2.4

Mathematical Practices by Design

Instructions: Highlight the Mathematical Practices and/or Look Fors that will be prominent in the lesson. Write design plans for how the *selected* Mathematical Practice will be developed.

Topic/Goal of Lesson:

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| ***Mathematical Practices and Student Look Fors*** | ***Design Plans*** |
| 1. Make sense of problems and persevere in solving them.
	* Analyze information (givens, constraints, relationships, goals).
	* Make conjectures and plan a solution pathway.
	* Use objects, drawings, and diagrams to solve problems.
	* Monitor progress and change course as necessary.
	* Check answers to problems and ask, “Does this make sense?”
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| 1. Reason abstractly and quantitatively.
	* Make sense of quantities and relationships in problem situations.
	* Create a coherent representation of a problem.
	* Translate from contextualized to generalized or vice versa.
	* Flexibly use properties of operations.
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| 1. Construct viable arguments and critique the reasoning of others.
	* Make conjectures and use counterexamples to build a logical progression of statements to support ideas.
	* Use definitions and previously established results.
	* Listen to or read the arguments of others.
	* Ask probing questions to other students.
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| 1. Model with mathematics.
	* Determine equation that represents a situation.
	* Illustrate mathematical relationships using diagrams, two-way tables, graphs, flowcharts, and formulas.
	* Check to see whether an answer makes sense within the context of a situation and change a model when necessary.
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Retrieved from the companion website for *Everything You Need for Mathematics Coaching: Tools, Plans, and A Process That Works: Grades K–12* by Maggie B. McGatha and Jennifer M. Bay-Williams with Beth McCord Kobett and Jonathan A. Wray. Thousand Oaks, CA: Corwi[n, www.corwin.com.](http://www.corwin.com/) Copyright © 2018 by Corwin. All rights reserved. Reproduction authorized only for the local school site or nonprofit organization that has purchased this book.

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| ***Mathematical Practices and Student Look Fors*** | ***Design Plans*** |
| 1. Use appropriate tools strategically.
	* Choose tools that are appropriate for the task (e.g., manipulative, calculator, digital technology, ruler).
	* Use technological tools to visualize the results of assumptions, explore consequences, and compare predictions with data.
	* Identify relevant external math resources (digital content on a website) and use them to pose or solve problems.
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| 1. Attend to precision.
	* Communicate precisely, using appropriate terminology.
	* Specify units of measure and provide accurate labels on graphs.
	* Express numerical answers with appropriate degree of precision.
	* Provide carefully formulated explanations.
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| 1. Look for and make use of structure.
	* Notice patterns or structure, recognizing that quantities can be represented in different ways.
	* Use knowledge of properties to efficiently solve problems.
	* View complicated quantities both as single objects and as compositions of several objects.
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| 1. Look for and express regularity in repeated reasoning.
	* Notice repeated calculations and look for general methods and shortcuts.
	* Maintain oversight of the process while attending to the details.
	* Evaluate reasonableness of intermediate and final results.
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*Source:* Adapted from Elementary Mathematics Specialists & Teacher Leaders Project. (n.d.). Common Core Look-Fors. Unpublished document. Used with permission. Previously published by Bay-Williams, J., McGatha, M., Kobett, B., and Wray, J. (2014)*. Mathematics Coaching: Resources and Tools for Coaches and Leaders, K–12.* New York, NY: Pearson Education, Inc.