Problem Solving Session

Friday, November 21, 2014

2:00pm-2:50pm in C630

1. What is the smallest positive integer that can be written entirely with 0's and 1's and is divisible by 225?

2. In Farmer Jane's field, grass grows at a constant rate. Her cows will only start grazing when the grass has reached a certain length, and each cow eats grass at the same, constant rate. Under these conditions, 5 of her cows can eat 2 hectares of grass in 10 days, and 7 of her cows can eat 3 hectares of grass in 30 days. How many days will it take 16 of her cows to eat 7 hectares of grass?

3. Each day a woman is driven home from work by her husband. He always arrives exactly on time to to pick her up. One day, she gets off work one hour early, and decides to walk home along the same route her husband uses. He sees her while driving to her work, and they drive home together. They arrive 20 minutes earlier than usual. How much time did she spend walking?

4. Adam puts a canoe in the Old Man River and starts paddling upstream. After a kilometre his hat falls in the river. Ten minutes later he realizes that his hat is missing and immediately paddles downstream to retrieve it. He catches up to it at the same place he launched his canoe in the first place. What is the speed of the river's current?

5. A column of soldiers 1 km long is marching at a constant rate. The soldier at the front needs to deliver a message to the soldier at the back, so she begins marching backward at a constant rate while the column continues forward. When she delivers the message, she immediately turns around and begins marching forward at a constant rate. When she reaches the front, the column has moved 1 km. How far did she march?

Announcement: An information session on how to get a summer research job in math and computer science will start at 3:00pm in D632 on Wednesday, November 26.