THE UNIVERSITY OF BRITISH COLUMBIA

Math 414 Section 101

Homework 1 Due by 1pm on September 15, 2017

1. A new hotel is built that avoids room numbers that includes the strings "91" or "11". For example there are no rooms 911, 112, 1912 or 113. suppose the first room is numbered 1 and other rooms are given increasing consecutive numbers, with the unlucky numbers containing 91 or 11 being skipped. How many rooms are there in the hotel if the last room is numbered 2017?

2. If x, y and z are positive numbers satisfying

$x + 1/y = 4$, $y + 1/z = 1$ and $z + 1/x = 7/3$

Then what is the value of xyz?

3. Last year, Alexa took 7 math tests and received 7 different scores, each an integer between 91 and 100 inclusive. After each test she noticed that the average of her test scores was an integer. Her score on the seventh test was 95. What was her score on the sixth test?

4. When Ivan Tsarevich came to the Magic Kingdom, Koschey was as old as Baba Yaga and Ivan Tsarevich together. How old was Ivan Tsarevich when Koschey was as old as Baba Yaga was when Ivan Tsarevich came to the Magic Kingdom?

5. Invent a grade 8-10 workshop problem and write out a detailed solution for someone giving a workshop. Take as inspiration some UBC Grade 8-10 workshop problem from 2009-2010. Identify explicitly the problem you used. Alternatively you may use another source (and identify it) or create a problem using your own imagination.

Note: Please make a photocopy or handwritten copy of the problem you create in question 5 and hand it in as the same time as the homework.