Round One Qualifying Test
2015 *Who Wants to Be a Mathematician*

Test-taker acknowledges that, if selected as a contestant for the AMS's WWtBaM contest, which selection belongs solely to the AMS, he/she will abide by the rules of the contest and that the decisions of the AMS as to prizes and eligibility thereto are solely at the discretion of the AMS.

You don't have to show your work on this paper. Just write the final answer. No calculators.
You have 15 minutes. Good luck!

1. Find the slope of the line whose equation is $2y - 3x = 5$. ___**3/2**_____

2. What is the fourth digit to the right of the decimal point in the decimal expansion of π ? __**5**___

3. The *x*-coordinate of the point where the graph of $xy = 8$ and $y = x^2$ intersect is ___**2**_____

4. $\sin\left(2\cos^{-1}\left(4/5\right)\right) =$ _____**24/25**_____

5. Which platonic solid has sides shaped like pentagons?
    a. dodecahedron　　　　b. icosahedron　　　c. octahedron　　　d. tetrahedron

6. What is the smallest degree possible for a polynomial with integer coefficients that has 5/2 and $3 + 2i$ as roots ? _____**3**_____

7. The million-dollar Millennium Problem that has been solved was named for
    a. David Hilbert　　　　b. William Hodge　　**c. Henri Poincaré**　　d. Bernhard Riemann

8. Find the sum of the following finite sequence, the alternating sum of the first 2,014 integers:
    $1 - 2 + 3 - 4 + \ldots + 2013 - 2014$? _____**-1007**_____

9. How many odd numbers between 100 and 999 have three distinct digits? ____**320**_____

10. Let F_n denote the nth term of the Fibonacci sequence 1, 1, 2, 3, 5, … . What is the greatest common factor (greatest common divisor) of F_{66} and F_{300}? _____**8**_____

Thank you for participating.