

The William Lowell Putnam Mathematical Competition

takes place Saturday, December 2, 2006.

In the last five years, we've been in the top three in terms of top-scoring students. Our team placed fifth twice.

Sign-up and Introductory Meeting
Mon. Oct. 2, 5:15–5:45 pm, in 380–383N

We will also discuss times and dates of problem-solving preparatory sessions. If you can't make it and are even potentially interested, please e-mail vakil@math.stanford.edu.

Sample problems:

1. Beginning with 2 and 7, the sequence 2, 7, 1, 4, 7, 4, 2, 8, ... is constructed by multiplying successive pairs of its members and adjoining the result as the next one or two members of the sequence, depending on whether the product is a one- or two-digit number. Prove that the digit 6 appears an infinite number of times in the sequence.
2. Find the smallest natural number n which has the following properties:
 - (i) its decimal representation has a 6 as its last digit, and
 - (ii) if the last digit 6 is erased and placed in front of the remaining digits, the resulting number is four times as large as the original number n .
3. Basketball star Shanille O'Keal's team statistician keeps track of the number, $S(N)$, of successful free throws she has made in her first N attempts of the season. Early in the season, $S(N)$ was less than 80% of N , but by the end of the season, $S(N)$ was more than 80% of N . Was there necessarily a moment in between when $S(N)$ was exactly 80% of N ?
4. Show that, for all integers $n > 1$,

$$\frac{1}{2ne} < \frac{1}{e} - \left(1 - \frac{1}{n}\right)^n < \frac{1}{ne}.$$

For more information: <http://math.stanford.edu/~vakil/putnam06/>