As you've probably already seen this morning, last night the President ba-rocked the Apollo, singing a few bars from Al Green's "Let's Stay Together" in front of the soulful reverend himself and complicating the next "2012 Presidential Election" category clue to be aired on Jeopardy. "Let's Stay Together" – is it "what is Barack Obama's campaign song?" or "what is something Newt Gingrich has never said to a wife?". Ba-dump-bump.

But, seriously, folks – how can Barack, Al, Newt, and the soulful sounds of "Let's Stay Together" help you master GMAT math? Well, while the President has surely proven himself to not be a square, most roots that you will see on the GMAT are square. And when you approach square roots, it can be helpful to think of pairs that would like to stay together…but can't quite work it out. Let's investigate:

Take, for example, the square root of 36: sqrt (36)

36 has prime factors: 2, 2, 3, 3, and when it's under the "roof" of the radical sign, those factors all stay together:

Sqrt (36) = Sqrt (2*2*3*3)

But in order to perform the square root function, in a way you're granting that number an amicable divorce and splitting its factors. If x^2 = 36, then:

x*x = 2*2*3*3

As long as there is an even number of each factor, each x (to complete the divorce analogy feel free to interchange "ex" and "x"…you're creating an x-husband and x-wife if you want to carry that analogy through) should one of the pair. Split up the two 2′s and the two 3′s, and each x gets one of each:

x = 2 * 3

Now, where this gets GMAT-interesting is when there isn't a pair for each factor and the divorce isn't so amicable as it pertains to integers. If we want to take the square root of 18 instead, 18 has the prime factors 2*3*3. So if:

y^2 = 2*3*3

y*y = 2*3*3

We can split the pair of 3s and give each y its own full 3…but that 2 is going to be messy since there's only one. That's when we have to keep the radical sign in play to show that we're splitting the one factor of 2:

y = 3*(sqrt2)

So if you're following the analogy, an amicable square root leaves us with just integers, since there is a pair of each prime factor to evenly split between both x's in x^2. When we don't have a pair of each prime factor, then the square root gets messy as a noninteger with the radical sign still there. So, consider this question:

Is ***integer*** x divisible by 6?

(1) x^2 is divisible by 12

(2) x^3 is divisible by 27

Note the word "integer" in the question stem. That defines x as an integer, meaning that we must have an "amicable divorce" in this square root situation. We can't have any lone factors that must be divided into noninteger square roots. So when statement 1 says:

x^2 = 2*2*3*y (NOTE: because x is *divisible* by 12, it's 12 * "something", and we'll represent that "something" with y here. y could be 1, making x^2 = 12, or it could be something giant…all we know is that at a minimum x^2 possesses the factors 2, 2, and 3)

Then x * x = 2 * 2 * 3 * y

The 2s will evenly split…but that 3, unless y supplies another 3 to pair with it, will cause a problem: the square root of 3 is not an integer, so this would be a messy, not-amicable square root. But the definition in the question stem promises that we're getting an integer value for x. And because of that, we know that y must carry a pair for the single 3 that already exists – otherwise we wouldn't get an integer. So statement 1 guarantees that:

x*x = 2*2*3*3* (maybe something else)

So we can guarantee that x = 2*3*(integer), and the statement is sufficient. (Statement 2 is not, so the answer is A)

And the takeaway – when x must be an integer and you're told that x^2 is divisible by a number, n, you know that any prime factor in n has a pair to facilitate the amicable split. Otherwise, you'd end up with a messy divorce and a noninteger result.

So when you consider divisibility and square roots, recognize that integer roots mean amicable divorces. Each x (or ex) gets one of each pair, and in order to be perfectly amicable every factor must have a pair. Because Al Gebra is not like Al Green – squares in algebra can't always stay together.