MATH 55 REVIEW QUESTIONS

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Question 1
Joe is waiting at a busstop serving bus lines A, B, C. We know that the next three buses will be the A, B, and C buses (but in random order), and we know that either bus A or bus B will get Joe to his destination. What is the probability that one of the next two buses will get Joe to his destination? What is the probability that the very next bus will get Joe to where he needs to go?

Question 2
What is
(1) \[ \binom{1000}{1} \]
(2) \[ \binom{1000000}{0} \]
(3) \[ \binom{1776}{1775} \]
(4) \[ \binom{1331}{1331} \]

Question 3
Use Pascal’s triangle to compute \( \binom{7}{2} \).

Question 4
A fair coin is flipped 20 times. What is the probability of getting exactly 7 heads?

Date: November 9, 2004.
Question 5

There are 10 people in a class. What is the probability that some person in the class is born in January? What is the probability that at least two people have their birthday in the same month?

Question 6

There are 25 pairs of shoes in an urn. Without looking, you reach in and pull out a pair of shoes. What are the chances that you have a matching pair?

Question 7

There are 100 units in a coop apartment building. There is a vote for a proposition to increase maintenance payments, where there is one vote per unit, and every unit can vote “Yes”, “No” or abstain. What is the probability that units 1-10 will vote the same way?

Question 8

An absentminded secretary stuffs four different letters into four different envelopes without looking. How many ways are there to do this?

Question 9: Bonus

As in question 8, but only count the number of ways where no letter winds up in the right envelope;