Bergen County Mathematics League

Good Luck To You

Good Luck to All

Part I *Time Limit:* 12 *minutes* On contests #2, #4, and #6, ***any S.A.T. calculator will be allowed.***

1-1. What are both solutions of $x + \frac{1}{x} = 2016 + \frac{1}{2016}$?

1-2. The age of each member of the math club is a whole number of years from 11 to 19 inclusive. If the product of the members' ages is 959310, what is the sum of their ages?

Part II *Time Limit:* 12 *minutes*

1-3. In my stationery shop, two golden compasses are sold for a total of $1000. If I increase the selling price of one compass by 1% and then decrease other one by 1%, the prices of the two compasses will be equal. What is the cost, in dollars, of the cheaper compass?

1-4. Three explorers, Al, Barb, and Cal, found many ancient coins. For every 5 coins that Al found, Barb found 4; and for every 5 coins that Barb found, Cal found 6. At the end of the day, they found a total of 345 coins. How many coins did Al find?

Part III *Time Limit:* 12 *minutes*

1-5. From a point interior to rectangle, line segments drawn to consecutive vertices have lengths of 1, 7, 8, and x. What is the value of x?

1-6. What are the only two integers, from 2010 to 2019 inclusive, that *cannot* be expressed in the form $ab + a + b$, where a and b are both positive integers?

Answers

1-1. 2016, 1/2016
1-2. 80
1-3. 495 or $495
1-4. 125
1-5. 4
1-6. 2010, 2016