NCC 2014
Part D

Student name: _____

1. There are 11 girls and 10 boys sitting at a huge round table with 50 chairs. Girls and boys are not allowed to sit next to each other. Jerry arrives late and has to choose where to sit. What is the minimum number of chairs that Jerry could have available to choose from? Jerry is a boy.

Answer: _____

2. Grace takes 30 minutes to walk from home to school, and her brother John takes 40 minutes. John left home 5 minutes earlier than Grace. Assuming that John and Grace walk at constant (but different) speeds, in how many minutes will Grace catch up to John?

Answer: _____

3. Alfred and Bob are two classmates who wrote four tests in math class. Alfred's four test scores were: 75%, 83%, 85%, and 89%. Bob only received three of his test scores back and has an average that is 3% higher than Alfred's. What score would Bob need on his fourth test to have an 88% average?

Answer: _____

4. How many 6-digit numbers are there with the sum of their digits equal to 3?

Answer: _____

5. 4 black cows and 3 brown cows give the same amount of milk in 5 days as 3 black cows and 5 brown cows give in 4 days. If 1 black cow gives 1 litre of milk per day, how many litres of milk does 1 brown cow give per day? Assume every cow of the same type gives the same amount of milk.

Answer: _____

6. A bag contains 2 red marbles and 4 blue marbles. Lenny, blindfolded, randomly selects one marble and puts it on the table. He then randomly selects another marble and puts it on the table. What is the probability that Lenny took out one red marble and one blue marble?

Answer: _____

7. To paint a cube with edge length 3 centimeters requires 2 grams of paint. How much paint (in grams) is required to paint a cube of edge length 12 centimeters?

Answer: _____

8. What is the most recent year that ended on the same day of the week (Monday, Tuesday, etc.) as the year 40 years before it? Recall that a year is a leap year if it is a multiple of 4 that is not a multiple of 100. However, years that are a multiple of 400 are always leap years. For example, 2004, 2008, 2012 were leap years; 1700, 1800, 1900 were not leap years, and 1600 and 2000 were leap years.

Answer: _____