One of the more fascinating themes surrounding the GMAT is that the math concepts that tend to drive adults crazy are those that they mastered as kids – the grad school level test in many ways flummoxes students with middle school and even elementary school math. Many a GMAT student has even joked that the GMAT is similar to the TV game show “Are You Smarter Than A Fifth Grader?”

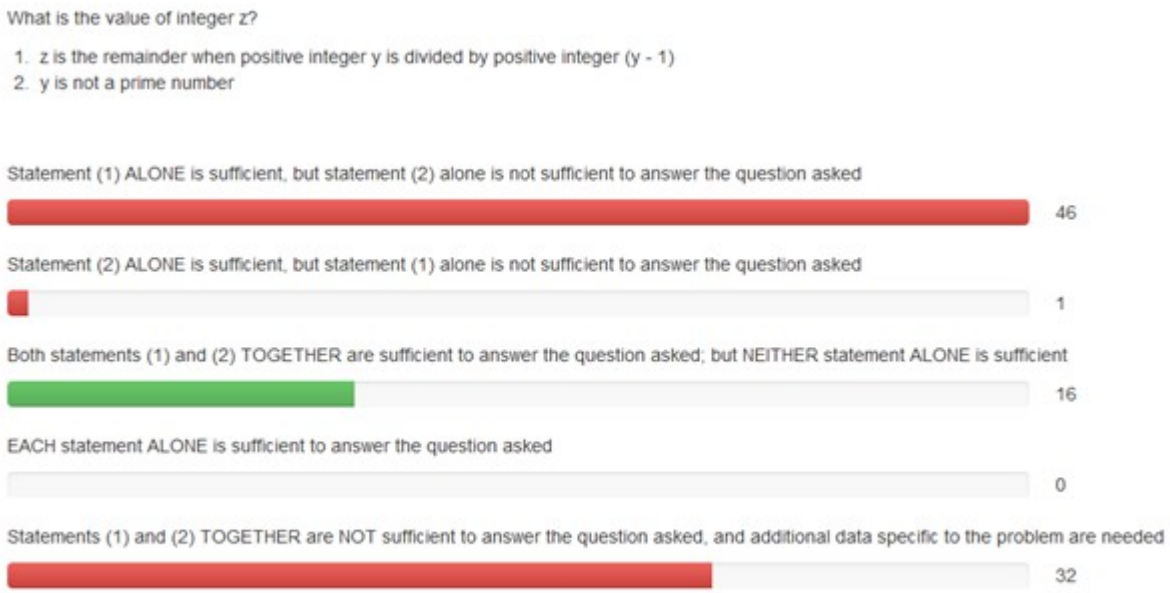
Now, you should know that while many of the concepts are from grade school the reasoning skills are certainly more suited to grad school. So as we examine another challenge question from the Veritas Prep Question Bank, be sure to learn lessons at two levels – the content level (let’s talk remainders) and the reasoning level (how can you be ready for this type of trap regardless of the specific piece of math content?).
Remainders are a common topic on GMAT questions, largely because they’re a concept that many have forgotten – the minute you learn about mixed numbers and decimals, you graduate from remainders… unless you’re taking the GMAT, in which case they come back stronger and more clever than ever. Consider, for example, this question:

What is the value of integer z?

(1) z is the remainder when positive integer y is divided by positive integer (y – 1)
(2) y is not a prime number

Now, before we get into the answer choices and statistics, let’s plug in a few numbers to get a feel for the remainder when dividing consecutive integers. Say 7 divided by 6 (1 remainder 1) or 5 divided by 4 (1 remainder 1). The remainder is what’s left over after the quotient. And in pretty much all cases as you’ve seen here, when you divide a positive integer by the integer below it, the difference is 1.

Note, also, that statement 2 is obviously not sufficient. The question asks about z and (2) is only about y with no connection to z. So this question should seem like a slam dunk – you know about remainders, from statement 1, and statement 2 is a throwaway. So why do approximately 5/6 of users answer this incorrectly – why do people answer this question at a rate (16% correct) worse than that of random guessing (20%)? Let’s look at the stats:



Choice A is a clear trap, and it’s one you need to learn from. Why isn’t statement 1 sufficient? Because of exactly one pair of consecutive positive integers: 2 and 1. 2 divided by 1 is 2, with no remainder (a remainder of 0). And so that one

combination allows for an answer different from 1, making statement 1 insufficient.

Now, how are you supposed to know that? Two pieces of knowledge can help you to avoid those kinds of traps:

1. Data Sufficiency questions tend to hug the borders. Which means that in this case, if y and (y – 1) are defined as "positive integers", you'll need to check the lower border. The smallest positive integer is 1, so by playing the border you'll find that 1 and 2 are a unique pairing. Often times people start with numbers that fit the definition but that don't stretch or test the parameters of the question. If a statement says "m > 7", don't just start with 8 – try 7.001 to see if that's different. And in this case, it paid to check the lower border of positive integers.
2. When one statement is obvious, it's likely a clue. Here statement 2 is pretty clearly not sufficient. So why is it there? It's a clue. Why would it matter that y is not prime? What would prime numbers have different? That's your cue to list out prime numbers (2, 3, 5, 7, 11…) and ask yourself if anything in that smaller list would change things. That's an invitation to think about y = 2 and realize that 2 and 1 is the unique pairing in this problem. Statement 2 rules out the only pair of numbers for which the remainder is not 1, so C is the answer.

Now, where does choice E come into play? There are two major reasons that people pick E. For one, they realize that statement 1 is not sufficient because of the pairing of 2 and 1, but they too quickly write off statement 2 because it looked so out-of-scope to begin with. Or they fail to fully digest the definitions that both y and (y – 1) are positive, and instead think that y could be 1 and that you'd be dividing 1 by 0 and get an "undefined" remainder. In either case, the lesson is to be precise — precise definitions matter in Data Sufficiency questions, and as you saw above it pays to consider the boundaries of each question by playing to the borders.

So learn from the mistakes of your counterparts here. This problem may be categorized as a "remainder" or "division" problem, but for the most part it's a Data Sufficiency strategy problem. Check the borders of each statement and remember that if one statement is obvious (either obviously sufficient or obviously not sufficient) it's often a clue, rewarding those who consider it in the context of the other, more nuanced statement.