As you study for the GMAT, you're likely to begin by noticing all of those things that you *used to* know. Algebra rules, geometry formulas, calculation methods – at first glance the GMAT looks like a test of every math class you took before you turned 16. And when you were learning those things as an adolescent, you typically learned 2-3 formulas at a time, studied and practiced them Thursday night, took the test on Friday, then started over again. So your inclination when you see that the GMAT will require you to again use those rules/formulas/methods is likely to be that you should memorize them all again and drill some repetition.

But the GMAT isn't like those other tests; it's not a test of whether you could quickly become Knibb High valedictorian but rather of whether you could become Kraft Foods VP of Marketing. So simply memorizing those formulas and rules might actually be counterproductive, for two reasons:

1) Memorization is prone to failure

2) The GMAT rewards conceptual ability, not factual knowledge

Note that, in education-speak, "remember" is the lowest tier of Bloom's Taxonomy of Educational Objectives, well below apply/create/analyze. The GMAT is not particularly interested in testing just your knowledge base!

Because of these (note – examples forthcoming), if you don't currently know a rule or formula, you shouldn't burden yourself with trying to memorize it, but instead you should focus on teaching yourself the ability to prove it. In that way, you'll make the concepts easier to remember; you'll have much more flexible knowledge that you can apply to a variety of situations; and you'll be studying in a way that better approaches the GMAT's objectives.

Consider these examples of how learning to prove a concept can be much more powerful than simply trying to remember it.

Number Properties

There exist several even/odd number property rules that the GMAT does test. Those rules are:

Even + Even = Even

Even + Odd = Odd

Odd + Odd = Even

Even * Even = Even

Even * Odd = Even

Odd * Odd = Odd

And if you try to memorize these, you're just reciting the same two words (even, odd) over and over in differing orders. It's incredibly easy to transpose those words in a particular case:

Even * Odd = Even

but

Even + Odd = Odd

and in doing so blow the whole problem. But if you focus instead on just knowing that "there are some rules for adding, subtracting, and multiplying evens and odds", you can always quickly prove the rule to yourself using small numbers. Knowing that the rule exists is more important than knowing the rule. If you're trying to find the multiplication rules, it doesn't take long to see that:

1*3 = 3 –> two odds multiply to an odd product

2*3 = 6 –> even * odd = even

2*4 = 8 –> two evens multiply to an even product

Just as importantly, you've not only learned (and quickly) how to attack an even/odd problem, but you're also training yourself to look for patterns in numbers in case another unique property pops up. You don't just know "even/odd properties", you know how to use small numbers to test patterns, and that the GMAT likes to reward you for finding and extrapolating patterns. This is much higher on Bloom's Taxonomy (the accepted hierarchy of levels of educational ability), as you're now applying a skill and not just remembering a fact. The GMAT has a vested incentive in rewarding those whose cognitive abilities rank higher on that chart, so this application of conceptual knowledge is much more likely to help you on harder questions, too.

Exponent Rules

When you face a situation like:

x^y * x^z

it may well be knee-jerk to add y + z for a combined exponent, x^(y+z). Or, wait, do you multiply them? And are you allowed to do that if you're adding x^y + x^z, too?

Rules like this can become fuzzy and/or are often tricky when you wonder whether you can apply them. But if you take a second to prove them, you have a great opportunity to create lasting understanding and flexible knowledge. Let's try with small numbers:

2^2 * 2^3

Well, we know that's also

4 * 8 = 32

and 32 is 2^5 (you can do this by hand pretty quickly…you don't need to memorize that either. 2, 4, 8, 16, 32 —> the 5th one is 32), so you can prove that you can't multiply and you can infer that you should add. And if you wanted to do this in the case x^y + x^z, you can try that, too, with small numbers to find:

2^2 + 2^3

4 + 8 = 12, which isn't 2-to-the-anything…you can't apply a rule like this when adding!

And if you really want to break down why, consider:

x^2 * x^3

well, x^2 = xx, and x^3 = xxx, so we have:

xx * xxx

Which is just 5 x's multiplied together –> x^5

Once you've proven these rules, it's quite probable that you'll "remember" them, and even more probable that even if your memory fails you'll be able to prove the rule again without losing much time. You're now a well-prepared flexible thinker.

So when you study, if you forget a rule DO NOT look it up! Prove it to yourself, and you'll unburden yourself from flashcards and memorization. Recall can fail; conceptual understanding does not. They say that the proof is in the pudding, but on the GMAT your celebratory pudding (you do plan to celebrate your 700+ by eating pudding, right?) is in the proof.