Vanilla Ice is famous for many reasons, but perhaps most of all for his lyric “If there was a problem, yo, I’ll solve it…” (Check out the hook while his DJ revolves it). You, too, can be ice cold under pressure and a master problem solver. Consider these three essential problem solving strategies:

1) Look Out Below

The answer choices in a Problem Solving question are assets, so look below the question at the answer choices before you simply begin calculating. Often the answer choices contain clues or shortcuts that will vastly decrease the amount of time/energy you need to spend on a problem. Consider the question:

What is the square root of 2209?

(A) 31

(B) 33

(C) 37

(D) 47

(E) 53

Actually calculating the square root of 2209 is a monster process, and you’re not allowed to bring your trusty slide rule to the test center! But a glance at the answer choices should reveal that your options are limited – you don’t have to create this number from scratch. You can first eliminate A, because 31*31 will end in a 1, and you need a number that ends in 3. And for the rest, you can “bracket” the answer choices with convenient math. 33 and 37 are both less than 40, and 40^2 isn’t hard to calculate. It’s 1600, which is too small, so both of those choices are out. Then you’re left with 47 and 53, and they’re bracketed by 50, which when squared is too big: 2500. So 47 is the only plausible answer choice, and you can select it correctly without doing any “hard” math.

Other problems allow you the same convenience. Where factoring is involved (fractions and roots, especially), the answer choices let you know your options. If your last step for a problem is:

What is the cube root of 243?

(A) 3 * cube root 5

(B) 3 * cube root 7

(C) 3 * cube root 9

You don’t have to create that cube root from scratch. You know that you’ll need to turn 243 into something*5, something*7, or something*9 in order to end up with one of those answer choices. So you can test: 243 isn’t divisible by 5, so A is out. It isn’t divisible by 7, so B is out. And it is divisible by 9: it’s 9*27, and 27 has a cube root of 3, so C is correct.

Search the answer choices for clues and you’ll find that they often provide you with quite a bit of information and direction. Before you start working on the problem, take a look below at the answers .

2) Answer The Right Question

One of the easiest ways for the GMAT to bait you into a wrong answer is to get you to leave your work just one step short, and to employ an answer choice that matches the number at that point. For example, if a problem asks “How many gallons are left in a 15-gallon tank if the driver leaves San Diego with a full tank and drives directly to Los Angeles, 200 miles away, using an average of 25 miles per gallon for the trip?”

Your first step is to calculate how many gallons were used, so you’ll calculate that 200 miles * 1 gallon/25 miles = 8 gallons. And 8 will be an answer choice. But the question isn’t asking how many gallons were used, it’s how many were left over. And that requires you to subtract 8 gallons from the original 15 to find that 7 remain.

The GMAT knows that many examinees aren’t fully comfortable with algebra or calculation, and that it’s a relief when you finally get “an answer” on your scratchwork that matches an answer choice. But the test will penalize you for not recognizing the context of that answer, and will reward those who don’t just “get a number” but also know what that number means. To ensure that you get full credit for your work, make sure to double-check your answer against the explicit question being asked; one way to do this is to write a big question mark (?) at the top of your noteboard so that you’re always looking at reminder. The most popular wrong answer to any question on the GMAT is the right answer to the wrong question. Make sure you answer the correct question!

3) Start With What You Know

Problem solving questions are well-crafted to provide you with uncertainty. They’re designed to look intimidating or difficult, but also to reward you for leveraging assets to chip away at that uncertainty. For example, consider the question:

&, #, and @ each represents a different digit, and & * # < 10. What is the value of the two-digit number &# if the following multiplication problem is true:

&#

x #& (note: the x is used here as a symbol for multiplication, not a new variable!)

#@#

(A) 11

(B) 12

(C) 13

(D) 21

(E) 31

At first glance, this problem looks like nothing you've seen before! But you do know some things here. When multiplying two-digit numbers, the first step is to multiply the units digits. And here, # * & provides a units digit of #. How is that true, particularly if as stated above the full product is less than ten? That means that & must equal 1, so that when it multiplies with another number, that other number (&) stays the same. 1 * & = &, so we can prove that & is 1.

We also know that the digits must be unique, so choice A is eliminated, and the fact that the & is 1 means that D and E are eliminated (the first digit must be a 1). So that leaves just two options, 12 and 13. And we know that the problem, then, is either 12*21 or 13*31, and we have to have a solution with the units and hundreds digits the same. At this point, we have two quick multiplication problems to do:

12*21 = 252 (this works)

13*31 = 403 (this does not)

So the correct answer must be 12. The key is to begin with a first step, taking inventory and advantage of what you know and working from there. Difficult problem solving questions often hinge on the exam's knowledge that people are uncomfortable when they can't see the entire process all at once, but remember that they also have to be written such that many examinees can solve them in 2 minutes. So rest assured that even if you don't know much, you still know enough to get started. Great test takers always begin by taking what they know and working from there; those who don't score as well tend to focus more on what they don't know, and struggle to get started.