CONFIDENCE INTERVALS

QUESTION:
A polling organization announces that the proportion of American
voters who favor congressional term limits is 64%, with a 95% confidence margin of error of
3%. This means that
(a) If the poll were conducted again in the same way, there is a 95% chance that the fraction of
voters favoring term limits in the second poll would be between 61% and 67%.
(b) There is a 95% probability that the true percentage of voters favoring term limits is between
61 and 67%.
(c) If the poll were conducted again the same way, there is a 95% probability that the percentage
of voters favoring term limits in second poll would be within 3% of the percentage favoring term
limits in the first poll.
(d) Among 95% of the voters, between 61% and 67% favor term limits.
(e) None of the above.

The answer key says e. I am clear on why it's not a, c, or d. I'm having trouble with b however.
Can someone clarify this issue (yet again, I know it's come up a lot already).

ANSWER:
I think you've made the correct distinction in what you wrote about confidence intervals. This is
one of those situations in which we are pressing the language to help us make a conceptual
distinction that is quite subtle.

So to say "I'm 95% confident that...", attached to a specific interval, implies, in the consensus
usage that has developed in the last years, a sense of the current specific result being set among
all possible results that could have occurred. Among all these results, 95% capture the
population characteristic of interest.

But to say "There is a 95% probability that..." means something different, and can never apply to
a specific observed result, if you understand probability as a long-term frequency applied to
random variables. This is the dominant understanding of probability today, at least in the AP
Stats universe.

In this example,

...the true percentage of voters favoring term limits is between 61 and 67%

neither "the true percentage of voters" or "between 61 and 67%" are random variables, but are
rather fixed quantities, so you can't talk about a probability in any but the trivial sense that the
true percentage is either in or not in the interval, with probability 0% or 100% (but you don't
know which it is).