problems **in real-world contexts**.	I can **apply** the <u>area</u> and <u>perimeter formulas</u> for <u>rectangles</u> in *mathematical problems* and problems in *real-world contexts* **including problems with <u>unknown side lengths</u>**.	I can **explain** the <u>difference</u> between the <u>area</u> and <u>perimeter formulas</u> for <u>rectangles</u>. **Use** the <u>area</u> and <u>perimeter formulas</u> to **determine** <u>unknown side lengths</u> of a <u>rectangle</u>. *I can* **create** *real-world applications of area and perimeter*. *

BUILDING BACKGROUND KNOWLEDGE AND SKILLS: FLASHBACK STANDARD

3.MD.C.6 **Measure** <u>areas</u> by **counting** <u>unit squares</u> (e.g., <u>square cm</u>, <u>square m</u>, <u>square in</u>, <u>square ft</u>, and <u>improvised units</u>.

EXTENDING KNOWLEDGE AND SKILLS: PREVIEW STANDARD

5.MD.C.4 **Measure** <u>volumes</u> by **counting** <u>unit cubes</u>, using <u>cubic cm</u>, <u>cubic in</u>, <u>cubic ft</u>, and <u>improvised units</u>.

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

ESSENTIAL KNOWLEDGE/CONCEPTS	ESSENTIAL SKILLS
What Do Students Need to Know/Understand? **List the underlined nouns.**	*What Do Students Need to Be Able to Do?* **List the circled (or *italicized*) verbs.**
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	**Identify Apply Explain** **Use Create Determine** **FBS Measure Count** **PRS Measure Count**

ESSENTIAL SKILLS portion continues with a second section:

DOK LEVEL
Level of content complexity rather than content difficulty.

DOK 1   DOK 2   DOK 3   *DOK 4**

ESSENTIAL QUESTIONS	ESSENTIAL VOCABULARY
How can we capture student wonder? ***Including open-ended and 'second' questions**	*What Do Students Need to Comprehend?* **List all key vocabulary**
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.	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?
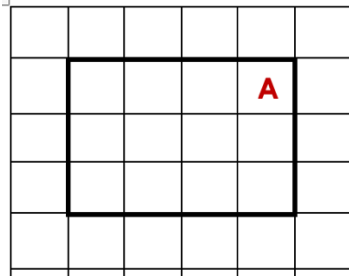*What will we do for students who already know it?*

My Learning Intention: I am learning to apply the <u>area</u> and <u>perimeter formulas</u> for <u>rectangles</u> in *mathematical problems* and problems in *real-world contexts* including problems with <u>unknown side lengths</u>.

| 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?		

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

Area of rectangle A = _____

2. **PART A.** Find the total distance around the rectangle.
   PART B. Is this an example of area or perimeter?

8 cm

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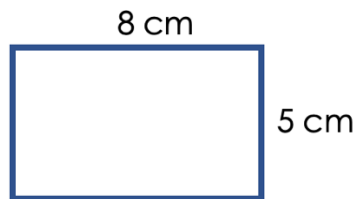
3. Hilda is creating a frame to place around a rectangular painting. The painting is 12 cm long and 8 cm high.

Circle the equation Hilda can use to design her frame?

| 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)

4. 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.
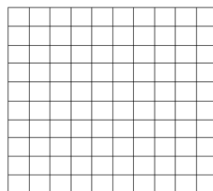
Alignment to MD.A.3.3 (DOK 2)

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

x ft

8 ft
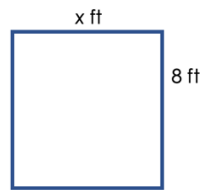
   A. 3.5 ft.
   B. 6 ft.
   C. 20 ft.
   D. 72 ft.

Alignment to MD.A.3.3 (DOK 3)

6. **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.

Alignment to MD.A.3.4 (DOK 3)

7. 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 <u>area</u> and <u>perimeter formulas</u> for <u>rectangles</u> in mathematical problems and problems in real-world contexts including problems with <u>unknown side lengths</u>.

Group Members	Emerging	Developing	Proficient	Distinguished

Warm-Up:

Vocabulary

Side   Length   Area   Unit Square

Perimeter   Unit   Side

Formula   Two-dimensional

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.

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.