How? Justify.

How did I arrive at my solution? How do I know it's correct?

READY REFERENCE GUIDE

DISTINGUISH CORRECT LOGIC FROM INCORRECT LOGIC

UNDERSTAND	**Definition**	Students have the ability to look at their own strategy for solving a problem, or the strategy of a peer, and determine whether the work makes sense. When it does not, students can explain *why* the work is incorrect and fix the error(s).
	When to Teach This Strategy	• Students should practice this strategy routinely. • Students get stuck on a problem and need to problem solve to find their error. • Students have arrived at a solution and need to explain their solution pathway to others.
PREPARE	**Why We Teach It**	Mathematically proficient students need this strategy to • make sense of their work, • communicate their mathematical thinking to others, and • understand math on a deeper level.
	Secrets to Success	For students to be successful with this strategy they must be able to • explain their work, • reason abstractly and concretely, • regularly practice defending their strategies for solving, and • regularly practice listening to peers defend their strategies and asking them clarifying questions.
TEACH	**How We Teach It**	Modeling a think-aloud during the "I Do" focus lesson: Explain to students that they are going to learn how to use a strategy called Distinguish Correct Logic from Incorrect Logic. "In math it is important not only to find a solution to a problem, but to be able to explain how we solved the problem to ourselves and to others. "This strategy is important because it helps you attend to accuracy and precision in your work. It also gives you a tool to help confirm that the work is correct or to recognize errors and correct them. You can use this strategy all the time to help make sure your work is free of errors and to help you take your understanding of math to a deeper level. "Using the strategy Distinguish Correct Logic from Incorrect Logic looks like this:" During the "I Do" focus lesson we present several previously solved problems to students. We model by orally explaining the process we followed to solve the problem. As you explain the strategy for solving, be certain to explain *why* you know your strategy for solving works. Be sure to include an example of a problem that has been solved incorrectly and model *why* the strategy is incorrect as well as how to fix the error(s) that were made. After modeling this strategy, we provide students with chances to practice by having them solve a problem and practice explaining their work out loud with a partner. "You will know you are using this strategy when you can easily explain how you arrived at a solution and why your strategy works, your work makes sense, and your work is regularly free of mistakes."
		Suggested Language • *How do I know my strategy makes sense?* • *How can I explain my strategy to someone else?* • *Would someone else understand how I arrived at my solution?*

SUPPORT	**Instructional Pivots**	• Give regular opportunities to explain their thinking to students who struggle with explaining their strategy. (Mental math is an excellent way to do this.)
		• Give students an organizer that provides space for them to fill in the
		  • *what* (what needs to be solved),
		  • *why* (why my strategy works), and
		  • *how* (my strategy for solving).

	Partner Strategies	These strategies may provide support before, during, and after teaching this strategy: • Defend Your Strategy for Solving the Problem • Use Diagrams, Objects, Etc., to Construct Your Argument for Solving