The Department of Mathematics and Computer Science of UMSL together with UMSL Advanced Credit Program announces the Distance Competition in Mathematics for students who are enrolled in this program.

Only complete solutions will be considered. Answers without any explanations will not receive any credit. Solutions should be typed or accurately written and scanned, and submitted by e-mail to the address: mathsolutions@umsl.edu

When sending a solution, please, include your first and last name, your high school, the ACP class you are enrolled in and the name of your ACP teacher.

Deadline for submission is 23:59 pm on Monday, November 18th 2019.

Students who sent correct solutions of all problems will be entered in a drawing to win one of five prizes.

Correct solutions will be posted after November 18th at the web page of the Department of Mathematics and Computer Science under ‘News and Announcements’.

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Problems:

1. The floor of a square hall is tiled with square tiles. Along the two diagonals there are 109 tiles altogether. How many tiles are there on the floor?

2. Two candles are the same height, but one will take 4 hours to burn completely, and the other will take 6 hours to burn completely. How long will it take for one candle to be twice the height of the other candle?

3. McDonald’s sells Chicken McNuggets in 6-piece, 9-piece, and 20-piece containers. Notice that you can buy 12 McNuggets and 15 McNuggets by buying 2 six-piece containers or a 6-piece and a 9-piece container, respectively. But you cannot buy 13 McNuggets without having extras. What is the largest number of Chicken McNuggets you cannot buy without having extras?

4. A farmer goes to the market and buys a hundred animals for a total cost of $10,000. If cows cost $500 each, pigs cost $100 each, and Rabbits cost $5 each, how many of each animal did he buy?