Apply and Solve

What strategies can I use to solve the problem?

READY REFERENCE GUIDE

USE A MATH FORMULA

UNDERSTAND	**Definition**	Students use a specific equation (a set of math symbols) to solve a given problem.
	When to Teach This Strategy	Teach this strategy when working with specific problems that can be solved efficiently using the same math equation each time. For example, it is most efficient to find area using the math equation *area = length x width*.
PREPARE	**Why We Teach It**	Mathematically proficient students recognize that using a formula is an efficient way to solve certain types of problems (such as circumference of a circle, area, volume, or distance). It is a quick way to find a solution, and the formula will work *every* time you need to solve this type of problem.
	Secrets to Success	For students to be successful with this strategy they must • understand *why* the formula works the way it does, and • know when the formula can and cannot be used to solve a problem.
TEACH	**How We Teach It**	Modeling a think-aloud during the "I Do" focus lesson: Explain to students that they are going to learn a math strategy that will help them use a specific math equation (sometimes called a math *formula*) to solve a certain type of math problem the same way, every time. Also, explain that a formula is an efficient way to solve certain types of problems because it works *every* time, and the more you work with it, the easier it will be to remember. First, read through the problem. Then ask yourself if you've seen a problem like this before. If so, did a certain math formula make it easy for you to solve the problem? Or have you learned a certain math formula from your teacher or peers that would help you solve this particular problem? For example, when I am trying to find the area of a space, it is efficient for me to use the math formula *area = length x width*. The more you work with specific math formulas, the easier it will become to recall and use them. After modeling this strategy three or four times with several different math problems using whichever formula is being taught, we give students several more problems during the "We Do" focus lesson. Students practice using the formula to arrive at a solution.
		Suggested Language • *Have I learned an equation, or "rule," that will help me easily solve this problem?* • *What is the most efficient way to solve this problem?*
SUPPORT	**Instructional Pivots**	• It is more important to teach students *why* and *how* an equation works than it is to simply provide them with the equation. • It is important to model and provide students with chances to practice when teaching them how to use a formula. They also need opportunities to learn and explore how to select the *right* formula for a given problem.
	Partner Strategies	These strategies may provide support before, during, and after teaching this strategy: • Draw a Picture • Estimate • Think-Aloud • Look for a Pattern • Create an Organized List • Work Backward • Monitor and Adjust